CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
NPDES NO. CAS 618033
AND
WASTE DISCHARGE REQUIREMENTS
ORDER NO. 96-30
FOR
THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On January 3, 1995, the Riverside County Flood Control and Water Conservation District (RCFC&WCD), in cooperation with the County of Riverside, and the incorporated cities of Beaumont, Corona, Calimesa, Canyon Lake, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as "permittees"), have jointly submitted a National Pollutant Discharge Elimination System (NPDES) Application No. CAS 618033 to renew their areawide NPDES permit for urban storm water run-off.

2. The 1987 amendments to the Clean Water Act required the United States Environmental Protection Agency (EPA) to develop permitting regulations for storm water discharges from municipal separate storm sewer systems serving a population of 100,000 or more and for storm water discharges associated with industrial activities, including construction sites. The EPA published proposed storm water regulations on December 7, 1988 and promulgated the final regulations on November 16, 1990. Prior to the EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Regional Board requested areawide NPDES permits for urban storm water run-off.

3. On July 13, 1990, the Regional Board adopted Order No. 90-104 for urban storm water run-off from urban areas in Riverside County within the Santa Ana Region. Order No. 90-104 expired on July 1, 1995. The Riverside County Flood Control and Water Conservation District was named as the principal permittee and Riverside County and the incorporated cities were named as the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the RCFC&WCD will continue as principal permittee and Riverside County and the incorporated cities will continue as co-permittees. However, the Regional Board, in exercising its enforcement discretion, will take action only against the individual permittee responsible for specific violations of this order, whenever possible.



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4. Order No. 90-104 required the permittees to develop and implement a drainage area management plan (DAMP); develop and implement storm water and receiving water monitoring plans; to eliminate illegal and illicit discharges to the storm drain systems; and, to enact the necessary legal authority to effectively prohibit illegal and illicit discharges. The overall goal of these requirements was to reduce pollutant loadings to surface waters from urban run-off to the maximum extent practicable (MEP)[1]. This Order regulates urban storm water run-off[2] from areas under the jurisdiction of the permittees.

5. The Report of Waste Discharge (the permit renewal application) included the following major components:

   a. A map of the drainage area and maps of existing storm drain facilities
   b. A summary of the storm water management program
   c. A Consolidated Program for Water Quality Monitoring
   d. A copy of a Proposed Storm Water/Urban Run-off Management and Discharge Control Ordinance
   e. A copy of the current Implementation Agreement
   f. A copy of the Interagency Agreement
   g. The Drainage Area Management Plan (DAMP)
   h. A copy of Proposed Riverside County Grading and Erosion Control Ordinance

6. Within the Santa Ana Region, the permittees serve a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The permitted area is shown on Appendix 1. This order regulates storm water run-off from areas under the jurisdiction of the permittees. The term storm water as used in this order includes storm water run-off, snow melt run-off, and surface run-off and drainage. The average annual rainfall in the urbanized area of Riverside County ranges from 10 to 12 inches. The permittees have jurisdiction over and/or maintenance responsibility for storm water conveyance systems within Riverside County. The storm drain system includes an estimated 200 miles of open and closed storm drains owned and operated by RCFC&WCD and an estimated 57 miles of open and closed storm drains owned and operated by the remaining permittees. The permittees have identified major outfalls( with a pipe diameter of 36 inches or greater or drainage areas draining 50 acres or more) and have submitted maps of existing storm drain facilities.

7. Approximately one quarter (1/4) of the entire Riverside County area drains into water bodies within the Santa Ana Region. Most of the urbanized areas of Riverside County lie within this Regional Board's jurisdiction. Storm water run-off from other portions of

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[1] Maximum Extent Practicable (MEP) means to the maximum extent possible, taking into account equitable considerations of synergistic, additive and competing factors, including but not limited to the gravity of the problem, fiscal feasibility, public health risks, societal concerns and social benefits.

[2] Urban storm water run-off discharges include those discharges from residential, commercial, industrial and construction areas within the permitted area and excludes discharges from feedlots, dairies and farms

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Riverside County is regulated by the San Diego and Colorado River Basin Regional Boards. The discharges consist of run-off from rainfall, snow melt, and surfacing ground water from various land use areas which either discharge directly to the Santa Ana River or to watercourses tributary to the Santa Ana River. Other major rivers in the area include the San Jacinto River and Temescal Creek. The San Jacinto Mountain areas drain into the San Jacinto River, which discharges into Lake Elsinore. Any overflow from Lake Elsinore is tributary to Temescal Creek, which flows into Reach 3 of the Santa Ana River in the Prado Flood Control Basin.

8. The Santa Ana River Basin is the major watershed within this Region. This watershed is divided into the upper and lower Santa Ana watersheds. The lower Santa Ana River Basin (downstream from Prado Dam) includes the Orange County drainage areas and the Upper Santa Ana River Basin includes the San Bernardino County and the Riverside County drainage areas. The San Bernardino County drainage areas are generally upstream of the Riverside County drainage areas.

9. The three county areas within this Region are regulated under three areawide permits for urban storm water run-off. These areawide NPDES permits are:

   a. Orange County, NPDES No. CA 8000180, Order No. 90-71 (upon renewal NPDES No. CAS 618030, Order No. 96-31)

   b. Riverside County, NPDES No. CA 8000192, Order No. 90-104 (upon renewal NPDES No. CAS 618033, Order No. 96-30)

   c. San Bernardino County, NPDES No. CA 8000200, Order No. 90-136 (upon renewal NPDES No. CAS 618036, Order No. 96-32)

10. Run-off from the San Bernardino County drainage areas is generally conveyed to the Riverside County drainage areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Dam (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

11. In addition to the Regional Board, a number of other stakeholders are involved in the management of the water resources of the Region. These include, but are not limited to, the incorporated cities in the Region, publicly owned treatment works, the three counties, and the Santa Ana Watershed Project Authority and its member agencies. The entities listed in Appendix 2 are considered as potential dischargers of storm water to the Riverside County drainage areas. It is expected that these entities will also work cooperatively with the permittees to manage urban run-off. The Regional Board has the discretion and authority to require non-cooperating entities to participate in this areawide permit or to issue individual storm water permits, pursuant to 40 CFR 122.26(a).

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Cooperation and coordination among all the stakeholders are critical to optimize the use of limited resources and insure economical management of the watershed. Recognizing this fact, this order focusses on watershed management and seeks to integrate the programs of all the stakeholders, especially the three municipal storm water permit holders, within this watershed.

12. The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies are threatened or impaired in part due to urban storm water run-off and non-storm water flows from urbanized areas. Preliminary results from urban storm water monitoring programs within the Region indicate that major pollutants of concern in urban run-off are certain heavy metals, sediment, coliform bacteria, pesticides, and nutrients. Municipal storm water run-off is a source of pollutants to waters of the Region that may be causing or contributing to water quality impairment. It is recognized that instream or end-of-channel treatment of storm water is difficult and expensive. Therefore, it is critical to identify the pollutant sources and to develop management practices necessary to reduce pollutant loading to storm water. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events and point source discharges permitted by the Regional Board under individual permits.

13. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources of urban storm water pollution nationwide:

    a. Industrial sites where appropriate pollution control and best management practices (BMPs) are not implemented,

    b. Construction sites where erosion and siltation controls and BMPs are not implemented, and

    c. Urban run-off where the drainage area is not properly managed.

14. To address the industrial and construction sites, the State Water Resources Control Board (State Board) issued two statewide general NPDES permits: one for storm water run-off from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water run-off from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). Most industrial activities (some light industrial activities are exempt) and construction activities on five acres or more are required to get individual NPDES permits for storm water discharges, or get coverage under these statewide general permits by completing and filing a Notice of Intent (NOI) with the State Board.

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15. In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water run-off from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order No. 94-7, NPDES NO. CA 8000336, for concentrated animal feeding operations, including dairies (General Dairy Permit). The Regional Board has issued and continues to issue individual storm water permits for certain industrial facilities within the Region.

16. One of the major components of these statewide permits, the Caltrans permit, and the General Dairy Permit is the requirement for the development and implementation of a storm water pollution prevention plan (SWPPP).

17. The Regional Board is the enforcing authority for the two statewide general permits. However, in most cases, the industrial and construction sites discharge directly into storm drains and/or flood control facilities owned and operated by the permittees. These industrial and construction sites are also regulated under local laws and regulations. Therefore, a coordinated effort between the permittees and the Regional Board is critical to avoid duplicative storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

18. The permittees generally conduct inspections of industrial and commercial facilities and construction sites within their jurisdiction to determine compliance with local storm water ordinances and regulations as well as for other regulatory purposes. The permittees have established a subcommittee to develop an enforcement/compliance strategy for industrial and commercial facilities and construction sites. The permittees have agreed to notify Regional Board staff when conditions are observed during such inspections which result in a threat or potential threat to water quality. This also includes failure to obtain coverage under the general storm water permits.

19. The permittees have agreed not to issue grading and/or building permits without proof of compliance for projects subject to the State's General Construction Activity Storm Water Permit.

20. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm drain system

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maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees will assess public agency activities and facilities for potential impact to storm water quality and develop and implement best management practices to reduce pollutant discharges from those activities/facilities found to be significant sources of pollutants. Non-storm water discharges from these facilities and/or activities also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III., Discharge Limitations, 3 of this order or are permitted by the Regional Board under an individual NPDES permit.

21. The major focus of storm water pollution prevention is the development and implementation of an appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to attain water quality consistent with the water quality objectives for the receiving waters in order to protect beneficial uses. The permittees developed and submitted a DAMP, which was approved on January 18, 1994.

22. The DAMP is a dynamic document and the permittees have implemented, or are in the process of implementing its various elements. The Regional Board also recognizes other drainage area management plans such as the Drainage Water Quality Plan for Lake Mathews (DWQPLM), which includes structural BMPs for pollution control. The RCFC & WCD and Riverside County are involved in the DWQPLM.

23. There is some contribution of pollutants in urban run-off from privately owned and operated facilities such as residences, businesses and commercial establishments and public and private institutions. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, and institutions. Therefore, the DAMP has a strong emphasis on public education.

24. The DAMP included 34 BMPs and a time schedule for implementation. These BMPs are organized into two components: BMPs for existing facilities and BMPs for new development. Both components include regulatory activities, public education programs and operations and maintenance activities.

25. In order to characterize storm water discharges, to identify problem areas, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. From 1990 through 1995, the principal permittee administered the monitoring program for the permittees which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The Report of Waste Discharge included a Consolidated Program for Water Quality Monitoring.

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26. In order to make the best use of limited resources of all the permittees (including other municipal permittees in San Bernardino and Orange Counties), and to derive maximum benefit from the storm water management programs, future programs should consider and explore approaches and program elements common to all three counties. An integrated management program may be developed with the cooperation of all the stakeholders, including the permittees in the three counties, and the Regional Board. The Regional Board will coordinate the activities within the watershed and seek participation of the permittees

27. The permittees have agreed to revise the implementation agreement that was developed in 1990 as required under Order No. 90-104 to coordinate the activities of the principal and co-permittees.

28. Illegal dumping and illicit/illegal connections and discharges to the storm drains are contributors to storm water and other surface water contamination. All the permittees have completed a reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains). The permittees are required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are required to develop a program to prohibit illegal/illicit connections to their storm drains and flood control facilities.

29. This order requires the permittees to continue to implement the BMPs listed in the DAMP and to effectively prohibit illegal and illicit discharges to the storm drain system. One of the major elements of the DAMP, the Storm Water/Urban Run-off Management and Discharge Controls Ordinance, was adopted by Riverside County on May 9, 1995. The purpose of this ordinance is to reduce pollutant discharges in storm water, and to regulate illicit connections and non-storm water discharges to the storm drain system.

30. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in planning procedures, in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc.

31. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Riverside County having programs/activities that have an impact on storm water quality (e.g., Fire Department, Department of Environmental Health, Planning Department, Building and Safety, Code Enforcement, etc.). As such, these organizations are expected to actively participate in implementing this areawide storm water program.

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32. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, agricultural land, utilities and special districts, and Native American tribal lands. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.

33. The permittees may petition the Regional Board to issue a NPDES permit to any discharger of non-storm water into storm drain systems that the permittees own or operate.

34. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region.

35. The requirements contained in this order are necessary to implement the Basin Plan.

36. In accordance with the Clean Water Act and its implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants to waters of the United States to the maximum extent practicable.

37. The legislative history and the preamble to the federal storm water regulations indicate that Congress and the U.S. EPA were aware of the difficulties in regulating urban storm water run-off solely through traditional end-of-pipe treatment. However, the U.S. EPA and the State Water Resources Control Board have determined that the NPDES permits for urban storm water run-off must contain effluent limitations based on water quality standards (beneficial uses and water quality objectives). The development and implementation of best management practices (BMPs), which will achieve compliance with applicable standards, are generally considered to be acceptable as effluent limitations. In accordance with Section 402 (p) of the Clean Water Act, this order requires the permittees to develop controls to reduce the discharge of pollutants to the maximum extent practicable. If urban storm water discharges cause an exceedance of the water quality standards in the receiving waters, the BMPs must be reevaluated, revised and implemented as appropriate to address any exceedances of receiving water quality standards. Numeric and narrative water quality objectives are contained in the Basin Plan for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. Due to the high cost associated with monitoring, and due to the variability that exists in the current storm water monitoring efforts being conducted by the permittees and other municipal permittees in Orange and San Bernardino Counties under their municipal storm

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water permits, a tri-county monitoring program to develop and implement effective monitoring procedures and strategies will be considered.

38. It is the Regional Board's intent that this order shall achieve attainment and protection of the beneficial uses of receiving waters. This order therefore, includes Receiving Water Limitations required to implement water quality objectives and to prevent nuisance and water quality impairment in receiving waters. The Permit requires implementation of control measures in accordance with the approved DAMP that will reduce pollutants in storm water discharges to the maximum extent practicable. The Receiving Water Limitations require the implementation of control measures that are technically and economically feasible as necessary to protect beneficial uses and attain water quality objectives in the receiving waters.

The Regional Board finds that the unique aspects of the regulation of storm water discharges through municipal storm sewer systems, including intermittent discharges, difficulties in monitoring and limited physical control over the discharge, will require adequate time to implement and evaluate the effectiveness of best management practices and to determine whether they will adequately protect receiving waters. Therefore, the permit includes a procedure for determining whether storm water discharges are causing continuing or recurring exceedances of receiving water limitations and for evaluating whether the approved DAMP must be revised. The permittees will be in compliance with the Receiving Water Limitations so long as the permittees comply with that procedure.

39. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Regional Board.

40. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

41. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

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42. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

43. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

**IT IS HEREBY ORDERED** that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and the regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF THE PRINCIPAL PERMITTEE:

The principal permittee shall be responsible for managing the overall storm water program and shall:

1. Conduct water quality and hydrographic monitoring of the municipal separate drain system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop criteria for inspections of the municipal storm drain systems.

3. Conduct inspections of the storm drain systems owned and operated by the RCFC&WCD.

4. Implement management programs, monitoring programs, and related plans as required by this order.

5. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority within the scope of the Riverside County Flood Control and Water Conservation District Act, as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i)(A-F).

6. Respond and/or arrange for responding to emergency situations such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or reduce the discharge of pollutants to the municipal separate storm drain systems and to waters of the United States.

7. Prepare and submit to the Executive Officer of the Regional Board, unified reports, plans, and programs necessary to comply with this order.

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The activities of the principal permittee should include, but not be limited to, the following:

8. Coordinate permit activities and participate in any committees/subcommittees formed to coordinate permit compliance activities.

9. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

10. Coordinate the implementation of areawide storm water quality management activities such as monitoring programs, public education, other pollution prevention measures, household hazardous waste collection, etc.

11. Gather and disseminate information on the progress of statewide municipal storm water programs and evaluate the information for potential use in the execution of this order.

12. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in reducing pollutant loadings to surface waters to the maximum extent practicable.

13. Coordinate activities pertaining to implementation of this order with the Regional Board.

14. Solicit and coordinate public input for any major proposed storm water management programs and implementation plans.

15. Develop and implement mechanisms, performance standards, etc., to promote consistent implementation of BMPs among the permittees.

16. In conjunction with the co-permittees, implement the BMPs listed in the approved DAMP.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

Each co-permittee shall be responsible for managing the storm water program within its jurisdiction and shall:

1. Adopt the Grading and Erosion Control Ordinance or its equivalent, within 120 days of adoption of this order.

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2. Conduct storm drain system inspections in accordance with the criteria developed by the principal permittee.

3. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i)(A-F).

4. Implement management programs, monitoring programs, and related plans as required by this order.

The co-permittees' activities should include, but not be limited to, the following:

5. Administer the storm water and erosion control ordinances adopted pursuant to Item 1., above.

6. Conduct and coordinate with the principal permittee any surveys, monitoring and/or characterizations needed to identify the pollutant sources and drainage areas.

7. Review and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

8. Cooperate in committees and/or subcommittees formed by the principal permittee to address compliance with this order.

9. In conjunction with the principal permittee, implement the BMPs listed in the approved DAMP.

10. Submit to the principal permittee any information necessary to develop unified report submittals to the Executive Officer of the Regional Board.

11. Prepare and submit any specific reports/information related to the permittees' storm water program as deemed necessary by the Executive Officer of the Regional Board.

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## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.

2. This order authorizes storm water discharges to waters of the State from the permittees' existing municipal separate storm drain systems provided that the permittees implement the BMPs (structural and/or non-structural control measures) necessary to reduce the pollutants in the discharge to the maximum extent practicable. All other discharges are prohibited except those listed under Item 3., below, those for which the Regional Board has issued individual permits, and those discharges which are in accordance with Item 5., below.

3. The following discharges need not be prohibited by the permittees unless identified by the permittees as sources of pollutants to the waters of the United States.

   a. Discharges covered by an NPDES permit, or for which an approval has been issued by the Regional or State Board office;

   b. Discharges from potable water line flushing and other potable water sources;

   c. Discharges from fire fighting and fire hydrant testing and flushing;

   d. Discharges from landscape irrigation, lawn watering and other irrigation activities;

   e. Diverted stream flows;

   f. Rising ground waters and natural springs;

   g. Uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)) and uncontaminated pumped groundwater;

   h. Passive foundation drains;

   i. Air conditioning condensate;

   j. Water from crawl space pumps;

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k. Passive footing drains;

l. Discharges from individual residential vehicle washing (not including discharges from mobile sources such as automobile/equipment detailing or washing);

m. Flows from riparian habitats and wetlands;

n. Dechlorinated swimming pool discharges;

o. Street wash water and run-off from fire fighting (program descriptions shall address discharges or flows from fire fighting only where such discharges are identified as significant sources of pollutants to waters of the United States),

p. Waters not otherwise containing wastes as defined in California Water Code Section 13050 (d); and

q. Other types of discharges identified and recommended by the permittees and approved by the Regional Board.

For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.

4. The permittees shall take necessary steps as required under Item 1., above, to ensure that non-storm water discharges to the municipal storm drain system do not cause or contribute to violations of water quality objectives or discharge pollutants to waters of the United States.

5. Non-storm water discharges from permittees' activities into waters of the state are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3., above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in the storm water pollution prevention strategy, required under Section V., Provision 13., of this order, a proposed plan to address the non-storm water discharges.

6. The discharge shall not cause or contribute to degradation of groundwaters.

7. Pollutants in storm water discharges from the municipal separate storm sewer system shall be reduced to the maximum extent practicable.

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## IV. RECEIVING WATER LIMITATIONS

1. Receiving water limitations are based upon beneficial uses, water quality objectives and water quality standards contained in the Basin Plan, and amendments thereto, and on ambient water quality. They are intended to protect the beneficial uses and attain the water quality objectives contained in the Basin Plan. The discharge of urban storm water, or non-storm water from a municipal storm sewer system for which the permittees are responsible under the terms of this permit shall not cause continuing or recurring impairment of beneficial uses or exceedances of water quality objectives. The permittees will not be in violation of this provision so long as they are in compliance with the requirements set forth in 2.

2. If the Executive Officer determines that a continuing or recurring impairment of beneficial uses or exceedance of water quality objectives has been caused by urban storm water discharges from the municipal storm sewer system, the following steps shall be taken:

   a. The Executive Officer will evaluate the adequacy of the permittees implementation of the approved DAMP based on the permittees submitted reports. The Executive Officer will determine if implementation of the approved DAMP has a reasonable likelihood of preventing future continuing or recurring impairment of beneficial uses or exceedances of water quality objectives resulting from urban storm water discharges. If the Executive Officer makes this determination, the permittees are required to continue implementing the approved DAMP.

   b. If the Executive Officer determines that the implementation of the approved DAMP will not have a reasonable likelihood of preventing future impairment of beneficial uses or exceedances of water quality objectives, the permittees shall, upon notice from the Executive Officer, do the following:

      i. Submit a report that includes an evaluation of the relative contribution of the urban storm water discharges to the impairment of beneficial uses or the exceedance of water quality objectives. The report shall address the persistence, the significance, and to the extent feasible, the causes of the impairment or exceedance, and the technical and economic feasibility of control actions available to the permittees to reduce or eliminate the impairment or exceedance.

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ii. Submit a report reviewing the approved DAMP to determine whether it should be revised so that there will be a reasonable likelihood of preventing future continuing or recurring beneficial use impairment or exceedances of water quality objectives, or whether revisions to achieve protection of beneficial uses or attainment of water quality objectives are technically or economically infeasible. If the report recommends revision of the approved DAMP, the report shall include a work plan to revise the DAMP so that it will have a reasonable likelihood of preventing future continuing or recurring beneficial use impairment or exceedances of water quality objectives. If the report concludes that no revisions are necessary to achieve protection of beneficial uses or attainment of water quality objectives, the report shall explain how implementation of the approved DAMP will achieve compliance. If the report determines that revisions to achieve protection of beneficial uses or attainment of water quality objectives are technically or economically infeasible, the permittees shall continue to comply with the approved DAMP, shall fully document this determination and shall make recommendations for actions to achieve compliance, including for example, commencement of a total maximum daily load report or revisions of the Basin Plan or mitigation projects to protect beneficial uses, and identification of possible funding sources for such actions.

iii. The permittees shall implement the work plan and the revised DAMP as approved by the Executive Officer.

3. The Executive Officer shall review and approve or disapprove the reports required under Receiving Water Limitation 2. The reports may be submitted as part of the next Annual Report, or at some other time designated by the Executive Officer. So long as the permittees have complied with the procedures set forth in Receiving Water Limitation 2, they do not have to repeat the procedure for continuing or recurring exceedances of the same receiving water limitations. As appropriate, any determinations under this part or revisions to the approved DAMP may be considered by the Regional Board in a public meeting.

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## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order and specifically with Section III., Discharge Limitations, and Section IV., Receiving Water Limitations, through timely implementation of their approved Drainage Area Management Plan and any approved modifications, revisions, or amendments thereto, which are developed pursuant to this order. The Drainage Area Management Plan and any amendments thereto are hereby made an enforceable part of this order.

2. Permittees shall implement all elements of the approved DAMP. Any proposed revisions to the DAMP shall be submitted to the Executive Officer of the Regional Board for review and approval. All revisions to the DAMP approved by the Executive Officer shall be implemented in a timely manner.

3. The permittees shall comply with Monitoring and Reporting Program No. 96-30, which is hereby made a part of this order, and any revisions thereto. The Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national, or other monitoring programs in lieu of Monitoring and Reporting Program No. 96-30.

4. Upon approval by the Executive Officer of the Regional Board, all plans and reports required by this order, including any subsequent amendments, shall be implemented and shall become an enforceable part of this order.

5. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any enforcement actions and known discharges of storm or wastewaters to facilities owned or operated by the permittees which may impair domestic water supply sources (e.g., discharges due to a levee break, illegal discharges to the street, etc.) or which may have an impact on human health or the environment; if the discharge is to Canyon Lake or any tributary to Canyon Lake, Elsinore Valley Municipal Water District shall also be notified immediately;

   b. Any industrial and/or construction facilities found not to be in compliance with the State's General Storm Water Permits or where the activities may be contributing pollutants to the waters of the U.S.; and

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c. Any suspected or reported activities on federal, state, or other entity's land or facilities, where the permittees do not have any jurisdiction, and where the suspected or reported activities may be contributing pollutants to waters of the United States.

6. The permittees shall not issue occupancy permits unless the applicant is informed of his obligation under the State's NPDES industrial general permit. The permittees shall not issue grading or building permits to developments that may result in land disturbance of five acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) unless the applicant shows proof of coverage under the State's General Construction Activity Storm Water Permit. The proof of coverage may include a letter from the Regional Board office, a copy of the Notice of Intent, etc. The permittees shall coordinate the activities of the various departments/sections within each permittee's jurisdiction to insure consistent implementation of storm water regulations.

7. Permit application and special NPDES program requirements contained in 40 CFR 122.21 (a), (b), (d) (2), (f), and (p), 122.41 (a), (b), (c), (d), (e), (f), (g), (h), (i), (j), (k), and (l); and 122.42 (c) are incorporated into this order by reference.

## IMPLEMENTATION AGREEMENT

8. No later than June 4, 1996, the permittees shall submit to the Executive Officer of the Regional Board an updated copy of an implementation agreement with authorized signatures of each of the permittees. Any subsequent revisions to the implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees. At a minimum, the implementation agreement should include all the essential elements of the existing agreement, developed in accordance with Order No. 90-104.

## LEGAL AUTHORITY

9. The permittees shall adopt the proposed Storm Water/Urban Run-off Management and Discharge Control Ordinance, or its equivalent. No later than June, 26, 1996, each permittee shall certify to the Regional Board that it has adequate legal authority to control the discharges of pollutants into the municipal storm drain system and that it has, at a minimum, satisfied each of the key regulatory requirements contained in 40 CFR Section 122.26(d)(2)(i)(A-F).

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## ENFORCEMENT/COMPLIANCE STRATEGY

10. Permittees shall develop and implement an enforcement/compliance strategy to enforce storm water and erosion control ordinances. This enforcement/compliance strategy should include a mechanism to determine compliance of industrial facilities and construction sites, and notification to the Executive Officer of any finding of non-compliance and any proposed local enforcement action. The enforcement/compliance strategy shall be submitted to the Executive Officer of the Regional Board by August 27, 1996.

## PUBLIC EDUCATION AND OUTREACH

11. The permittees shall continue to implement the public education efforts already underway and shall implement all of the proposed efforts identified in the Report of Waste Discharge.

12. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

13. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.

## MUNICIPAL FACILITIES

14. The permittees shall develop a pollution prevention strategy to address their public agency facilities and activities which are determined by the permittees (with the approval of the Executive Officer of the Regional Board) to be activities of concern regarding storm water pollution. The pollution prevention strategy shall be developed to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the United States. The pollution prevention strategy shall be submitted to the Executive Officer of the Regional Board by October 9, 1996. In developing the pollution prevention strategy, the permittees shall consider the following:

    a. Identification of public agency facilities and activities that are potential contributors of pollutants to waters of the United States.

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b. Potential pollutants of concern that are associated with the facilities and/or activities;

c. Proposed BMPs and a schedule for their implementation to ensure that these facilities are not sources of pollutants into the waters of the United States;

d. A monitoring program to measure the effectiveness of the BMPs;

e. A schedule for training of public agency staff to ensure proper implementation of the BMPs; and

f. Identification of any non-storm water discharges from the public agency facilities/activities, frequency of the discharge, characterization of the discharge, volume, flow and duration of the discharge, short term source control BMPs to mitigate the impacts from the discharge, and a schedule for elimination or permitting of the discharge.

## MUNICIPAL CONSTRUCTION PROJECTS/ACTIVITIES

15. This Order authorizes the discharge of storm water run-off from construction projects that may result in land disturbance of 5 acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) that are under ownership and/or direct responsibility of any of the permittees.

16. Prior to commencement of construction activities, the permittees shall notify the Executive Officer of the Regional Board of the proposed construction project. Upon completion of the project, the Executive Officer shall be notified of the completion of the project.

17. The permittees shall develop and implement a storm water pollution prevention plan and a monitoring program that is specific for the construction project prior to the commencement of any of the construction activities. The SWPPP and monitoring program shall be implemented throughout the duration of the construction project. The SWPPP shall be kept at the construction site and released to the public and/ or Regional Board staff upon request.

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18. The SWPPP and the monitoring program for the construction projects shall be consistent with the requirements of the most recent version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

19. The permittees shall give advance notice to the Executive Officer of the Regional Board of any planned changes in the construction activity which may result in non-compliance with the current version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

20. All other terms and conditions of the latest version of the State's General Construction Activity Storm Water Permit shall be applicable.

## NEW DEVELOPMENT (INCLUDING RE-DEVELOPMENT)

21. Within 90 days of the issuance of this order, the permittees shall begin implementation of the new development BMPs (DAMP Supplement A) that were developed pursuant to Order No. 90-104.

22. Within 120 days of the issuance of this order, the permittees shall review their General Plan update and CEQA document preparation processes to insure that storm water-related issues are properly considered. If necessary, these processes shall be revised to include requirements for evaluation of storm water-related impacts and identification of appropriate mitigation measures.

23. The permittees shall establish a mechanism to insure proper maintenance and operation of all permanent flood control structures. For new developments, the parties responsible for the maintenance of the flood control structures and funding sources for maintenance and operation of the facilities shall be identified prior to issuance of grading permits.

## FISCAL RESOURCES

24. The permittees shall prepare and submit a unified fiscal analysis report appropriate for implementation of the requirements of this order to the Executive Officer of the Regional Board. The fiscal analysis report shall be submitted no later than November 15, of each year and shall at a minimum include the following:

    a. Each permittee's expenditures for the previous fiscal year;
    b. Each permittee's budget for the current fiscal year;
    c. A description of the source of funds;

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## PERMIT EXPIRATION AND RENEWAL

25. This order expires on March 1, 2001 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

    a. Any revisions to the Drainage Area Management Plan including, but not limited to, all the activities the permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;

    b. Changes in land use and/or population including map updates; and

    c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls, including map updates of the storm drain systems.

26. This order may be modified, revoked or reissued prior to its expiration date for the following reasons:

    a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order;

    b. To incorporate applicable requirements of statewide water quality control plans and policies adopted by the State Water Resources Control Board or any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

    c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

    d. To incorporate new or revised program elements and compliance schedule(s) necessary to comply with Section IV of this order.

27. This order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections.

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If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

28. Order No. 90-104 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on March 8, 1996.

Gerard J. Thibeault
Executive Officer

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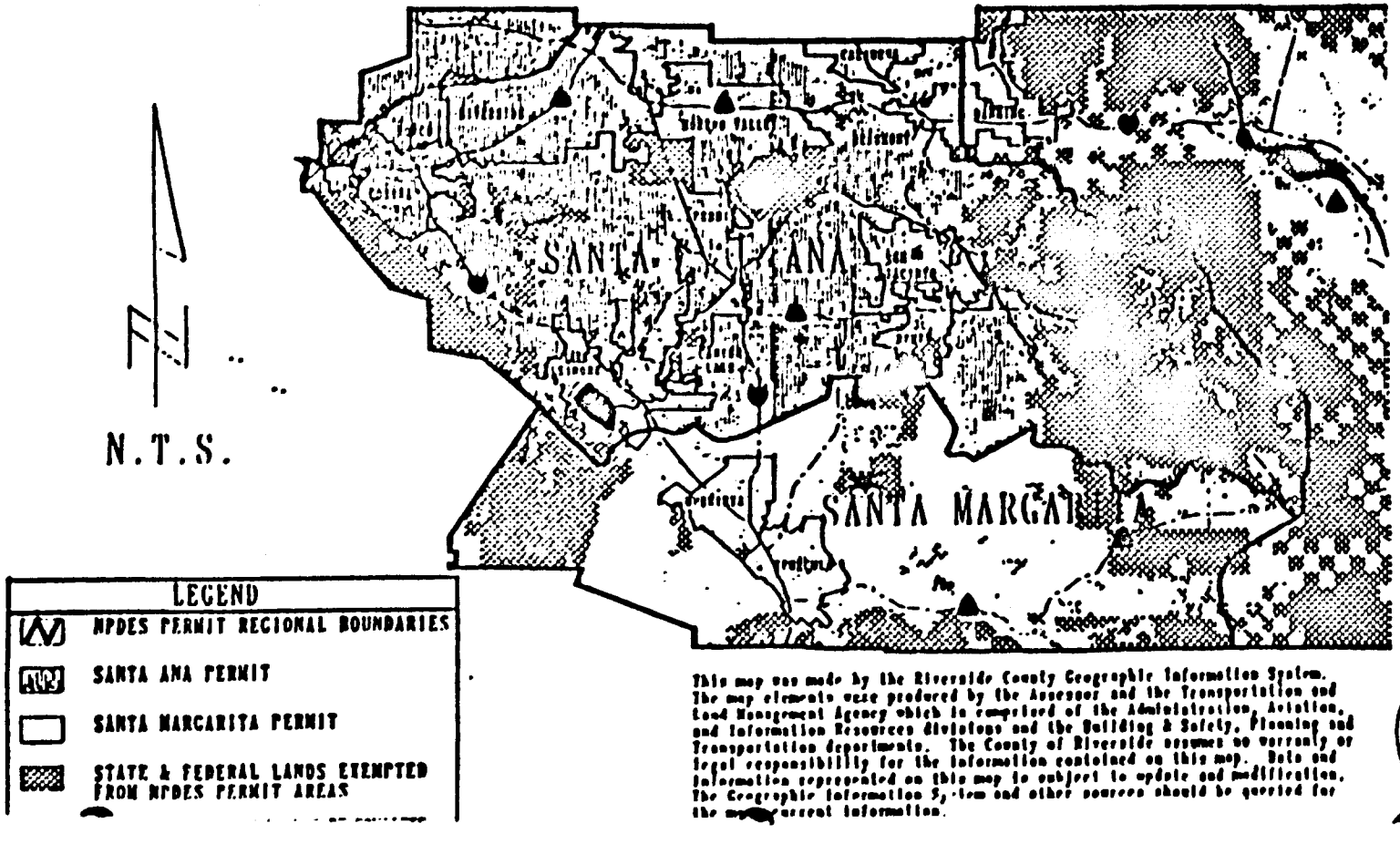
# ORDER NO. 96-30
# APPENDIX 1
# PERMITTED AREA

## WESTERN RIVERSIDE COUNTY NPDES PERMIT AREA




This map was made by the Riverside County Geographic Information System. The map elements were produced by the Assessor and the Transportation and Land Management Agency which is comprised of the Administration, Aviation, and Information Resources divisions and the Building & Safety, Planning and Transportation departments. The County of Riverside assumes no warranty or legal responsibility for the information contained on this map. Data and information represented on this map is subject to update and modification. The Geographic Information System and other sources should be queried for the most current information.

# ORDER NO. 96-30
# APPENDIX 2

## LIST OF OTHER ENTITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS TO STORMWATER FACILITIES

Government Agencies
- Department of the Air Force, March Air Force Base
- Special Districts
- State Parks
- U.S. Army Corps of Engineers

Hospitals
- AMI Circle City Hospital
- Corona Community Hospital
- Riverside Community Hospital
- Riverside General Hospital

Railroads
- AT&SF Railway Company
- Southern Pacific Railroad

School Districts
- Alvord Unified - School District
- Corona - Norco Unified School District
- Hemet Unified School District
- Lake Elsinore Unified School District
- Menifee Union School District
- Moreno Valley Unified School District
- Nuview Union School District
- Perris Elementary School District
- Perris Union High School District
- Riverside Unified School District
- Romoland School District
- San Jacinto Unified School District
- Val Verde School District

Universities and Colleges
- Chapman College
- Mt. San Jacinto College
- Riverside Community College
- University of California Riverside

Water Districts
- Eastern Municipal Water District
- Elsinore Valley Municipal Water District
- Metropolitan Water District
- Western Municipal Water District

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California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 96-30

NPDES NO. CAS 618033
for
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

## I. GENERAL

1. Revisions of the monitoring and reporting program may be necessary to ensure that the discharger is in compliance with requirements and provisions contained in this order. Revisions may be made by the Executive Officer at any time during the term of this order, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

2. All sample collection, handling, storage, and analyses shall be in accordance with 40 CFR Part 136 or other methods approved by the Executive Officer.

3. The permittees are authorized to complement their monitoring data with data from other sources provided those sources are similar to sources in the Santa Ana Watershed.

4. The permittees shall implement the Consolidated Program for Water Quality Monitoring (submitted as part of the Report of Waste Discharge) until development and implementation of other acceptable monitoring programs.

## II. OBJECTIVES

The overall goal of this monitoring program is to provide feedback in direction for and in support of an effective watershed management program. The following are the major objectives:

1. To define storm water quality status, trends, and pollutants of concern.

2. To characterize pollutants in storm water and to assess the influence of land use on storm water quality.

3. To identify significant water quality problems related to storm water discharges within the watershed.



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4. To identify other sources of pollutants in storm water run-off to the extent possible (e.g., atmospheric deposition, contaminated sediments, other non-point sources, etc.).

5. To verify and to control illicit discharges.

6. To identify those waters which without additional action to control pollution from storm water discharges cannot reasonably be expected to attain or maintain applicable water quality objectives or the goals and requirements of the Basin Plan.

7. To evaluate the effectiveness of existing management programs, including an estimate of pollutant reductions achieved by the structural and nonstructural BMPs.

The Regional Board recognizes that these objectives may not be attainable during this permit period and authorizes the Executive Officer to evaluate and to determine adequate progress toward meeting each objective.

## III. MONITORING PROGRAM REQUIREMENTS

The lead permittee shall develop and submit for the approval of the Executive Officer an integrated monitoring program to achieve the above stated objectives. In developing this program, the lead permittee is encouraged to seek cooperation with the permittees from San Bernardino and Orange counties. The Executive Officer or his/her designated representative(s) shall facilitate the coordination meetings or subcommittees formed to achieve this goal. The development and implementation of the monitoring program shall be in accordance with the time schedule prescribed by the Executive Officer. At a minimum, the program shall consider the following:

1. Uniform guidelines for quality control, quality assurance, data collection and data analyses.

2. A mechanism for the collection, analysis and interpretation of existing data from Orange, Riverside, and San Bernardino County monitoring programs. These and other data from local, regional or national sources should be utilized to characterize different storm water sources; to determine pollutant generation, transport and fate; to develop a relationship between land use, development size, storm size and the event mean concentration of pollutants; to determine spatial and temporal variances in storm water quality and seasonal and other bias in the collected data; and to identify any unique features of the Santa Ana Watershed. The permittees are encouraged to use data from similar studies, if available.

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3. A description of the monitoring program including:

   a. The number and location of monitoring stations;
   b. Environmental indicators (e. g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;
   c. Parameters selected for field screening and for laboratory work; and
   d. Total number of samples to be collected from each station, receiving water and major outfall monitoring, frequency of sampling during dry weather and short or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.

4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including estimated cost.

## *IV.* REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of U. S. EPA, Region 9, no later than November 15, of each year. This progress report may be submitted in a mutually agreed upon electronic format. At a minimum, the annual progress report shall include the following:

   a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order.

   b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the Drainage Area Management Plan. The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and in reducing pollutant loads in storm water discharges.

   c. An analysis of the feasibility and usefulness of using structural BMPs based on data collected from the Drainage Water Quality Plan for Lake Mathews and/or other similar programs..

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d. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable.

3. Co-permittees shall be responsible for the submittal of all required information/materials needed to comply with this Monitoring and Reporting Program in a timely manner to the principal permittee. All such submittals shall be signed by a duly authorized representative of the co-permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| *ITEM* | *DUE DATE* |
|---|---|
| Legal Authority Certification | June 26, 1996 |
| Revised Implementation Agreement | June 4, 1996 |
| Enforcement Strategy | August 27, 1996 |
| Municipal Activities Pollution Prevention Strategy | October 9, 1996 |
| Annual Report including the Fiscal Analyses Report | November 15 of each year (next report due in 1996) |

Ordered by _____
Gerard J. Thibeault
Executive Officer

March 8, 1996

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California Regional Water Quality Control Board
Santa Ana Region

ORDER NO. 96-31
NPDES No. CAS618030

Waste Discharge Requirements
for
the County of Orange, Orange County Flood Control District
and
The Incorporated Cities of Orange County Within the Santa Ana Region
Areawide Urban Storm Water Run-off
Orange County

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On December 30, 1994, the County of Orange and the Orange County Flood Control District (OCFCD), in cooperation with the cities of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Lake Forest, Los Alamitos, Newport Beach, Orange, Placentia, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, and Yorba Linda (hereinafter collectively referred to as permittees), submitted National Pollutant Discharge Elimination System (NPDES) Application No. CA 8000180 and a Report of Waste Discharge for reissuance of their areawide storm water NPDES permit.

2. Section 402(p) of the federal Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires NPDES permits for storm water discharges from separate municipal storm drain systems, storm water discharges associated with industrial activity (including construction activities), and designated storm water discharges which are considered significant contributors of pollutants to waters of the United States (U.S.). On November 16, 1990, the United States Environmental Protection Agency (hereinafter US EPA) published regulations (40 CFR Parts 122, 123 and 124) which describe permit application requirements for storm water discharges pursuant to Section 402(p) of the CWA. Prior to EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Region requested areawide NPDES permits for urban storm water run-off.

3. On July 13, 1990, the Regional Board adopted Order No. 90-71 for urban storm water run-off from urban areas in Orange County within the Santa Ana Region. The County of Orange was named as the principal permittee and the Orange County Flood Control District (OCFCD) and the incorporated cities were named as the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the County of Orange will continue as principal permittee and the OCFCD and the incorporated cities will continue as co-permittees. Order 90-71 expired on July 1, 1995.



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4. Order No. 90-71 required the permittees to develop and implement a drainage area management plan (DAMP) and a storm water and receiving water monitoring plan, to eliminate illegal and illicit discharges to the storm drain systems and to enact the necessary legal authority to effectively prohibit such discharges. The overall goal of these requirements was to reduce pollutant loadings to surface waters from urban run-off to the maximum extent practicable (MEP)[1].

5. This order outlines the next step toward an effective program and specifies requirements to protect the beneficial uses of the waters of the U. S. The intent of this permit is to regulate pollutant discharges, identify and focus on those areas which threaten the beneficial uses and improve water quality in the Region in a timely manner. This order regulates urban storm water run-off[2] from areas under the jurisdiction of the permittees.

6. The Report of Waste Discharge (the permit renewal application) included the following major components:

   a. Summary of status of current Storm Water Management Program
   b. Proposed Plan of Storm Water Quality Management Activities for 1995-2000
   c. The Drainage Area Management Plan
   d. A Model Water Quality Ordinance
   e. An Enforcement Consistency Guide
   f. A Reconnaissance Survey Field Inspection and Documentation Manual

7. The permittees serve a population of approximately 2.6 million, occupying an area of approximately 511 square miles (including both unincorporated areas and the limits of 31 cities). The permittees have jurisdiction over and /or maintenance responsibility for storm water conveyance systems within Orange County. The County's systems include an estimated 400 miles of storm drain systems. A major portion of the urbanized areas of Orange County drains into water bodies within this Regional Board's jurisdiction. The project area is shown on Attachment A. The major storm drain systems and drainage areas in Orange County which are within this Region are shown on Attachment B. A portion of the Orange County drainage area is within the jurisdiction of the San Diego Regional Board and is currently regulated under an order issued by that Board.

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[1] Maximum Extent Practicable (MEP) means to the maximum extent possible, taking into account equitable considerations of synergistic, additive, and competing factors, including but not limited to, gravity of the problem, fiscal feasibility, public health risks, societal concerns, and social benefits.

[2] Urban storm water run-off includes those discharges from residential, commercial, industrial and construction areas within the permitted area and excludes discharges from feedlots, dairies and farms.

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8. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, utilities and special districts, Native American tribal lands, waste water management agencies and other point and non-point source discharges otherwise permitted by the Regional Board. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.

9. Storm water discharges consist of surface run-off generated from various land uses in all the hydrologic drainage areas which discharge into the water bodies of the U. S. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events, and the presence of illegal disposal practices/illicit connections. Nationwide studies in urban areas have shown that urban run-off typically contains significant quantities of pollutants. Preliminary results from urban storm water monitoring programs within the permitted area indicate that the major pollutants of concern are certain heavy metals, sediment, chemical oxygen demand (COD), pesticides, herbicides, and nutrients.

   The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies have been found to be threatened or impaired due to point and non-point source discharges.

10. Certain activities that generate pollutants present in storm water runoff are beyond the ability of the permittees to eliminate. Examples of these include operation of internal combustion engines, atmospheric deposition, brake pad wear, tire wear and leaching of naturally-occurring minerals from local geography.

11. Storm water discharges to the storm drain systems in Orange County are tributary to various water bodies of the Region. The permitted area can be subdivided into five tributary watersheds: the San Gabriel River drainage area, the Huntington Harbor and Bolsa Bay drainage area, the Greenville-Banning Channel drainage area, the Santa Ana River drainage area, and the Newport Bay drainage area (see Attachment B). These watersheds are tributary to the Pacific Ocean. The surface water bodies in Orange County include:

   Inland Surface Streams

   a. Santa Ana River, Reaches 1 and 2,

   b. Silverado Creek (tributary to Santiago Creek),

   c. Santiago Creek, Reaches 1, 2, 3, and 4 (tributary to the Santa Ana River),

   d. San Diego Creek, Reaches 1 and 2 (tributary to Newport Bay),

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e. San Joaquin Freshwater Marsh (tributary to San Diego Creek),

f. All other tributaries to these Creeks: Bonita Creek, Serrano Creek, Peters Canyon Wash, Hicks Canyon Wash, Bee Canyon Wash, Borrego Canyon Wash, Agua Chinon Wash, Laguna Canyon Wash, Rattlesnake Canyon Wash, Sand Canyon Wash, Black Star Creek, Carbon Canyon Creek, Coyote Creek and other tributaries to these washes,

Bays, Estuaries, and Tidal Prisms

g. Anaheim Bay,

h. Sunset Bay,

i. Bolsa Bay and Bolsa Chica Ecological Reserve,

j. Lower and Upper Newport Bay,

k. Tidal Prism of Santa Ana River (to within 1000 feet of Victoria Street) and Newport Slough, Santa Ana Salt Marsh,

l. Tidal Prism of San Gabriel River (River Mouth to Marina Drive),

m. Tidal Prisms of Flood Control Channels Discharging to Coastal or Bay Waters (e.g. Huntington Harbor),

Ocean Waters

Nearshore Zone

n. San Gabriel River to Poppy Street in Corona Del Mar,

o. Poppy Street to Southeast Regional Boundary,

Offshore Zone

p. Waters between Nearshore Zone and Limit of State Waters,

Lakes and Reservoirs

q. Irvine Lake (Santiago Reservoir), and

r. Laguna, Peters Canyon, and Rattlesnake Reservoirs.

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11. (cont'd)
The beneficial uses of these water bodies include: municipal and domestic supply, agricultural supply, industrial service supply, groundwater recharge, navigation, hydropower generation, water contact recreation, non-contact water recreation, commercial and sportfishing, warm freshwater habitat, cold freshwater habitat, preservation of biological habitats of special significance, wildlife habitat, preservation of rare, threatened or endangered species, marine habitat, shellfish harvesting, spawning, reproduction and development of aquatic habitats, and estuarine habitat . The ultimate goal of this storm water management program is to protect the beneficial uses of the receiving waters.

12. The Santa Ana River Basin is the major watershed within the jurisdiction of the Regional Board. The lower Santa Ana River Basin (downstream from Prado Basin) includes the Orange County drainage areas and the Upper Santa Ana River Basin includes the San Bernardino and the Riverside drainage areas. Within the Region, generally the San Bernardino County drainage areas drain to the Riverside County drainage areas, and Riverside County drainage areas discharge to Orange County.

13. Within the Region, run-off from the San Bernardino County areas is generally conveyed to the Riverside County areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Basin (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

14. The three county areas within this Region are regulated under three areawide permits for urban storm water run-off. These areawide NPDES permits are:

a. Orange County, NPDES No. CAS618030;
b. Riverside County, NPDES No. CAS618033; and
c. San Bernardino County, NPDES No. CAS618036.

15. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources for urban storm water pollution nationwide:

a. Industrial sites where appropriate pollution control and best management practices (BMPs)[3] are not implemented;

b. Construction sites where erosion and siltation controls and BMPs are not implemented; and

c. Urban run-off where the drainage area is not properly managed.

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[3] Best Management Practices (BMPs) are water quality management practices that are maximized in efficiency for the control of storm water run-off pollution.

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16. To address the industrial and construction sites, the State Board issued two statewide general NPDES permits: one for storm water run-off from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water run-off from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water run-off from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order 94-7, NPDES No. CA 8000336 for concentrated animal feeding operations, including dairies. The Regional Board issued and continues to issue individual storm water permits for certain industrial facilities within the Region.

17. One of the major components of these statewide permits and the Caltrans permit is the development and implementation of a storm water pollution prevention plan (SWPPP).

18. Most industrial activities (some light industrial activities are exempt) and construction sites on five acres or more are required to get coverage under these statewide general permits.

19. The Regional Board administers compliance with the State's General Industrial Activities Storm Water Permit and the General Construction Activity Storm Water Permit. However, in most cases, the industries and construction sites discharge into storm drains and/or flood control facilities owned and operated by the permittees. These industries and developers are also regulated under local laws and regulations. Therefore, a coordinated effort of the permittees and the Regional Board staff is critical to avoid duplicative and overlapping storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

20. The permittees have agreed to continue to notify Regional Board staff when conditions are observed during their routine activities which result in a threat or potential threat to water quality. This also includes failure to obtain coverage under the general storm water permits.

21. The permittees have developed project conditions of approval for new developments to be implemented at the time of grading or building permit issuance for individual sites on five acres or more, with the intent to comply with the General Construction Activity Storm Water Permit.

22. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out municipal related activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm

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drain system maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees will prepare an environmental performance report for appropriate public facilities under their jurisdiction, and develop and implement best management practices for those activities found to require pollution prevention measures. Non-storm water discharges from these facilities and/or activities could also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III, Discharge Limitations, 3 & 5 of this order or are permitted by the Regional Board under an individual NPDES permit.

23. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Orange County having programs/activities that have an impact on storm water quality. A list of these organizations is included in Attachment C. As such, these organizations are expected to actively participate in implementing the Orange County NPDES Storm Water Program. The Regional Board has the discretion and authority to require non-cooperating entities to participate in this areawide permit or obtain individual storm water discharge permits, pursuant to 40 CFR 122.26(a).

24. The major focus of storm water pollution prevention is the development and implementation of appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to support attainment of water quality consistent with the water quality objectives for the receiving waters in order to protect beneficial uses through the implementation of the DAMP. The permittees developed and submitted a DAMP for approval, which was approved on May 3, 1994.

25. The DAMP is a dynamic document and the permittees have implemented, or are in the process of implementing, the various elements of the DAMP. This order requires the permittees to continue to implement the BMPs listed in the DAMP and to effectively prohibit illegal and illicit discharges to the storm drain system.

26. Urban run-off contains pollutants from privately owned and operated facilities such as residences, businesses, private and/or public institutions, and commercial establishments. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, the permittees and the regulators. The DAMP has a strong emphasis on public education.

27. The Orange County DAMP defined a management structure for the permittees' compliance effort, a formal agreement to underpin cooperation, and detailed municipal efforts to develop, implement, and evaluate various BMPs or control programs in the areas of public agency activities, public information, new development and construction, public works construction, industrial discharger identification, and illicit discharger/connection identification and elimination. The DAMP also defined an extensive surface water quality and sediment monitoring program.

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28. In order to characterize storm water discharges, to identify problem areas, to determine the impact of urban run-off on receiving waters, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. From 1990 through 1995, the principal permittee administered the monitoring program for the permittees which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The permit application included a summary of monitoring data collected during 1991-1994. The monitoring program did not identify any specific pollutant sources which could be targeted for special pollutant control programs. The monitoring data indicated spatial differences in water quality between Orange County's major watersheds. Some of the monitoring data collected to date may be used to develop baseline water quality data for future evaluation of program effectiveness.

29. The Strategic Plan and Initiatives (June 22, 1995) for the State Water Resources Control Board and the Regional Water Quality Control Boards recognizes the importance of an integrated watershed management approach. The Regional Board also recognizes that a watershed management program should integrate all related programs, including the storm water programs. Consistent with this approach, an integrated monitoring program could be developed with the cooperation of all the stakeholders, including the permittees in the three counties, and the Regional Board. The Regional Board will coordinate the activities within the watershed and seek participation of the permittees.

30. Any illegal dumping and illicit/illegal connections and discharges[4] to the storm drains could contribute to storm water and other surface water contamination. A reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains) is being conducted by the permittees. The permittees are required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are also required to develop a program to prohibit illegal/illicit connections to their storm drains and flood control facilities.

31. The County of Orange obtains its authority to control pollutants in storm water discharges, to prohibit illegal discharges/illicit connections, to control spills, and to require compliance and carry out inspections of the storm drain systems in the County of Orange from the Orange County Flood Control Act, Orange County Water Pollution Ordinance, and various county ordinances which address industrial wastes and waste discharges within the unincorporated areas of Orange County and contract cities. The permittees have various forms of legal authority in place, such as charters, State Code provisions for General Law cities, city ordinances, and applicable portions of municipal codes and the State Water Code, to regulate storm water/urban run-off discharges.

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[4] Illegal discharge means any discharge (or seepage) to the municipal separate storm sewer that is not composed entirely of storm water except for the authorized discharges listed in Section III of this permit. Illegal discharges include the improper disposal of wastes into the storm sewer system.

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In order to insure countywide consistency and to provide a legal underpinning to the entire Orange County Storm Water Program, a model water quality ordinance was completed on August 15, 1994 and is available to the permittees for adoption.

32. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in the planning procedures and in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc. The County of Orange already requires a Water Quality Management Plan which addresses permanent post-construction BMPs, in addition to the SWPPP required by the statewide general permit for construction activity.

33. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Orange County having programs/activities that have an impact on storm water quality (e.g. Fire Department, Building and Safety, Code enforcement, etc.). As such, these organizations are expected to actively participate in implementing this areawide storm water program.

34. In accordance with the Clean Water Act and its implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants in urban run-off to waters of the U. S. to the maximum extent practicable.

35. The legislative history and the preamble to the federal storm water regulations indicate that the Congress and the U.S. EPA were aware of the difficulties in regulating urban storm water run-off solely through traditional end-of-pipe treatment. However, it is the Regional Board's intent that this order shall achieve attainment and protection of the beneficial uses of receiving waters. This order, therefore, includes Receiving Water Limitations required to implement water quality objectives and to prevent nuisance and water quality impairment in receiving waters. In accordance with Section 402 (p) of the Clean Water Act, this order requires the permittees to implement control measures in accordance with the approved DAMP that will reduce pollutants in storm water discharges to the maximum extent practicable. The Receiving Water Limitations require the implementation of control measures that are technically and economically feasible as necessary to protect beneficial uses and attain water quality objectives of the receiving waters.

36. The Regional Board finds that the unique aspects of the regulation of storm water discharges through municipal storm sewer systems, including intermittent discharges, difficulties in monitoring and limited physical control over the discharge, will require adequate time to implement and evaluate the effectiveness of best management practices and to determine whether they will adequately protect receiving waters. Therefore, the permit includes a procedure for determining whether storm water discharges are causing

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continuing and recurring exceedances of receiving water limitations and for evaluating whether the DAMP must be revised. The permittees will be in compliance with the Receiving Water Limitations so long as it complies with that procedure.

37. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region. The Basin Plan also incorporates by reference all State Board water quality control plans and policies including the 1990 Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and the 1974 Water Quality Control Policy for Enclosed Bays and Estuaries of California ( Enclosed Bays and Estuaries Plan).

38. The requirements contained in this order are necessary to implement the plans and policies described in Finding 36, above. These plans and policies contain numeric and narrative water quality standards for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Continuation of water quality/biota monitoring and analysis of the data are essential to make that determination.

39. The permittees may petition the Regional Board to issue a separate NPDES permit to any discharger of non-storm water into storm drain systems that they own or operate.

40. The permittees have developed a Storm Water Implementation Agreement between the County, its cities and the Orange County Flood Control District as required under Order No. 90-71.

41. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Executive Officer.

42. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

43. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

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44. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

45. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

**IT IS HEREBY ORDERED** that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF PRINCIPAL PERMITTEE

The principal permittee shall be responsible for the overall program management and shall:

1. Conduct chemical and biological water quality monitoring of the storm drain system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop criteria for inspections of the municipal separate storm drain systems.

3. Conduct inspections of the storm drain systems within its jurisdiction.

4. Implement management programs (within its jurisdiction), monitoring programs, and related plans as required by this order.

5. Enact and revise policies/ordinances necessary to establish legal authority as required by the Federal Storm Water Regulations.

6. Respond and/arrange for responding to emergency situations such as accidental spills, leaks, illegal discharges/illicit connections, etc. to prevent or reduce the discharge of pollutants to storm drain systems and waters of the U.S.

7. Prepare and submit to the Executive Officer of the Regional Board unified reports, plans, and programs as required by this order.

The activities of the principal permittee should include, but not be limited to, the following:

8. Coordinate permit activities and participate in any subcommittees formed as necessary, to coordinate compliance activities with this order.

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9. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

10. Coordinate the implementation of areawide storm water quality management activities such as public education, pollution prevention, household hazardous waste collection, etc.

11. Develop and implement mechanisms, performance standards, etc., to promote uniform and consistent implementation of BMPs among the permittees.

12. Pursue enforcement actions as necessary within its jurisdiction to ensure compliance with storm water management programs, ordinances and implementation plans including physical elimination of undocumented connections and illicit discharges.

13. In conjunction with the other permittees, implement the BMPs listed in the approved DAMP.

14. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in protecting beneficial uses.

15. Coordinate all the activities with the Regional Board including the submittal of all reports, plans, and programs as required under this order.

16. Obtain public input for any proposed management and implementation plans where applicable.

17. Cooperate in watershed management programs and regional and/or statewide monitoring programs.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

The co-permittees shall be responsible for the management of storm drain systems within their jurisdictions and shall:

1. Implement management programs, monitoring programs, implementation plans and all BMPs outlined in the DAMP within each respective jurisdiction as required by Order No. 96-31.

2. Adopt the Orange County Water Quality Ordinance or the equivalent legislation necessary to establish and maintain adequate legal authority as required by the Federal Storm Water Regulations.

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3. Conduct storm drain system inspections in accordance with the criteria developed by the principal permittee.

The co-permittees' activities should include , but not be limited to, the following:

4. Participate in committees or subcommittees formed by the principal permittee to address storm water related issues to comply with this order.

5. Review, approve, implement, and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

6. Pursue enforcement actions as necessary to ensure compliance with the storm water management programs, ordinances and the implementation plans including physical elimination of undocumented connections and illicit discharges.

7. Conduct and coordinate with the principal permittee any surveys and characterizations needed to identify the pollutant sources and drainage areas.

8. Submit storm drain system maps with periodic revisions as necessary.

9. Respond to emergency situations such as accidental spills, leaks, illegal discharges/illicit connections, etc. to prevent or reduce the discharge of pollutants to storm drain systems and waters of the U.S.

10. Prepare and submit all reports to the principal permittee in a timely manner.

## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit/illegal discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.

2. The discharge of storm water from permittees' municipal storm drain systems to waters of the United States containing pollutants which have not been reduced to the maximum extent practicable is prohibited.

3. The following discharges need not be prohibited by the permittees unless identified by the permittees as a source of pollutants to the receiving waters.

   a. discharges composed entirely of storm water,

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b. covered by NPDES permits or written clearances issued by the Regional or State Board
c. from potable water line flushing and other potable water sources,
d. fire hydrant testing and flushing,
e. air conditioning condensation,
f. landscape irrigation, lawn garden watering and other irrigation waters,
g. passive foundation drains,
h. passive footing drains,
i. water from crawl space pumps,
j. dechlorinated swimming pool discharges,
k. non-commercial vehicle washing,
l. diverted stream flows,
m. rising ground waters and natural springs,
n. ground water infiltration as defined in 40 CFR 35.2005 (20) and uncontaminated pumped groundwater,
o. flows from riparian habitats and wetlands,
p. street wash water and run-off from fire fighting (program descriptions shall address discharges or flows from fire fighting only where such discharges are identified as significant sources of pollutants to waters of the United States),
q. waters not otherwise containing wastes as defined in California Water Code Section 13050 (d), and
r. other types of discharges identified and recommended by the permittees and approved by the Regional Board.

For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.

4. If it is determined by the permittees that any of the preceding discharges cause or contribute to violations of water quality standards or are significant contributors of pollutants to waters of the U.S., the permittees shall prohibit these discharges from entering the storm drain system.

5. Non-storm water discharges from public agency activities into waters of the U.S. are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3., above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in the Environmental Performance Report, required under Section V., Provision 18., of this order, a proposed plan to eliminate the non-storm water discharges in a timely manner.

6. The permittees shall reduce the discharge of pollutants to the storm water conveyance systems to the maximum extent practicable.

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## IV. RECEIVING WATER LIMITATIONS

1. Receiving water limitations have been established based on beneficial uses, water quality objectives, and water quality standards contained in the Basin Plan, and amendments thereto, and on ambient water quality. They are intended to protect the beneficial uses and attain the water quality objectives contained in the Basin Plan. The discharge of urban storm water, or non-storm water, from a municipal storm sewer system for which the permittees are responsible under the terms of this permit shall not cause continuing or recurring impairment of beneficial uses or exceedances of water quality objectives. The permittees will not be in violation of this provision so long as they are in compliance with the requirements set forth in 1.a.

   a. If the Executive Officer determines that a continuing or recurring impairment of beneficial uses or exceedances of water quality objectives has been caused by urban storm water discharges from the municipal storm sewer system, the following steps shall be taken:

      i. The Executive Officer will evaluate the adequacy of the permittees' implementation of the approved DAMP based on the permittees' submitted reports and other relevant information. The Executive Officer will determine if implementation of the approved DAMP has a reasonable likelihood of preventing future continuing or recurring impairment of beneficial uses or exceedances of water quality objectives resulting from urban storm water discharges. If the Executive Officer makes this determination, the permittees are required to continue implementing the approved DAMP.

      ii. If the Executive Officer determines that implementation of the approved DAMP will not have a reasonable likelihood of preventing future impairment of beneficial uses or exceedances of water quality objectives, the permittees shall, upon notice from the Executive Officer, do the following:

         A. Submit a report that includes an evaluation of the relative contribution of the urban storm water discharges to the impairment of beneficial uses or the exceedances of water quality objectives. The report shall address the persistence, the significance, and to the extent feasible, the causes of the impairment or exceedance, and the technical and economic feasibility of control actions available to the permittees to reduce or eliminate the impairment or exceedance.

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B. Submit a report reviewing the approved DAMP to determine whether it should be revised so that there will be a reasonable likelihood of preventing future continuing or recurring beneficial use impairment or exceedances of water quality objectives, or whether revisions to achieve protection of beneficial uses or attainment of water quality objectives are technically or economically infeasible. If the report recommends revision of the approved DAMP, the report shall include a work plan to revise the plan so that it will have a reasonable likelihood of preventing future continuing or recurring beneficial use impairment or exceedance or water quality objectives. If the report concludes that no revisions are necessary to achieve protection of beneficial uses or attainment of water quality objectives, the report shall explain how implementation of the approved DAMP will achieve compliance. If the report determines that revisions to achieve protection of beneficial uses or attainment of water quality objectives are technically or economically infeasible, the permittees shall continue to comply with the DAMP, shall fully document this determination and shall make recommendations for actions to achieve compliance.

C. The permittees shall implement the work plan and the revised DAMP as approved by the Executive Officer.

2. The Executive Officer shall review and approve or disapprove the reports required under Receiving Water Limitation 1. The reports may be submitted as part of the next Annual Report, or at some other time designated by the Executive Officer. So long as the permittees have complied with the procedures set forth in Receiving Water Limitation 1, they do not have to repeat the procedure for continuing or recurring exceedances of the same receiving water limitations. As appropriate, any determinations under this part or revisions to the approved DAMP may be considered by the Regional Board in a public meeting.

## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order and specifically with Section III. Discharge Limitations and Section IV. Receiving Water Limitations, through timely implementation of their approved Drainage Area Management Plan (DAMP) and any approved modifications, revisions, or amendments developed pursuant to this order. The approved DAMP, as included in the Report of Waste Discharge, including any approved amendments thereto, is hereby made an enforceable component of this order.

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2. The permittees shall implement all elements of the approved DAMP. Where the dates are different than those of the order, the dates in the order shall prevail. Any proposed revisions to the DAMP shall be submitted with the Annual Report to the Executive Officer of the Regional Board for review and approval. All approved revisions to the DAMP shall be implemented in a timely manner.

3. The permittees shall comply with Monitoring and Reporting Program No. 96-31 which is hereby made a part of this order and any revisions thereto. The Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national or other monitoring programs in lieu of Monitoring and Reporting Program No. 96-31.

4. Upon approval by the Executive Officer of the Regional Board, all plans, reports and subsequent amendments as required by this order shall be implemented and shall become an enforceable part of this order. Prior to approval by the Executive Officer, these plans, reports and amendments shall not be considered as an enforceable part of this order.

5. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any enforcement actions and discharges of storm or wastewaters, known to the permittees, which may have an impact on human health or the environment,

   b. Any suspected or reported activities on federal, state, or other entity's land or facilities, where the permittees do not have any jurisdiction, and where the suspected or reported activities may be contributing pollutants to waters of the U.S.

6. The permittees shall not issue any grading permit for construction activities which will disturb five acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) until proof of coverage with the State's General Construction Activity Storm Water Permit is verified. The proof of coverage may include a letter from the Regional Board office, a copy of the Notice of Intent, Waste Discharger Identification number, etc.

7. The permittees shall identify all illegal and or illicit connections by February 1, 1997 and submit a report of the findings by February 28, 1997 including a schedule for elimination of any identified illicit connection and for periodic inspections of the storm drain facilities.

8. Permit application and special NPDES program requirements contained in 40 CFR 122.21 (a), (b), (d)(2), (f), (p); 122.41 (a), (b), (c), (d), (e), (f), (g), (h), (i), (j), (k), (l); and 122.42 (c) are incorporated into this order by reference.

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## IMPLEMENTATION AGREEMENT

9. No later than May 31, 1996, the permittees shall submit to the Executive Officer of the Regional Board a copy of the existing Storm Water Program Implementation Agreement with authorized signatures of each of the permittees. Any further revisions to the implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees.

## LEGAL AUTHORITY

10. The permittees shall adopt the proposed Water Quality Ordinance, or its equivalent. The permittees shall review their existing grading and erosion control ordinances and determine the need for any revision. Upon adoption of the ordinances, but no later than July 31, 1997 each permittee shall certify to the Regional Board that it has adequate legal authority to control the discharges of pollutants into the municipal storm drain system and that it has satisfied the requirements of 40 CFR Section 122.26(d)(2)(i)(A-F). The certification may be submitted jointly by all permittees.

## ENFORCEMENT/COMPLIANCE STRATEGY

11. The Permittees shall implement the Enforcement Consistency Guide, dated 8/15/94, or an equivalent enforcement strategy, in order to enforce the Water Quality Ordinance. Upon implementation, but no later than July 31, 1997, each permittee shall certify to the Regional Board that the guide or similar policies are in place for their enforcement staff. Before implementation, this guide and its equivalent must include the following:

    a. A mechanism to determine compliance of industrial facilities, commercial facilities, and construction sites with storm water ordinances and concerns;

    b. A program to monitor and control the pollutants in storm water discharges to the municipal system from industrial facilities that the permittees determines are contributing to a substantial pollutant loading to the municipal storm drain system. The program shall identify priorities and procedures for inspections and establishing and implementing control measures.

12. The permittees shall develop a training program and offer it to the staff of existing industrial and construction inspection programs, to raise concerns with regard to storm water requirements.

13. The permittees will continue to provide notification to the Regional Board regarding storm water related information gathered during site inspections of industrial and construction sites regulated by the Statewide General Storm Water Permits.

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## PUBLIC EDUCATION AND OUTREACH

14. The permittees will continue to implement the public education efforts already underway and shall implement all of the proposed efforts contained in the permit application. Any proposed changes shall be reported in the Annual Report.

15. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

16. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.

17. The permittees shall develop BMP guidance for the control of those potentially polluting activities not otherwise regulated by any agency.

## MUNICIPAL FACILITIES

18. The permittees shall prepare an Environmental Performance Report, as stated in the amended DAMP, to address public agency facilities and activities not currently required to obtain coverage under the State's general storm water permits. This report may include a pollution prevention strategy to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the U.S. A report shall be submitted to the Executive Officer of the Regional Board by July 31, 1997, identifying the extent of the investigation and all findings of the Environmental Performance Report as it pertains to storm water quality. Thereafter, the permittees shall include in the annual report for each year the actions taken by the permittees to eliminate discharges of pollutants to waters of the U.S., identified by the permittees, at public agency facilities.

## MUNICIPAL CONSTRUCTION PROJECTS/ACTIVITIES

19. This order authorizes the discharge of storm water run-off from construction projects that may result in land disturbance of five (5) acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) that are under ownership and/or direct responsibility of any of the permittees.

20. Prior to commencement of construction activities, the permittees shall notify the Executive Officer of the Regional Board of the proposed construction project. Upon completion of the construction project, the Executive Officer shall be notified of the completion of the project.

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21. The permittees shall develop and implement a storm water pollution prevention plan (SWPPP) and a monitoring program that is specific for the construction project prior to the commencement of any of the construction activities. The SWPPP shall be kept at the construction site and released to the public and/or Regional Board staff upon request.

22. The SWPPP and the monitoring program for the construction projects shall be consistent with the requirements of the latest version of the State's General Construction Activity Storm Water Permit.

23. The permittees shall give advance notice to the Executive Officer of the Regional Board of any planned changes in the construction activity which may result in non-compliance with the latest version of the State's General Construction Activity Storm Water Permit.

24. All other terms and conditions of the latest version of the State's General Construction Activity Storm Water Permit shall be applicable.

## NEW DEVELOPMENT (INCLUDING RE-DEVELOPMENT)

25. Within 90 days of the issuance of this order, the permittees shall begin implementation of the new development BMPs (DAMP, Appendix G, dated September 1993) and BMPs for public works construction (DAMP, Appendix H) that were developed under Order 90-71. Each permittee shall certify to the Regional Board by November 15, 1996, that these guidelines or the equivalent are being implemented and enforced.

26. Within 120 days of the issuance of this order, the permittees shall review their planning procedures and CEQA document preparation processes to insure that storm water-related issues are properly considered. If necessary, these processes shall be revised to include storm water requirements for evaluation of appropriate mitigation measures.

27. The permittees shall, through conditions of approval, insure proper maintenance and operation of any permanent flood control structures installed in new developments. The parties responsible for the maintenance and operation of the facilities shall be identified.

## FISCAL RESOURCES

28. The permittees shall prepare and submit a unified fiscal analyses to the Executive Officer of the Regional Board. The fiscal analysis shall be submitted with the Annual Report document no later than November 15th of each year and shall, at a minimum, include the following:

    a. Each permittee's expenditures for the previous fiscal year,
    b. Each permittee's budget for the current fiscal year,
    c. A description of the source of funds, and
    d. Each permittee's estimated budget for the next fiscal year.

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## PERMIT EXPIRATION AND RENEWAL

29. This order expires on March 1, 2001 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

    a. Any revisions to the Drainage Area Management Plan including, but not limited to, all the activities the permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;

    b. Changes in land use and/or population including map updates; and

    c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls including map updates of the storm drain systems.

    d. To incorporate new or revised program elements and compliance schedule(s) necessary to comply with Section IV of this order.

30. This Order may be modified, revoked or reissued prior to its expiration date for the following reasons:

    a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order;

    b. To incorporate applicable requirements of statewide water quality control plans adopted by the State Water Resources Control Board or any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

    c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

31. This order shall serve as a National Pollutant Discharge Elimination System (NPDES) Permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

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32. Order No. 90-71 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on March 8, 1996.

Gerard J. Thibeault
Executive Officer

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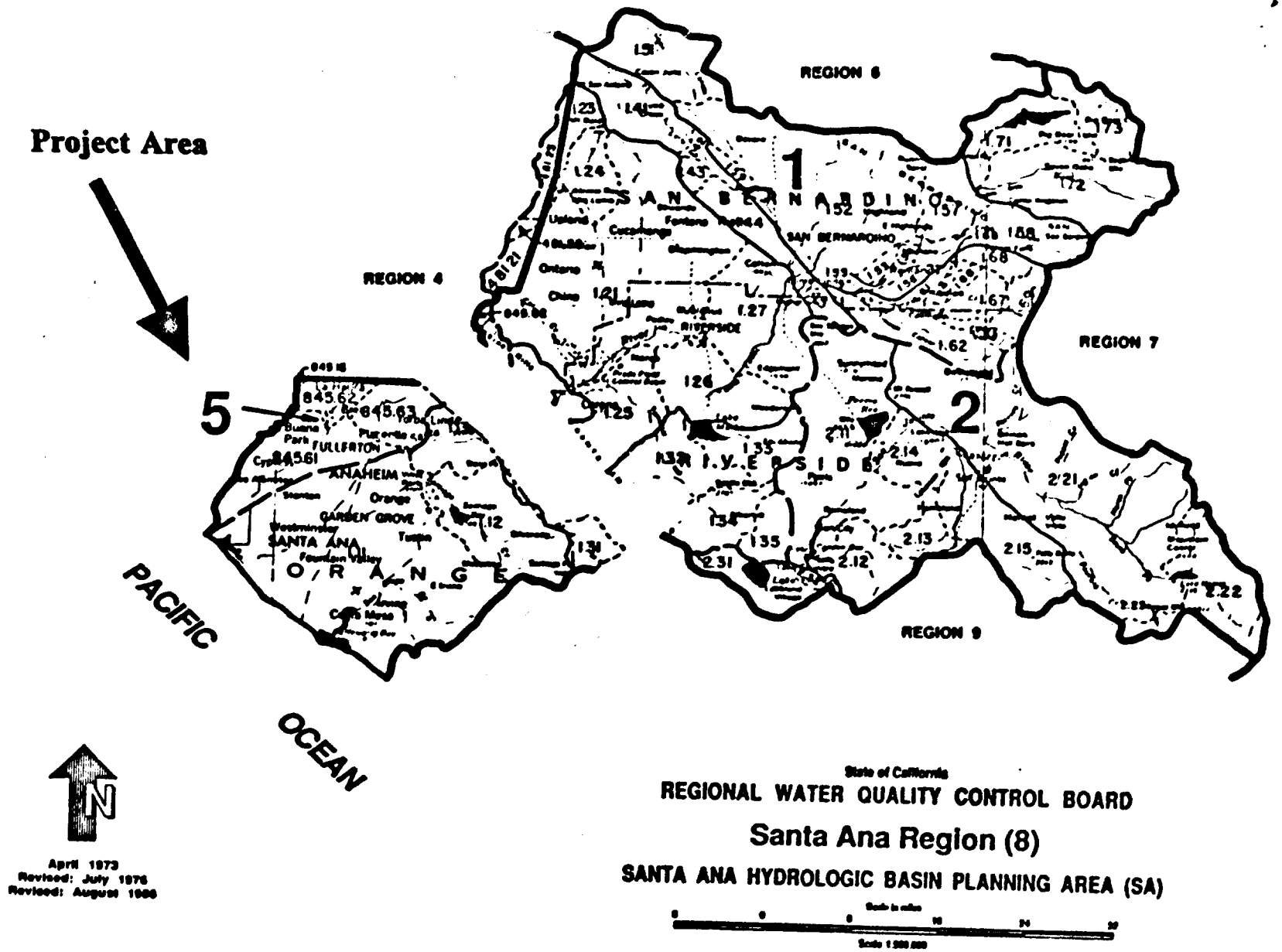
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REGION 6
REGION 4
REGION 7
REGION 9
1
2
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SAN BERNARDINO
RIVERSIDE
ORANGE
SAN BERNARDINO
RIVERSIDE
FULLERTON
ANAHEIM
GARDEN GROVE
SANTA ANA
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N
April 1973
Revised: July 1976
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State of California
REGIONAL WATER QUALITY CONTROL BOARD
Santa Ana Region (8)
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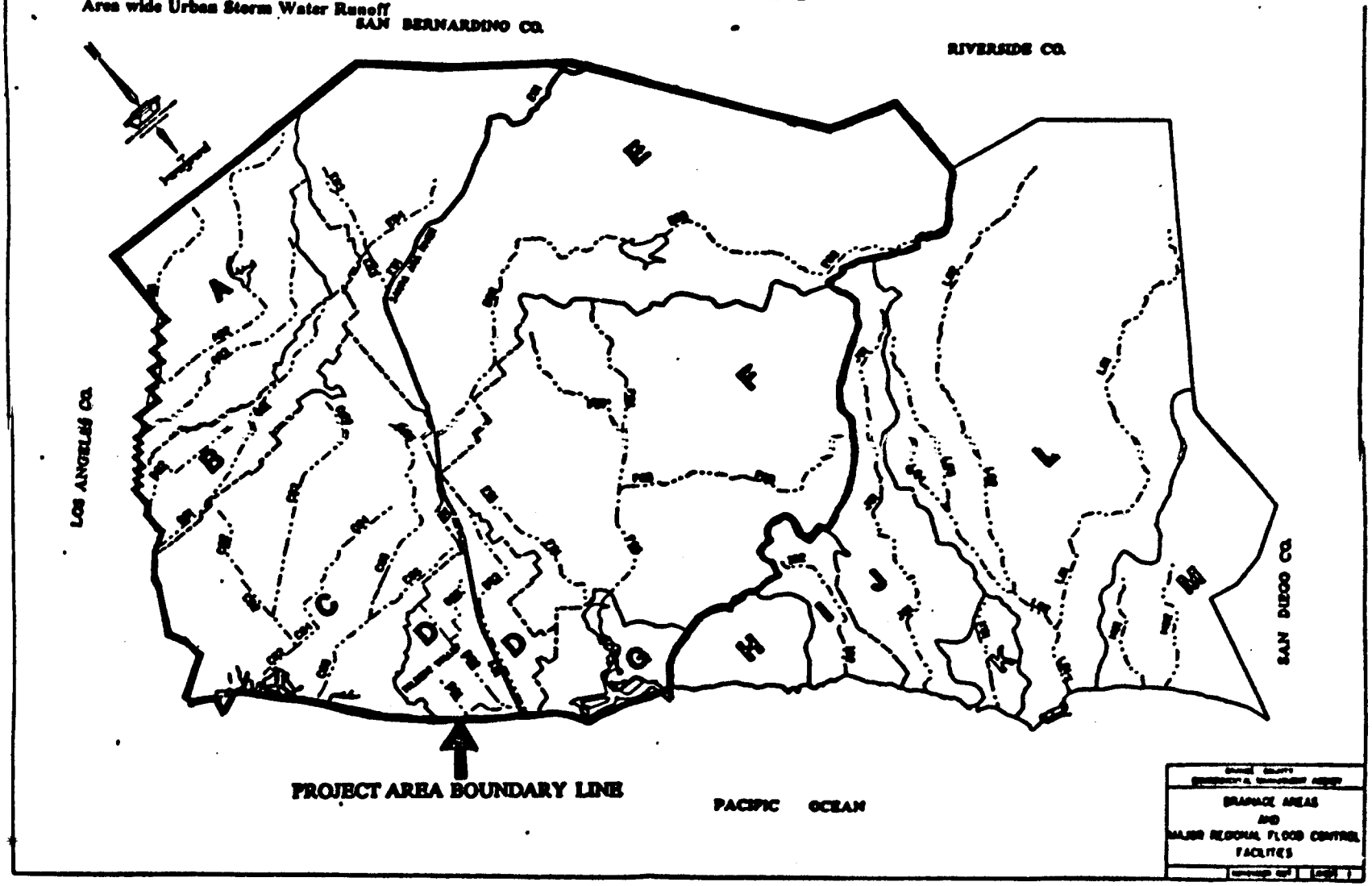


**LEGEND**

A,B - San Gabriel River Drainage Area
C - Huntington Harbour & Bolsa Bay Drainage Area
D - Greenville-Banning Channel Drainage Area
E - Santa Ana River Drainage Area
F,G - Newport Bay Drainage Area

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**Order No. 96-31**
**Attachment "C"**

## LIST OF OTHER ENTITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS TO THE ORANGE COUNTY STORM WATER SYSTEM

California Department of Transportation (Caltrans), District 12
Southern Pacific Railroad
Atchison, Topeka & Santa Fe Railway Company
Seal Beach Naval Weapons Station
Seal Beach Naval Reserve Center, Los Alamitos
U. S. Marine Corps Air Station, El Toro
National Forest Service

### Universities and Colleges

University of California, Irvine
California State University, Fullerton
Chapman College
Coastline College
Cypress College
Fullerton College
Irvine Valley College
Golden West College
Orange Coast College
Rancho Santiago College

### School Districts

Anaheim Elementary School District
Anaheim Union High School District
Brea-Olinda Unified School District
Buena Park Joint Union High School District
Centralia Elementary School District
Cypress Elementary School District
Fountain Valley Union High School District
Fullerton Joint Union High School District
Garden Grove Unified School District
Huntington Beach Elementary School District
Huntington Beach Union High School District
Irvine Unified Union High School District
La Habra Joint Union High School District
Los Alamitos Unified School District
Lowell Joint Union High School District
Magnolia Elementary School District
Newport-Mesa Unified School District
Ocean View Union High School District
Orange Unified School District

**Order No. 96-31**
**Attachment "C" (cont'd)**

Placentia Unified School District
Santa Ana Unified School District
Savanna Union High School District
Tustin Unified School District
Westminster Union High School District
Yorba Linda Joint Union High School District

Hospitals

Anaheim General Hospital
Brea Community Hospital
Chapman General Hospital
Children's Hospital of Orange County, Orange
Coastal Communities Hospital, Santa Ana
Fairview Hospital
FHP Hospital, Fountain Valley
Fountain Valley Regional Hospital and Medical Center
Hoag Hospital, Newport Beach
Kaiser Foundation Hospital, Anaheim
Orange County Community Hospital, Buena Park
Pacifica Community Hospital, Huntington Beach
Placentia Linda Community Hospital
Santa Ana Hospital and Medical Center
St. Joseph's Hospital, Orange
U.C. Irvine Medical Center
Vencor Hospital of Orange County, Westminster
Whittier Hospital and Medical Center, Buena Park

Water/Wastewater Agencies

Santa Ana Watershed Project Authority
Irvine Ranch Water District
Los Aliso Water District
El Toro Water District
San Bernardino County Flood Control District
Riverside County Flood Control & Water Conservation District
L.A. County Department of Public Works
County Sanitation Districts of Orange County
Orange County Water District
Metropolitan Water District

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California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 96-31
NPDES No. CAS618030

for
the County of Orange, Orange County Flood Control District,
and
Incorporated Cities of Orange County Within the Santa Ana Region
Areawide Urban Storm Water Run-off

## I. GENERAL

1. Revisions of the monitoring and reporting program are appropriate to ensure that the permittees are in compliance with requirements and provisions contained in this order. Revisions may be made under the direction of the Executive Officer at any time during the term, and my include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

2. The Executive Officer is authorized to allow the permittees to participate in statewide, national, or other monitoring programs in lieu of this monitoring program.

3. All sample collection, handling, storage, and analysis shall be in accordance with 40 CFR Part 136 or other methods approved by the Executive Officer.

4. The permittees are authorized to complement their monitoring data with other monitoring sources provided the monitoring conditions and sources are similar to those in the Santa Ana Watershed.

5. The permittees shall implement the Orange County Water Quality Monitoring Program (submitted as part of the permit application) until development and implementation of other acceptable monitoring programs.

## II. OBJECTIVES

The overall goal of this monitoring program is to develop and support an effective watershed management program. The following are the major objectives:

1. To develop and support an effective municipal non-point source control program.

2. To define water quality status, trends, and pollutants of concern associated with municipal storm water discharges.

3. To characterize pollutants associated with municipal storm water discharges and to assess the influence of urban land uses on water quality and the beneficial uses of receiving waters.

4. To identify significant water quality problems related to urban storm water discharges.



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5. To identify other sources of pollutants in storm water run-off to the maximum extent possible (e.g., atmospheric deposition, contaminated sediments, other non-point sources, etc.).

6. To identify and prohibit illicit discharges.

7. To identify those waters, which without additional action to control pollution from urban storm water discharges cannot reasonably be expected to attain or maintain applicable water quality standards required to sustain the beneficial uses in the Basin Plan.

8. To evaluate the effectiveness of existing municipal storm water quality management programs, including an estimate of pollutant reductions achieved by the structural and nonstructural BMPs implemented by the permittees.

9. To evaluate costs and benefits of proposed municipal storm water quality control programs to the stakeholders including the public.

The Regional Board recognizes that these objectives may not be attainable during this permit period and authorizes the Executive Officer to evaluate and to determine adequate progress toward meeting each objective.

## III. MONITORING PROGRAM REQUIREMENTS

The permittees shall develop and submit for approval of the Executive Officer an integrated watershed monitoring program geared towards achieving the above stated goals. This program may be developed in cooperation with the permittees from the San Bernardino and Riverside counties. The Executive Officer or his/her designated representative(s) shall facilitate the coordination meetings or subcommittees formed to achieve this goal. The development and implementation of the monitoring program shall be in accordance with the time schedules prescribed by the Executive Officer. At a minimum, the program shall include the following:

1. Uniform guidelines for quality control, quality assurance, data collection and data analysis.

2. A mechanism for the collection, analysis and interpretation of existing data from local, regional or national monitoring programs. These data sources may be utilized to characterize different storm water sources; to determine pollutant generation, transport and fate; to develop a relationship between land use, development size, storm size and the event mean concentration of pollutants; to determine spatial and temporal variances in storm water quality and seasonal and other bias in the collected data; and to identify any unique features of the Santa Ana Watershed. The permittees are encouraged to use data from similar studies, if available.

3. A description of the monitoring program including:

   a. The number of monitoring stations;

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b. Monitoring locations within flood control channels, bays and estuaries, coastal areas, major outfalls, and other receiving waters;

c. Environmental indicators (e.g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;

d. Parameters selected for field screening and for laboratory work; and

e. Total number of samples to be collected from each station, frequency of sampling during wet and dry weather, short duration or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.

4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including cost sharing.

## IV. REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of the U.S. EPA, Region 9, no later than November 15th, of each year. This progress report may be submitted in a mutually agreeable electronic format. At a minimum, annual progress report shall include the following:

a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order;

b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the Drainage Area Management Plan. The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and reducing pollutant loads in storm water discharges;

c. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable;

d. A summary and analysis of monitoring results from the previous year and any changes to the monitoring program for the following year;

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e. A fiscal analysis progress report as described in Section V., Provision, 25., of this order;

f. A draft workplan which describes the proposed implementation of the DAMP for next fiscal year. The workplan shall include clearly defined tasks, responsibilities, and schedules for implementation of the storm water program and each permittee's actions for the next fiscal year; and

g. Major changes in any previously submitted plan/policies.

3. The permittees shall be responsible for the submittal of all required information/materials needed to comply with this order in a timely manner to the principal permittee. All such submittals shall be signed by a duly authorized representative of the permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| ITEM | DUE DATE |
|---|---|
| Report on Illicit/Illegal Discharges & Storm Water Program Implementation Agreement | February 28, 1997 |
| Legal Authority & Enforcement Strategy Certification | July 31, 1997 |
| Environmental Performance Report | July 31, 1997 |
| New Development BMP Certification | November 15, 1996 |
| Proposed Monitoring Program | July 31, 1997 |
| Annual Report/Fiscal Analysis | November 15th of each year |

Ordered by _____
Gerard J. Thibeault
Executive Officer
March 8, 1996

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
AND
WASTE DISCHARGE REQUIREMENTS
NPDES NO. CAS618036
ORDER NO. 96-32
FOR
THE SAN BERNARDINO COUNTY TRANSPORTATION/FLOOD CONTROL DEPARTMENT, THE COUNTY OF SAN BERNARDINO, AND THE INCORPORATED CITIES OF SAN BERNARDINO COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On April 4, 1995, the San Bernardino County Transportation/Flood Control Department (SBCFCD), in cooperation with the County of San Bernardino, and the incorporated cities of Big Bear Lake, Chino, Chino Hills, Colton, Fontana, Grand Terrace, Highland, Loma Linda, Montclair, Ontario, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Upland, and Yucaipa (hereinafter collectively referred to as "permittees") jointly submitted National Pollutant Discharge Elimination System (NPDES) Application No. CAS618036 to renew their areawide NPDES permit for urban storm water run-off.

2. The 1987 amendments to the Clean Water Act required the United States Environmental Protection Agency (EPA) to develop permitting regulations for storm water discharges from municipal separate storm sewer systems serving a population of 100,000 or more and for storm water discharges associated with industrial activities including construction sites. The EPA published proposed storm water regulations on December 7, 1988 and promulgated the final regulations on November 16, 1990. Prior to the EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Regional Board requested early areawide NPDES permits for urban storm water run-off.

3. On October 19, 1990, the Regional Board adopted Order No. 90-136 for urban storm water run-off from urban areas in San Bernardino County within the Santa Ana Region. Order No. 90-136 expires on October 1, 1995. The San Bernardino County Transportation/Flood Control Department was named as the principal permittee and San Bernardino County and the incorporated cities were named as



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the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the SBCFCD will continue as principal permittee and San Bernardino County and the incorporated cities will continue as co-permittees. However, the Regional Board, in exercising its enforcement discretion, will take action only against the individual permittee responsible for specific violations of this order, whenever possible.

4. San Bernardino County Municipal Permit required the permittees to develop and implement a Drainage Area Management Plan (DAMP), a receiving and storm water monitoring program, reconnaissance survey program, a plan for prosecution of illegal dischargers, and to establish legal authority to effectively prohibit illegal/illicit discharges. The overall goal of these requirements was to effectively reduce the pollutant loadings to surface waters from urban run-off to the maximum extent practicable (MEP).

5. The Report of Waste Discharge (the permit renewal application) included the following components:

   a. A Municipal Storm Water Management Program which is an extension of the October, 1993 Drainage Area Management Plan.
   b. Letters of intent for compliance with San Bernardino County Municipal Storm Water Permit by all the co-permittees.

6. Within the Santa Ana Region, the permittees serve a population of approximately 1.11 million, occupying an area of approximately 985 square miles. The latest figures obtained from the Reconnaissance Progress Report estimated 384 miles of above-ground and 334 miles of below-ground storm drain channels in the project area. Approximately seven percent (7%) of the San Bernardino County area drains into water bodies within this Regional Board's jurisdiction. The project area is shown on Attachment 1. This order regulates storm water run-off from areas under the jurisdiction of the permittees. The term storm water as used in this order includes storm water run-off, snow melt run-off, and surface run-off and drainage. The permittees have jurisdiction over and/or maintenance responsibility for storm water conveyance systems within San Bernardino County. Approximately 50% of the remaining San Bernardino County drainage areas is within the jurisdiction of the Lahonton Regional Board and the other 43% is within the jurisdiction of the Colorado River Basin Regional Board. However, urbanization in these areas is minimal compared to areas within the Santa Ana Regional Board's jurisdiction.

7. The Santa Ana River Basin is the major watershed within this Region. This watershed is divided into the upper and lower Santa Ana watersheds. The lower Santa Ana River Basin (downstream from Prado Dam) includes the Orange County

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drainage areas and the Upper Santa Ana River Basin includes the San Bernardino County and the Riverside County drainage areas. The San Bernardino County drainage areas are generally upstream of the Riverside County drainage areas.

8. The three county areas within this Region are regulated under three areawide permits for urban storm water run-off. These areawide NPDES permits are:

   a. Orange County, NPDES No. CA 8000180, Order No. 90-71 (upon renewal Order No. 96-31, NPDES No. CAS618030)

   b. Riverside County, NPDES No. CA 8000192, Order No. 90-104 (upon renewal Order No. 96-30, NPDES No. CAS618033)

   c. San Bernardino County, NPDES No. CA 8000200, Order No. 90-136 (upon renewal Order No. 96-32, NPDES No. CAS618036)

9. Surface Water bodies in San Bernardino County within the jurisdiction of Santa Ana Region are listed in Attachment 2.

10. Run-off from the San Bernardino County drainage areas is generally conveyed to the Riverside County drainage areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Basin (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

11. The entities listed in Attachment 3 are considered as potential dischargers of storm water to the San Bernardino County drainage areas. It is expected that these entities will also work cooperatively with the permittees to manage urban run-off. The Regional Board has the discretion and authority to require non-cooperating entities to participate in this areawide permit or obtain individual storm water permits, pursuant to 40 CFR 122.26(a).

12. The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified apparent impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies are thought to be threatened or impaired in part due to urban storm water run-off and non-storm water flows from urbanized areas. Preliminary results from urban storm water monitoring programs within the Region indicate that major pollutants of concern in urban run-off are certain heavy metals, sediment, coliform bacteria, pesticides, and nutrients. Municipal storm water run-off is a source of pollutants to waters of the U.S. that

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may be causing or contributing to water quality impairment. It is recognized that instream or end-of-channel treatment of storm water is difficult and expensive. Therefore, it is critical to identify the sources and to develop management practices necessary to reduce pollutant loading to storm water. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events and point source discharges permitted by the Regional Board under individual permits.

13. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources for urban storm water pollution:

    a. Industrial sites where appropriate pollution control and best management practices (BMPs) are not implemented,

    b. Construction sites where erosion and siltation controls and BMPs are not implemented, and

    c. Urban run-off where the drainage area is not properly managed.

14. To address the industrial and construction sites, the State Board issued two statewide general NPDES permits: one for storm water run-off from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water run-off from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water run-off from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order No. 94-7, NPDES No. CA 8000336, for concentrated animal feeding operations, including dairies (General Dairy permit). The Regional Board has and continues to issue individual storm water permits for industrial facilities within the Region.

15. One of the major components of these statewide permits, the Caltrans permit, and the General Dairy Permit is the development and implementation of a storm water pollution prevention plan (SWPPP).

16. Most industrial activities (some light industrial activities are exempt) and construction activities on five acres or more are required to get individual NPDES permits for storm water discharges or get coverage under these statewide general permits.

17. The Regional Board is the enforcing authority for the two statewide general permits. However, in most cases, the industrial and construction sites discharge

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directly into storm drains and/or flood control facilities owned and operated by the permittees. These industrial and construction sites are also regulated under local laws and regulations. Therefore, a coordinated effort between the permittees and the Regional Board staff is critical to avoid duplicative storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

18. The permittees or other agencies generally conduct inspections of most industrial and commercial facilities and construction sites within their jurisdiction to determine compliance with local storm water ordinances and regulations, as well as for other regulatory purposes. The permittees have agreed to notify Regional Board staff when conditions are observed during such inspections which result in threat or potential threat to water quality. This also includes failure to obtain coverage under the general storm water permits.

19. The permittees have agreed not to issue grading and/or building permits without proof of filing for a Notice of Intent (NOI) for sites subject to State's General Construction Activity Storm Water Permit.

20. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out municipal related activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm drain system maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees will assess public agency activities and facilities for potential impact to storm water quality and develop and implement best management practices to reduce pollutant discharges from those activities that are found to be pollutant sources. Non-storm water discharges from these facilities and/or activities also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III., Discharge Limitations, 5., of this order or are permitted by the Regional Board under an individual NPDES permit.

21. The major focus of storm water pollution prevention is the development and implementation of an appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to attain water quality consistent with the

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water quality objectives for the receiving waters in order to protect beneficial uses. The permittees developed and submitted a DAMP, which was approved on May 2, 1994. The Municipal Storm Water Management Program (MSWMP) is an extension of the DAMP.

22. The MSWMP provides a framework for continuing the implementation of DAMP elements for the term of the renewed permit.

23. There is some contribution of pollutants in urban run-off from privately owned and operated facilities such as residences, businesses and commercial establishments and public and private institutions. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, the permittees and the regulators. Therefore, the DAMP has a strong emphasis on public education.

24. The MSWMP included numerous BMPs under nine major program elements and a time schedule for implementation. These BMPs are organized into various components such as BMPs for existing residential, commercial and industrial areas; BMPs for construction sites; BMPs for new developments, etc. These components include regulatory activities, public education programs and operations and maintenance activities.

25. In order to characterize storm water discharges, to identify problem areas, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. San Bernardino County monitoring program commenced in January of 1994 which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The Report of Waste Discharge included a Consolidated Program for Water Quality Monitoring.

26. In addition to the Regional Board, a number of other stakeholders are involved in the management of these water resources which includes, but is not limited to, the incorporated cities in the Region, publicly owned treatment works, the three counties, Santa Ana Watershed Project Authority and its member agencies. The cooperation and coordination between all the stakeholder are critical for an efficient and most economical management of the watershed. The Regional Board will coordinate the activities within the watershed and seek participation of the permittees.

27. The permittees have agreed to revise the implementation agreement that was developed in 1990 as required under Order No. 90-136.

28. Illegal dumping and illicit/illegal connections and discharges to the storm drains are

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contributors to storm water and other surface water contamination. Most of the cities have completed their reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains) and the remaining cities have scheduled the completion prior to expiration of their municipal permit (October 1, 1995). The permittees were required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are also required to develop a program to prohibit any future illegal/illicit connections to their storm drains and flood control facilities.

29. As part of Order No. 90-136, the permittees were required to develop and implement a plan to eliminate the illicit connections and to prosecute the illegal dischargers. This order requires the permittees to continue the implementation and enforcement required under this plan.

30. This order requires the permittees to continue to implement the BMPs listed in the ROWD and to effectively prohibit illegal and illicit discharges to the storm drain system. One of the major elements of the DAMP was the establishment of legal authority. The permittees within San Bernardino County have already adopted ordinances to establish their legal authority. This task was completed as of April 1995.

31. Successful implementation of the provisions and limitations in this order will require the cooperation of all the involved agencies and organizations within San Bernardino County (e.g. Fire Department, Department of Environmental Health, Planning Department, Building and Safety, Code Enforcement, etc.). As such, these agencies and organizations are expected to actively participate in implementing this areawide storm water program. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in the planning procedures, in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc.

32. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, agricultural land, utilities and special districts, and Native American tribal lands. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.

33. The permittees may petition the Regional Board to issue a separate NPDES permit to any discharger of non-storm water into storm drain systems that they own or operate.

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34. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region.

35. The requirements contained in this order are necessary to implement the Basin Plan.

36. In accordance with the Clean Water Act and it's implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants to waters of the U.S. to the maximum extent practicable.

37. The legislative history and the preamble to the federal storm water regulations indicate that the Congress and the U.S. EPA were aware of the difficulties in regulating urban storm water run-off solely through traditional end-of-pipe treatment. However, the U.S. EPA and State Water Resources Control Board have determined that the NPDES permits for urban storm water run-off must contain effluent limitations based on water quality standards (beneficial uses and water quality objectives). The development and implementation of best management practices (BMPs), which will achieve compliance with applicable standards, are generally considered to be acceptable as effluent limitations. In accordance with Section 402 (p) of the Clean Water Act, this order requires the permittees to develop controls to reduce the discharge of pollutants to the maximum extent practicable. If urban storm water discharges cause an exceedance of the water quality standards in the receiving waters, the BMPs will be reevaluated, revised, and implemented, as appropriate, to address any exceedance of receiving water quality standards. Numeric and narrative water quality objectives are contained in the Basin Plan for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. Due to the high cost associated with monitoring, and due to the variability that exists in the current storm water monitoring efforts being conducted by the permittees and other municipal permittees in Orange and Riverside Counties under their municipal storm water permits, a tri-county monitoring program will be considered to develop and implement effective monitoring procedures and strategies.

38. It is the Regional Board's intent that this order shall achieve attainment and protection of the beneficial uses of receiving waters. This order therefore, includes Receiving Water Limitations required to implement water quality objectives and to prevent nuisance and water quality impairment in receiving waters. This order

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requires implementation of control measures in accordance with the approved MSWMP that will reduce pollutants in storm water discharges to the maximum extent practicable. The Receiving Water Limitations require the implementation of control measures that are technically and economically feasible as necessary to protect beneficial uses and attain water quality objectives of the receiving waters.

The Regional Board finds that the unique aspects of the regulation of storm water discharges through municipal storm sewer systems, including intermittent discharges, difficulties in monitoring and limited physical control over the discharge, will require adequate time to implement and evaluate the effectiveness of best management practices and to determine whether they will adequately protect receiving waters. Therefore, the permit includes a procedure for determining whether storm water discharges are causing continuing or recurring exceedances of receiving water limitations and for evaluating whether the approved MSWMP must be revised. The permittees will be in compliance with the Receiving Water Limitations so long as the permittees comply with that procedure.

39. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Regional Board.

40. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

41. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

42. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

43. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

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IT IS HEREBY ORDERED that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and the regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF THE PRINCIPAL PERMITTEE

The principal permittee shall be responsible for managing the overall storm water program and shall:

1. Conduct water quality and hydrographic monitoring of the municipal separate storm sewer system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop uniform criteria to inspect the municipal storm drain systems.

3. Develop minimum criteria for inspections at industrial facilities and construction sites, and reporting to the Regional Board of observed non-compliance discharges, as well as non-compliance with local ordinances at sites which fall under the general construction or industrial storm water permits.

4. Conduct inspections of the storm drain systems owned and operated by the SBCFCD.

5. Implement management programs, monitoring programs, and related plans as required by this order.

6. Prepare and submit to the Executive Officer of the Regional Board, unified reports, plans, and programs necessary to comply with this order.

7. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority within the scope of the San Bernardino County Transportation/Flood Control Department Act, as required by the Federal Storm Water Regulations.

8. Respond and/or arrange for responding to emergency situations such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or to reduce the discharge of pollutants to the municipal separate storm sewer systems and to waters of the U.S.

In addition, the activities of the principal permittee should, at a minimum, include the following:

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9. Coordinate permit activities and participate in any subcommittees formed as necessary, to coordinate compliance activities with this order.

10. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

11. Coordinate the implementation of areawide storm water quality management activities such as monitoring program, public education, pollution prevention, household hazardous waste collection, etc.

12. Gather and disseminate information on the progress of statewide municipal storm water programs and evaluate the information for potential use in the execution of this order.

13. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in attaining water quality standards.

14. Coordinate activities pertaining to implementation of this order with the Regional Board.

15. Solicit and coordinate public input for any major proposed storm water management programs and implementation plans.

16. Develop and implement mechanisms, performance standards, etc., to promote consistent implementation of BMPs among the permittees.

17. In conjunction with the other permittees, implement the BMPs listed in the approved DAMP, as amended by the Report of Waste Discharge (ROWD).

18. Participate with other counties (Orange and Riverside counties) in the development and implementation of a tri-county monitoring program coordinated by the Regional Board.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

The co-permittees shall be responsible for managing the storm water program within their jurisdiction and shall:

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1. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority as stated in Section V(10) of this order and required by the Federal Storm Water Regulations.

2. Conduct storm drain system inspections in accordance with the uniform criteria developed by the principal permittee.

3. Submit to the principal permittee any information necessary to develop unified report submittal to the Executive Officer of the Regional Board.

4. In conjunction with the principal permittee, implement the BMPs listed in the approved DAMP, as amended by the ROWD.

Co-permittees activities should, at a minimum, include the following:

5. Administer the storm water and erosion control ordinances.

6. Conduct and coordinate with the principal permittee any surveys and characterizations needed to identify the pollutant sources and drainage areas.

7. Review and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

8. Participate in committees or subcommittees formed to address storm water related issues to comply with this order.

## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.
2. This order authorizes storm water discharges to waters of the U.S. from the permittees' existing municipal separate storm drain systems provided that the permittees implement the BMPs (structural and/or non-structural control measures) necessary to reduce the pollutants in the discharge to the maximum extent practicable. Discharges other than those listed under Item 5., below, and those for which the Regional Board has issued individual permits are prohibited.

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3. The following discharges need not be prohibited by the permittees unless identified by the permittees as a source of pollutants to the receiving waters.

   a. Discharges for which an approval has been issued by the Regional Board office or State Board, including discharges authorized under NPDES permits issued by the State or Regional Boards,

   b. Discharges from potable water line flushing and other potable water sources,

   c. Discharges from fire fighting and fire hydrant testing and flushing,

   d. Discharges from landscape irrigation, lawn watering and other irrigation activities,

   e. Diverted stream flows,

   f. Rising ground waters and natural springs,

   g. Uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)) and uncontaminated pumped groundwater,

   h. Passive foundation drains,

   i. Air conditioning condensate,

   j. Water from crawl space pumps,

   k. Passive footing drains,

   l. Discharges from individual residential vehicle washing (not including discharges from mobile sources such as automobile/equipment detailing or washing),

   m. Flows from riparian habitats and wetlands,

   n. Dechlorinated swimming pool discharges,

   o. Waters not otherwise containing wastes as defined in California Water Code Section 13050 (d) and,

   p. Other types of discharges identified and recommended by the permittees and approved by the Regional Board.

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For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.

4. The permittees shall take necessary steps to ensure that non-storm water discharges to the municipal storm drain system do not cause or contribute to violations of water quality standards or degrade the waters of the U.S.

5. Non-storm water discharges from permittee's activities into waters of the U.S. are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3., above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in the storm water pollution prevention strategy, required under Section V. Provision 19., of this order, a proposed plan to address the non-storm water discharges.

6. The MSWMP, as outlined in the ROWD, is hereby made an enforceable component of this order.

## IV. RECEIVING WATER LIMITATIONS

1. Receiving Water Limitations are based upon beneficial uses, water quality objectives and water quality standards contained in the Basin Plan, and amendments thereto, and on ambient water quality. They are intended to protect the beneficial uses and attain the water quality objectives contained in the Basin Plan. The discharge of urban storm water, or non-storm water, from a municipal storm sewer system for which the permittees are responsible under the terms of this permit shall not cause continuing or recurring impairment of beneficial uses or exceedances of water quality objectives. The permittees will not be in violation of this provision so long as they are in compliance with the requirements set forth in 1.a.

   a. If the Executive Officer determines that a continuing or recurring impairment of beneficial uses or exceedance of water quality objectives has been caused by urban storm water discharges from the municipal storm sewer system, the following steps shall be taken:

      i. The Executive Officer will evaluate the adequacy of permittees' implementation of the approved MSWMP based on the permittees' submitted reports and other relevant information. The Executive Officer will determine if implementation of the approved MSWMP has a reasonable

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likelihood of preventing future continuing or recurring impairment of beneficial uses or exceedances of water quality objectives resulting from urban storm water discharges. If the Executive Officer makes this determination, the permittees are required to continue implementing the approved MSWMP.

ii. If the Executive Officer determines that implementation of the approved MSWMP will not have a reasonable likelihood of preventing future impairment of beneficial uses or exceedances of water quality objectives, the permittees shall, upon notice from the Executive Officer, do the following:

A. Submit a report that includes an evaluation of the relative contribution of the urban storm water discharges to the impairment of beneficial uses or the exceedance of water quality objectives. The report shall address the persistence, the significance, and to the extent feasible, the causes of the impairment or exceedance, and the technical and economic feasibility of control actions available to the permittees to reduce or eliminate the impairment or exceedance.

B. Submit a report reviewing the approved MSWMP to determine whether it should be revised so that there will be a reasonable likelihood of preventing future continuing or recurring beneficial use impairment or exceedances of water quality objectives, or whether revisions to achieve protection of beneficial uses or attainment of water quality objectives are technically or economically infeasible. If the report recommends revision of the approved MSWMP, the report shall include a work plan to revise the MSWMP so that it will have a reasonable likelihood of preventing future continuing or recurring beneficial use impairment or exceedances of water quality objectives. If the report concludes that no revisions are necessary to achieve protection of beneficial uses or attainment of water quality objectives, the report shall explain how implementation of the approved MSWMP will achieve compliance. If the report determines that revisions to achieve protection of beneficial uses or attainment of water quality objectives are technically or economically

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infeasible, the permittees shall continue to comply with the approved MSWMP, shall fully document this determination, and shall make recommendations for actions to achieve compliance, including, for example, commencement of a total maximum daily load report or revision of the Basin Plan or mitigation projects to protect beneficial uses, and identification of possible funding sources for such actions.

C. The permittees shall implement the work plan and the revised MSWMP as approved by the Executive Officer.

2. The Executive Officer shall review and approve or disapprove the reports required under Receiving Water Limitation 1. The reports may be submitted as part of the next Annual Report, or at some other time designated by the Executive Officer. So long as the permittees have complied with the procedures set forth in the Receiving Water Limitation 1, they do not have to repeat the procedure for continuing or recurring exceedances of the same receiving water limitations. As appropriate, any determinations under this part or revisions to the approved MSWMP may be considered by the Regional Board in a public meeting."

## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order.

2. The Report of Waste Discharge, including the MSWMP, submitted as application for renewal of the NPDES permit is hereby made a part of this order.

3. Permittees shall implement all elements of the approved DAMP, as amended by the ROWD (MSWMP). Any proposed revisions to the MSWMP shall be submitted to the Executive Officer of the Regional Board or included in the Annual Report for review and approval. All revisions to the MSWMP, approved by the Executive Officer, shall be implemented in a timely manner.

4. The permittees shall comply with Monitoring and Reporting Program No. 96-32, which is hereby made a part of this order and any revisions thereto.

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The Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national, or other monitoring programs in lieu of Monitoring and Reporting program for Order No. 96-32.

5. Upon approval by the Executive Officer of the Regional Board, all plans and reports required by this order, including any subsequent amendments, shall be implemented and shall become an enforceable part of this order.

6. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any enforcement actions and discharges of storm or wastewaters, known to the permittees, which may have an impact on human health or the environment;

   b. Any industrial or construction facilities observed to potentially be not in compliance with the storm water regulations or where the activities may be contributing pollutants to the waters of the U.S.; and

   c. Any observed activities on federal, state, or other lands or facilities, where the permittees do not have any jurisdiction, and where the observed activities may be contributing pollutants to waters of the U.S.

7. The permittees shall not issue occupancy permits unless the applicant is informed of his obligation under the State's NPDES industrial general permits. The permittees shall not issue grading or building permits to developments on 5 acres or more unless the applicant shows proof of filing a Notice of Intent in accordance with the State's General Construction Activities Storm Water Permit. The proof of filing may include a letter from the Regional Board office, a copy of the Notice of Intent or other acceptable proof of coverage under the general permit. The permittees shall coordinate the activities of the various departments/sections within each permittee's jurisdiction to ensure consistent implementation of storm water program.

8. Permit application and special NPDES program requirements contained in 40 CFR 122.21(a), (b), (d)(2), (f), and (p); 122.41(a), (b), (c), (d), (e), (f), (g), (h), (i), (j), (k), and (l); and 112.42(c) are incorporated into this order by reference.

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## IMPLEMENTATION AGREEMENT

9. No later than March 1, 1996, the permittees shall submit to the Executive Officer of the Regional Board an updated copy of an implementation agreement with authorized signatures of each of the permittees. Any subsequent revisions to the implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees. At a minimum, the implementation agreement should include all the essential elements of the existing agreement and a mechanism for active participation of all permittees in the committees and subcommittees to ensure uniform co-operation and involvement of the permittees in the decision making process.

## LEGAL AUTHORITY

10. The permittees adopted the Storm Water Run-off Management Ordinance. This task was completed as of April, 1995. The permittees shall establish a mechanism for periodic review and update of their ordinances to ensure compliance with the requirements of 40 CFR Section 122.26(d)(2)(i)(A-F).

## ENFORCEMENT STRATEGY

11. Permittees have developed an enforcement strategy as outlined in the ROWD (submitted on April 4, 1995) to enforce storm water and erosion control ordinances. The permittees shall implement the enforcement strategy which includes a mechanism for the inspection of industrial facilities and construction sites, notification to the Executive Officer of any observations of non-compliance with the storm water regulations and any proposed local enforcement action.

12. The enforcement strategy shall include enforcement and control of discharges from facilities not covered under the State's existing General Storm Water Permits.

13. Permittees have completed the reconnaissance survey of their storm drain conveyance systems as of October 1, 1995 and will eliminate all illegal and/or illicit connections by December 1, 1996. Permittees shall submit a report of the findings by April 30, 1997 and each year thereafter (including the detection, elimination and prosecution of illegal dischargers).

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PUBLIC EDUCATION AND OUTREACH

14. The permittees shall continue to implement the public education efforts already underway and shall implement all of the proposed efforts contained in the Report of Waste Discharge. Any proposed changes shall be submitted to the Executive Officer of the Regional Board for approval.

15. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

16. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.

17. The permittees shall develop a public education program geared toward the industrial facilities and construction sites through active participation of the county and city departments.

18. Permittees shall develop an educational program targeted toward educating the staff at the county and city departments/agencies under their jurisdiction about storm water program and utilize their assistance in enforcing the requirements of this order. Example of these departments/agencies include Fire Department, Department of Health and Safety, Pre-treatment Programs, Hazardous Waste Collection, Building and Safety, etc.

MUNICIPAL FACILITIES

19. The permittees have developed a pollution prevention strategy to address their public agency facilities and activities not currently required to obtain coverage under the State's general storm water permits. The pollution prevention strategy is to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the U.S. The pollution prevention strategy shall be implemented in accordance with the time schedule proposed in the ROWD.

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## MUNICIPAL CONSTRUCTION PROJECTS/ACTIVITIES

20. This order authorizes the discharge of storm water run-off from construction projects that may result in land disturbance of five (5) acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) that are under ownership and/or direct responsibility of any of the permittees.

21. Prior to commencement of construction activities, the permittees shall notify the Executive Officer of the Regional Board of the proposed construction project. Upon completion of the construction activities, the Executive Officer shall be notified of the completion of the construction project.

22. The permittees shall develop and implement a storm water pollution prevention plan and a monitoring program that is specific for the construction project prior to the commencement of any of the construction activities. The SWPPP and the monitoring program shall be implemented throughout the duration of the construction activities on site. The SWPPP shall be kept at the construction site and released to the public and/or Regional Board Staff upon request.

23. The SWPPP and the monitoring program for the construction projects shall be consistent with the requirements of the most recent version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

24. The permittees shall give advance notice to the Executive Officer of the Regional Board of any planned changes in the construction activities which may result in non-compliance with the current version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

## NEW DEVELOPMENTS (INCLUDING RE-DEVELOPMENT)

25. The permittees shall begin implementation of the new development BMPs as described in Section 4 of the ROWD in accordance with the schedule provided in the ROWD.

26. By April 30, 1997, the permittees shall update their General Plan and CEQA document preparation processes to ensure that storm water-related issues are properly considered. If necessary, these processes shall be revised to include requirements for evaluation of storm water-related impacts and identification of appropriate mitigation measures.

27. The permittees shall establish a mechanism to ensure proper maintenance and operation of all permanent flood control structures. For new developments, the parties responsible for the maintenance of the flood control structures and funding sources for maintenance and operation of the facilities shall be identified prior to issuance of grading permits.

**FISCAL RESOURCES**

28. The permittees shall prepare and submit a unified fiscal analyses report to the Executive Officer of the Regional Board. The fiscal analysis report shall be submitted no later than August 31 of each year and shall, at a minimum, include the following:

    a. Each permittee's expenditures for the previous fiscal year;
    b. Each permittee's budget for the current fiscal year;
    c. A description of the source of funds.

**PERMIT EXPIRATION AND RENEWAL**

29. This order expires on March 1, 2001 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

    a. Any revisions to the Municipal Storm Water Management Program including, but not limited to, all the activities the permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;

    b. Changes in land use and/or population including map updates; and

    c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls including map updates of the storm drain systems.

30. This order may be modified, revoked or reissued prior to its expiration date for the following reasons:

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a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order,

b. To incorporate applicable requirements of statewide water quality control plans and policies adopted by the State Water Resources Control Board or any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

31. This order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

32. Order No. 90-136 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on March 8, 1996.

Gerard J. Thibeault
Executive Officer

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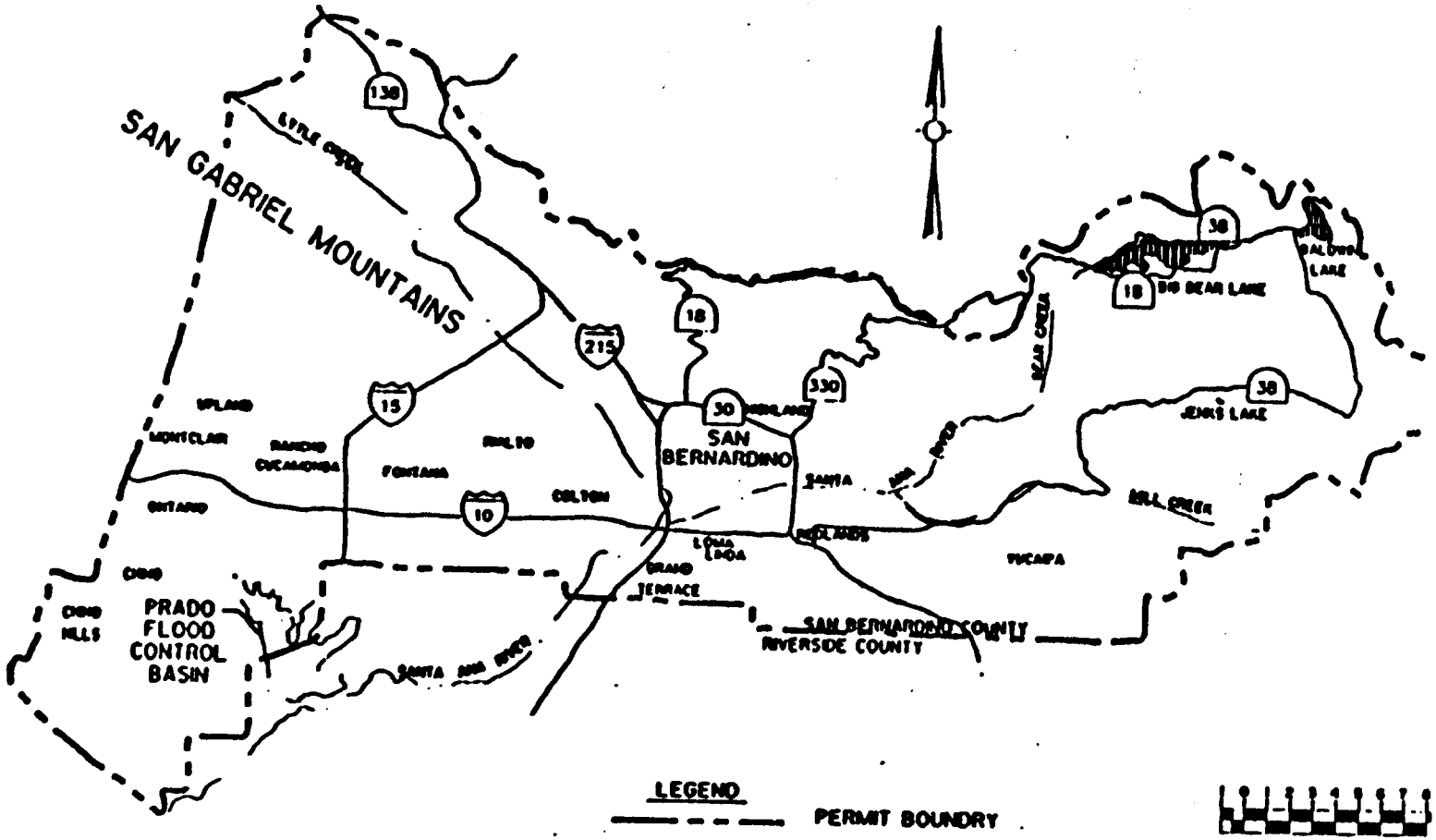
## Attachment 1

# PROJECT AREA



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## Attachment 2

Inland Surface Streams

A. Santa Ana River
Santa Ana River, Reaches 4, 5, and 6

B. San Bernardino Mountain Streams

Mill Creek Drainage

Mill Creek, Reaches 1 and 2
Mountain Home Creek
Mountain Home Creek, East Fork
Monkey Face Creek
Alger Creek
Falls Creek
Vivian Creek
High Creek
Other Tributaries: Lost, Oak Cove, Green, Skinner, Momyer and Glen Martin Creeks, and other Tributaries to these Creeks

Bear Creek Drainage
Bear Creek
Siberia Creek
Slide Creek
All Other Tributaries to these Creeks

Big Bear Lake Tributaries
North Creek
Metcalf Creek
Grout Creek
Rathbone (Rathbun) Creek
Other Tributaries to Big Bear Lake: Johnson, Minnelusa, Polique, and Red Ant Creeks, and other Tributaries to these Creeks

Baldwin Lake Drainage
Shay Creek
Other Tributaries to Baldwin Lake: Sawmill, Green, and Caribou Canyons and other Tributaries to these Creeks.

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C. Other Streams Draining to Santa Ana River (Mountain Reaches)
Cajon Creek
City Creek
Devil Canyon Creek
East Twin and Strawberry Creeks
Waterman Canyon Creek
Fish Creek
Forsee Creek
Plunge Creek
Barton Creek
Bailey Canyon Creek
Kimbark Canyon, East Fork Kimbark Canyon, Ames Canyon and West Fork Cable Canyon Creeks
Valley Reaches of Above Streams
Other Tributaries (Mountain Reach): Alder, Badger Canyon, Bledsoe Gulch, Borea Canyon, Breakneck, Cable Canyon, Cienega Seca, Cold, Converse, Coon, Crystal, Deer, Elder, Fredalba, Frog, Government, Hamilton, Heart Bar, Hemlock, Keller, Kilpecker, Little Mill, Little Sand Canyon, Lost, Meyer Canyon, Mile, Monroe Canyon, Oak, Rattlesnake, Round Cienega, Sand, Schneider, Staircase, Warm Springs Canyon and Wild Horse Creeks, and other tributary to these Creeks.

D. San Gabriel Mountain Streams (Mountain Reaches)
San Antonio Creek
Lytle Creek (South, Middle, and North Forks) and Coldwater Canyon Creek
Day and East Etiwanda Creeks
Valley Reaches of Above Streams
Cucamonga Creek (Mountain Reach)
Cucamonga Creek (Valley Reach)
Other Tributaries (Mountain Reaches): San Sevaine, Deer, Duncan Canyon, Henderson Canyon, Stoddard Canyon, Icehouse Canyon, Cascade Canyon, Cedar, Falling Rock, Kerkhoff and Cherry Creeks, and other Tributaries to these Creeks.

E. San Timoteo Area Streams
San Timoteo Creek, Reaches 1 and 2
Oak Glen, Potato Canyon and Birch Creeks
Yucaipa Creek

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F. Prado Area Streams
Chino Creek

G. Lake and Reservoirs
Baldwin Lake
Big Bear Lake
Jenks Lake

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## Attachment 3

LIST OF OTHER ENTITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS TO THE SAN BERNARDINO COUNTY STORM WATER CONVEYANCE SYSTEM

Government Agencies

U.S. Army Corps of Engineers
U.S. Department of Agriculture - Forest Services, San Bernardino County National Forest
California Department of Transportation (Cal Trans)
California Department of Parks and Recreation - Chino Hills State Park
Inland Valley Development Agency, San Bernardino International Trade Center And Airport

Hospitals

Bear Valley Community Hospital
Chino Community Hospital
Doctors Hospital
Kaiser Foundation Hospital
Loma Linda Community Hospital
Loma Linda University Medical Center
Mountains Community Hospital
Ontario Community Hospital
Patton State Hospital
U.S. Department of Veterans Affair - Jerry L. Pettis Memorial Veterans Medical Center
Redlands Community Hospital
St. Bernardine Medical Center
San Antonio Community Hospital
San Bernardino Community Hospital
San Bernardino County Hospital

Railroads

AT&SF Railway Company
Southern Pacific Railroad Company

School Districts

Alta Loma Elementary School District
Bear Valley Unified School District
Central Elementary School District
Chaffey Joint Union High School District
Chino Unified School District

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Colton Joint Unified School District
Cucamonga Elementary School District
Etiwanda Elementary School District
Fontana Unified School District
Mountain View Elementary School District
Mt. Baldy joint Elementary School District
Ontario-Montclair Elementary School District
Rialto Unified School District
Rim of the World Unified School District
Redlands Unified School District
San Bernardino City Unified School District
Upland Unified School District
Yucaipa Joint Unified School District

Universities and Colleges

California State University - California State University San Bernardino
San Bernardino Community College District - Chaffey College Campus
San Bernardino Community College District - Crafton Hills College Campus
San Bernardino Community College District - San Bernardino Valley College Campus
University of Redlands
Loma Linda University

Water Districts

Big Bear Municipal Water District
Chino Basin Municipal Water District
Cucamonga County Water District
East Valley Water District
Monte Vista Water District
San Bernardino Valley Municipal Water District
West San Bernardino County Water District
Yucaipa Valley Water District

Transportation

Omnitrans
Metrolink (Fontana, Montclair, Ontario, Rancho Cucamonga, Rialto, San Bernardino)
Redlands Municipal Airport
Rialto Municipal Airport
Chino Airport
Cable Airport

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Other Potential Dischargers

United States Postal Service
California National Guard

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

MONITORING AND REPORTING PROGRAM NO. 96-32
NPDES NO. CAS618036
FOR
THE SAN BERNARDINO COUNTY TRANSPORTATION/FLOOD CONTROL DEPARTMENT, THE COUNTY OF SAN BERNARDINO, AND THE INCORPORATED CITIES OF SAN BERNARDINO COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

## I. GENERAL

1. Revisions of the monitoring and reporting program may be necessary to ensure that the discharger is in compliance with requirements and provisions contained in this order. Revisions may be made by the Executive Officer at any time during the term of this order, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

2. All sample collection, handling, storage, and analyses shall be in accordance with 40 CFR Part 136.

3. The permittees are authorized to complement monitoring data from other sources provided those sources are identical to sources in the Santa Ana Watershed.

4. The permittees shall implement the Consolidated Program for Water Quality Monitoring (submitted as part of the Report of Waste Discharge) until development and implementation of an acceptable watershed monitoring program.

## II. OBJECTIVES

The overall goal of this monitoring program is to develop and support an effective watershed management program. The following are the major objectives:

1. To define water quality status, trends, and pollutants of concern.

2. To characterize pollutants and to assess the influence of land use on water quality.

3. To identify significant water quality problems related to storm water discharges within the watershed.

4. To identify other sources of pollutants in storm water run-off to the extent possible (e.g., atmospheric deposition, contaminated sediments, other nonpoint sources, etc.).

5. To verify and to control illicit discharges.



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6. To identify those waters which without additional action to control pollution from storm water discharges cannot reasonably be expected to attain or maintain applicable water quality standards or the goals and requirements of the Basin Plan.

7. To evaluate the effectiveness of existing management programs, including an estimate of pollutant reductions achieved by the structural and nonstructural BMPs.

8. To evaluate costs and benefits to the stakeholder including the public.

The Regional Board recognizes that these objectives may not be attainable during this permit period and authorizes the Executive Officer to evaluate and determine adequate progress toward meeting each objective.

## III. MONITORING PROGRAM REQUIREMENTS

The permittees shall develop and submit for approval of the Executive Officer an integrated monitoring program geared towards achieving the above stated objectives. In developing this program, the principal permittee is encouraged to seek cooperation with the permittees from the Riverside and Orange counties. The Executive Officer or his/her designated representative(s) shall facilitate the coordination meetings or subcommittees formed to achieve this goal. The development and implementation of the monitoring program shall be in accordance with the time schedules prescribed by the Executive Officer. At a minimum, the program shall include the following:

1. Uniform guidelines for quality control, quality assurance, data collection and data analyses.

2. A mechanism for the collection, analyses and interpretation of existing data from Orange, Riverside, and San Bernardino County monitoring programs. These and other data from local, regional or national sources should be utilized to characterize different storm water sources; to determine pollutant generation, transport and fate; to develop a relationship between land use, development size, storm size and the event mean concentration of pollutants; to determine spatial and temporal variances in storm water quality and seasonal and other bias in the collected data; and to identify any unique features of the Santa Ana Watershed. The permittees are encouraged to use data from similar studies, if available.

3. A description of the monitoring program including:

   a. The number of monitoring stations;
   b. Environmental indicators (e. g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;
   c. Parameters selected for field screening and for laboratory work; and

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d. Total number of samples to be collected from each station, receiving water and major outfall monitoring, frequency of sampling during wet and dry weather, short duration or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.

4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including estimated cost.

## IV. REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of U.S. EPA, Region 9, no later than November 30, of each year. This progress report may be submitted in a mutually agreed upon electronic format. At a minimum, the annual progress report shall include the following:

   a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order.

   b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the MSWMP. The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and in reducing pollutant loads in storm water discharges.

   c. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable.

   d. An analysis and discussion on the monitoring results and any impacts on the receiving waters. Also, recommendations for corrective actions during the upcoming year of MSWMP implementation and monitoring.

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e. An analysis and the effectiveness of the overall storm water management program. The permittees identification of proposed programs which will result in the attainment of the water quality standards, and a time schedule to implement the new programs.

f. An assessment of the public education program (including industrial facilities and construction sites) and educational activities proposed for the upcoming year.

g. A progress report on the prosecution of illegal dischargers and reduction or elimination of illegal discharges.

3. Permittees shall be responsible for the submittal of all required information/materials needed to comply with this order in a timely manner to the principal permittee. All such submittal shall be signed by a duly authorized representative of the permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| ITEM | DUE DATE |
|---|---|
| Revised Implementation Agreement | June 1, 1996 |
| Municipal Activities Pollution Prevention Strategy | December 1, 1996 |
| Report on illegal/illicit connections | April 30, 1997 |
| Fiscal Analyses Report | August 31 of each year |
| Report on Illicit/Illegal Discharges | April 30 of each year |
| Annual Report | November 30 of each year |

Ordered by _____

Gerard J. Thibeault
Executive Officer

March 8, 1996

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State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

**ORDER NO. 94-082**
**NPDES PERMIT NO. CAS063339**
**WASTE DISCHARGE REQUIREMENTS**
**FOR**
**STORM WATER MANAGEMENT/URBAN RUNOFF DISCHARGES**
**FOR**
**VENTURA COUNTY FLOOD CONTROL DISTRICT,**
**COUNTY OF VENTURA, AND THE CITIES OF VENTURA COUNTY**

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter called the Regional Board), finds that:

1. The Ventura County Flood Control District (VCFCD), the County of Ventura, and the Cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura, Santa Paula, Simi Valley, and Thousand Oaks (hereinafter referred to separately as Co-Permittees and jointly as the Discharger) have joined together to form the Ventura Countywide Storm Water Management Program, and petition to be covered by a single National Pollutant Discharge Elimination System (NPDES) permit for publicly owned municipal storm drains in Ventura County under their jurisdiction.

2. The Discharger submitted a two-part permit application (hereinafter called the Application) to the Regional Board for issuance of waste discharge requirements under the NPDES. Part 1 of the Application was submitted on January 19, 1994, and Part 2 was submitted on April 1, 1994. This Application included all the Co-Permittees except the City of Oxnard, which had submitted its own Part 1 permit application on May 18, 1992, and Part 2 on May 17, 1993.

3. Approximately thirty four square miles of unincorporated Ventura County are tributary to Malibu Creek, and ultimately to Santa Monica Bay in Los Angeles County. The County of Ventura was not included as a Co-Permittee of NPDES Permit No. CA0061654 issued for the Los Angeles County municipal storm water systems, but subsequently agreed to become a Co-Permittee of that permit. Currently the County of Ventura is in compliance with conditions of that permit. Upon the expiration of NPDES Permit No. CA0061654, this area may request to become a Co-Permittee to the Ventura County NPDES permit.

4. Approximately nine square miles of the City of Thousand Oaks are tributary to Malibu Creek in Los Angeles County, and ultimately to Santa Monica Bay. This portion of the City is not covered by the Los Angeles County Municipal Storm Water Permit.



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The City of Thousand Oaks initially applied for a separate NPDES permit for this portion of the city and submitted their NPDES application Part 1 in March 1992, and Part 2 on March 25, 1993. To avoid duplication of reporting requirements, the City of Thousand Oaks, including the portion tributary to Malibu Creek, became a single Co-Permittee under the Ventura County NPDES permit.

5. The applications submitted by the Discharger, the City of Oxnard, and the City of Thousand Oaks are collectively referred to as the Application Package. The information contained in the Application Package is generally found by the Regional Board to satisfy the NPDES permit application requirements of the United States Environmental Protection Agency (EPA) for municipal storm water discharges.

6. The area subject to permit requirements includes all areas within the boundaries of the cities as well as unincorporated areas of Ventura County defined as urban by the U.S. Census Bureau (Figure 1). Municipal storm drain systems in this area discharge either directly into the Pacific Ocean or one of five major water bodies:

| Water Body | Receives Municipal Storm Drain Discharges from: |
|---|---|
| Ventura River | City of Ojai, City of San Buenaventura (part), unincorporated Ventura County (part) |
| Santa Clara River | City of Fillmore, City of Oxnard (part), City of San Buenaventura (part), City of Santa Paula, unincorporated Ventura County (part) |
| Calleguas Creek | City of Camarillo, City of Moorpark, City of Simi Valley, City of Thousand Oaks (part), unincorporated Ventura County (part) |
| Malibu Creek | City of Thousand Oaks (part), unincorporated Ventura County (part) |
| Bays/ Estuaries | City of Oxnard (part), City of Port Hueneme, City of San Buenaventura (part) |

7. In the Application, the Discharger proposed the Ventura Countywide Storm Water Management Plan (hereinafter called the Plan) which describes in detail all group activities and entity-specific activities. The Plan also describes management measures that are included and how they are organized; it lists tasks required to accomplish the measures, the schedule for implementation, and specific goals. The schedule and tasks are projected for the 5-year permit period. An outline of the Plan is presented in Table 1. The Plan will be applied to all areas within Ventura County that are subject to permit requirements, and supersedes storm water management plans presented in the



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separate Part 2 permit applications submitted by the City of Oxnard and the City of Thousand Oaks.

8. The Co-Permittees are separate legal entities and have the authority to develop, administer, implement, and enforce storm water management programs within their own jurisdiction. The Plan defines certain storm water discharge requirements that apply to the Discharger, and others that apply to specific Co-Permittees. Each Co-Permittee shall be responsible for compliance with relevant portions of this permit within their jurisdiction.

9. The Water Quality Act of 1987 added Section 402(p) to the Federal Clean Water Act (CWA). This section requires the EPA to establish regulations setting forth NPDES requirements for storm water discharges. The first phase of these requirements is directed at municipal separate storm drainage systems serving a population of 100,000 or more and storm water discharges associated with industrial activities, including construction activities. Other dischargers, including municipalities with a population of less than 100,000, for which the EPA Administrator or the State determines that the storm water discharge contributes to a violation of a water quality standard, or is a significant contributor of pollutants to waters of the United States, may also be subject to NPDES requirements. On November 16, 1990, EPA published these final regulations in the Federal Register under Part 122. For municipalities serving a population greater than 100,000, the regulations detail a two-part application process. Part 1 of the application requires a summary of existing programs and resources. Part 2 of the application requires the proposed management program to address pollutant discharges from the municipal storm drain system.

10. The Federal Clean Water Act allows EPA to delegate its NPDES permitting authority to states with an approved environmental regulatory program. The State of California is a delegated State. The Porter-Cologne Water Quality Control Act (California Water Code) authorizes the State Water Resources Control Board, through the Regional Boards, to regulate and control the discharge of pollutants into waters of the state and tributaries thereto.

11. California Water Code Section 13263(a) specifies that waste discharge requirements issued by Regional Boards include provisions to implement water quality based objectives. Numerical water quality objectives are not provided in this Order because information is not available to establish appropriate numerical limits and determine locations where Co-Permittees shall be made accountable. The requirements in this Order will provide the data necessary to make these determinations while concurrently achieving reductions in pollutant loads to water bodies from storm water runoff. Numerical criteria may be developed in the future.



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12. Section 6217(g) of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) requires coastal states with approved coastal zone management programs to address non-point pollution impacting or threatening coastal water quality. CZARA address five sources of non-point pollution: agriculture, silviculture, urban, marinas, and hydromodification. This NPDES permit addresses the management measures required for the urban category.

13. Storm water discharges consist of surface runoff generated from various land uses in all the hydrologic drainage basins which discharge into waters of the State. The quality of these discharges varies and is affected by hydrology, geology, land use, season, and sequence and duration of hydrologic events. The pollutants of concern in these discharges include, but are not limited to, total suspended solids (TSS), total dissolved solids (TDS), chemical oxygen demand (COD), biochemical oxygen demand (BOD), oil and grease, total and fecal coliform and enterococci bacteria, heavy metals, nutrients, sediments, petroleum hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), pesticides, and herbicides.

14. This permit is intended to develop, achieve, and implement a timely, comprehensive, and cost-effective storm water pollution control program to minimize pollutants in storm water discharges to waters of the United States from Ventura County.

15. The Application designates the VCFCD as the Principal Co-Permittee for permit implementation while the remaining entities, including the County of Ventura and the ten cities, are designated as Co-Permittees. The Application contains the following Implementation Agreement between the Principal Co-Permittee and the Co-Permittees:

As the Principal Co-Permittee, VCFCD shall:

a. Coordinate permit activities;
b. Establish uniform data submittal format;
c. Set time schedules;
d. Prepare regulatory reports;
e. Forward information to the Co-Permittees;
f. Arrange for public review;
g. Secure services of consultants as necessary;
h. Implement activities of common interest;
i. Develop/prepare/generate all materials and data common to all Co-Permittees;
j. Update Co-Permittees on Regional Board and EPA regulations; and
k. Arrange for collection and payment of annual permit renewal fee.



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All Co-Permittees shall:

a. Comply with the requirements of the permit within their own jurisdictional boundaries;
b. Prepare and provide to the Principal Co-Permittee permit-required submittals; and
c. Develop programs to address:
   - Implementation of controls to reduce pollution from commercial, industrial, and residential areas;
   - Implementation of structural/non-structural controls on land development and construction sites;
   - Implementation of controls to reduce pollution from maintenance activities;
   - Elimination of illegal connections, including discouragement of improper disposal, encouragement of spill prevention and containment, and implementation of appropriate spill response;
   - Inspection monitoring and control programs for industrial facilities; and
   - Implementation of public awareness and training programs.

16. Within its own jurisdiction, each Co-Permittee is responsible for adoption and enforcement of storm water pollution prevention ordinances, implementation of self-monitoring programs and Best Management Practices (BMPs), and conducting applicable inspections. The Principal Co-Permittee shall be responsible for the preparation and submittal of progress and annual reports to the Regional Board.

17. The Regional Board may require a separate NPDES permit for, or to modify this Order to include, as a Co-Permittee, any entity which discharges storm water in the portion of Ventura County. Such entity can be any State or Federal agency, State or Federal facility, real estate development, waste disposal facility, special district, private interest, etc. Pursuant to 40 CFR 122.26(a), the Regional Board will give these entities the option to become a Co-Permittee or obtain an individual storm water discharge permit.

18. The State Water Resources Control Board adopted a revised Water Quality Control Plan for Ocean Waters of California (Ocean Plan) on March 22, 1990. The Ocean Plan contains water quality objectives for the coastal waters of California.

19. This Regional Board adopted a revised Water Quality Control Plan for the Santa Clara River Basin (Basin Plan) on June 3, 1991. The Basin Plan incorporates the Ocean Plan and lists the following existing beneficial uses that apply (depending on the specific receiving waters) to the Ventura County water bodies and their tributary streams:



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a. Municipal and Domestic Supply
b. Agricultural Supply
c. Industrial Service Supply
d. Industrial Process Supply
e. Ground Water Recharge
f. Freshwater Replenishment
g. Navigation
h. Hydropower Generation
i. Water Contact Recreation
j. Non-contact Water Recreation
k. Ocean Commercial and Sport Fishing
l. Warm Freshwater Habitat
m. Cold Freshwater Habitat
n. Preservation of Areas of Special Biological Significance
o. Saline Water Habitat
p. Wildlife Habitat
q. Preservation of Rare and Endangered Species
r. Marine Habitat
s. Fish Migration
t. Fish Spawning
u. Shellfish Harvesting

20. The requirements contained in this Order, as they are met, will be in conformance with the goals of the Water Quality Control Plans.

21. The issuance of waste discharge requirements for this discharge is exempt from the provisions of the California Environmental Quality Act (CEQA), Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code in accordance with Section 13389 of the California Water Code.

The Board has notified the Discharger and interested agencies and persons of its intent to issue waste discharge requirements for this discharge, and has provided them with an opportunity to submit their written views and recommendations.

The Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) Permit, pursuant to Section 402 of the Federal Clean Water Act, or amendments thereto, and shall take effect at the end of ten days from the date of its adoption provided the Regional Administrator of the EPA has no objections.



R0061498

**IT IS HEREBY ORDERED** that the Ventura County Flood Control District, the County of Ventura, and the Cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura, Santa Paula, Simi Valley, and Thousand Oaks, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and regulations and guidelines adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Non-storm water discharges entering storm drainage systems without a NPDES permit are prohibited. This prohibition does not apply to the following types of non-storm water discharges unless the Regional Board determines that these discharges cause specific receiving water limit violations:

   a. Water line flushing;
   b. Landscape irrigation;
   c. Diverted stream flows;
   d. Rising ground waters;
   e. Uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to separate storm sewers;
   f. Uncontaminated pumped ground water;
   g. Discharges from potable water sources;
   h. Foundation drains;
   i. Air conditioning condensate;
   j. Irrigation water;
   k. Natural springs;
   l. Water from crawl space pumps;
   m. Footing drains;
   n. Lawn watering;
   o. Individual residential car washing;
   p. Flows from riparian habitats and wetlands;
   q. Dechlorinated swimming pool discharges;
   r. Discharges or flows from emergency fire fighting activities;
   s. Other types of discharges identified and recommended in annual reports by the Discharger, as approved by the Executive Officer of the Regional Board.

2. The discharges of storm water containing pollutants which have not been reduced through measures identified in the Plan, to the maximum extent practicable, are prohibited.



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B. RECEIVING WATER LIMITATIONS

1. The Discharger shall not allow the following conditions to create a condition of nuisance or to adversely affect beneficial uses of waters of the State:

   a. Floating, suspended, or deposited macroscopic particulate matter, or foam;

   b. Bottom deposits or aquatic growths;

   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

   d. Visible, floating, suspended or deposited oil or other products of petroleum origin; or

   e. Toxic or deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge shall not cause a violation of any applicable water quality objective for receiving waters contained in the Ocean Plan or the Basin Plan. If different applicable water quality objectives are adopted after the date of adoption of this Order, the Regional Board may revise and modify this Order, as appropriate.

C. PROVISIONS

1. The Discharger shall demonstrate compliance with Discharge Prohibitions A.1 and A.2 and Receiving Water Limitations B.1 and B.2 through the timely implementation of control measures and other actions to reduce pollutants in the discharge as proposed in the Plan. As such, the Plan submitted by the Discharger is an integral and enforceable component of this Order. Any subsequent modifications, revisions, or amendments must be approved by the Executive Officer of the Regional Board. Each of the Co-Permittees need only to comply with the permit conditions (including Discharge Prohibitions A.1 and A.2 and Receiving Water Limitations B.1 and B.2) applicable to discharges from the municipal separate storm drains for which they are operators.

2. The Discharger shall implement the following storm water management program areas during the 5-year permit period. The Plan includes appropriate



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source control best management practices (BMPs) and treatment control BMPs that are implemented through education, regulation and public agency activities.

a. **Programs for residents.** Programs that implement appropriate storm water pollution control measures for residents, provide municipal oversight and regulation of these programs, and educate residents about control measures for storm water pollutants generated by residents.

b. **Programs for industrial/commercial businesses.** Programs to incorporate storm water pollution control duties into current municipal programs regulating businesses in Ventura County. These programs will define priority businesses, identify storm water pollution controls that priority businesses will conduct, provide municipal oversight/regulation of these programs, and educate businesses and residents about these programs.

c. **Programs for public infrastructure.** Programs to implement storm water pollution controls into the planning, administration, operation, and maintenance of public facilities.

d. **Programs for illicit discharge control.** Programs that seek to prevent, detect, locate, and properly control illicit discharges to the storm drain system. Each Co-Permittee shall adopt requirements as described in the Plan that effectively prohibit non-storm water discharges into the storm drains.

e. **Programs for land development.** Programs that implement storm water pollution control consideration into land development planning activities, and educate those involved in land development about these programs.

f. **Programs for construction sites.** Programs that implement storm water pollution controls into the Co-Permittee public works construction projects, refine the Co-Permittee regulatory programs for construction projects by private entities and other public agencies, and educate construction workers and site inspectors about these programs.

3. The Discharger shall implement the Plan in two phases (as described in Section 4.4 of the Plan). An initial implementation phase shall begin when this permit is adopted and the full implementation phase shall begin 18 month thereafter. During the initial implementation phase, the Co-Permittees will begin to



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implement select storm water management programs as detailed in the Plan. A summary of the schedule for the initial implementation phase is presented as following:

| Storm Water Management Program | Co-Permittee Specific Program Begins by |
|---|---|
| Programs for Residents<br>- General Public Information/Participation Program<br>- Refuse Disposal Practices | <br>September, 1994<br>August, 1995 |
| Programs for Industrial/Commercial Businesses<br>- Specific Business Outreach Programs<br>Automobile Services<br>Restaurants | <br><br>February, 1996<br>August, 1996 |
| Programs for Public Infrastructure<br>- Education for Public Agencies and Employees | <br>August, 1995 |
| Programs for Illicit Discharge Control<br>- Illicit Discharge Investigation | <br>September, 1994 |
| Programs for Land Development<br>- Education/Outreach to Land Developers<br>- Land Use Planning and Zoning<br>- Development Standards and Reviews<br>- Permits and Inspection | <br>September, 1994<br>August, 1995<br>August, 1995<br>August, 1995 |
| Programs for Construction Sites<br>- Education/Outreach to Construction Site Personnel | <br>September, 1994 |

The remaining programs in the Plan shall be implemented during the full implementation phase. Program work plans for the full implementation phase shall be prepared as necessary and presented as part of regular annual and semi-annual progress reports to the Regional Board.

4. The City of Thousand Oaks, when implementing control measures and other actions for specific pollutant sources and activities observed to occur within the area tributary to Malibu Creek, will, to the maximum extent practicable, achieve consistency with the waste discharge requirements issued to Los Angeles County municipal storm water systems (NPDES Permit No.



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CA0061654) and amendments thereto. To achieve this, the City of Thousand Oaks shall submit all the required up-to-date program elements that apply to the Phase I cities, as defined in the Los Angeles County Permit, by September 18, 1994.

5. It is anticipated that the initial storm water management program, as delineated in the Plan and/or implementation agreement, may need to be modified, revised, or amended from time-to-time to respond to changed conditions and to incorporate more effective approaches to pollutant control. Minor changes may be made at the direction of the Executive Officer. Minor changes requested by the Discharger shall become effective upon written approval of the Executive Officer. If proposed changes imply a major revision in the overall scope of effort of the program, such changes must be approved by the Regional Board as permit amendments.

6. This Order may be modified, revoked, or reissued, prior to the expiration date as follows:

   a. To address changed conditions identified in the required technical reports or other sources deemed significant by the Regional Board;

   b. To incorporate applicable requirements or statewide water quality control plans adopted by the State Board or amendments to the Basin Plan;

   c. To comply with any applicable requirements, guidelines, or regulations issued or approved under Section 402(p) of the CWA, if the requirement, guideline, or regulation so issued or approved contains different conditions or additional requirements not provided for in this Order. The Order as modified or reissued under this paragraph shall also contain any other requirements of the CWA then applicable; or

   d. Any CWA reauthorization.



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7. This Order expires on August 10, 1999. The Discharger must submit a Storm Water Management Plan in accordance with Title 23, California Code of Regulation, not later than 180 days in advance of such date as application for reissuance of waste discharge requirements.

I, Robert P. Ghirelli, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on August 22, 1994.

Robert P. Ghirelli

ROBERT P. GHIRELLI, D.Env.
Executive Officer



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ATTACHMENTS:

TABLE 1 Outline of the Ventura Countywide Storm Water Management Plan.

FIGURE 1 Map of Area Subject to Permit Requirements



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Table 1
**Outline of the Ventura Countywide Storm Water Management Plan**

**Programs for Residents**
A. General Public Information/Participation Program
B. Refuse Disposal Practices
C. Yard/Landscape Maintenance Practices
D. Vehicle Maintenance Practices

**Programs for Industrial/Commercial Businesses**
A. Specific Business Outreach Programs
B. Enforcement Programs
C. Hazardous Material Control Programs
D. Pretreatment/Source Control Programs

**Programs for Public Infrastructure**
A. Education for Public Agencies and Employees
B. Drainage System Operation & Maintenance
C. Roadway Operation & Maintenance
D. Landscape Maintenance
E. Co-Permittee Corporation Yards
F. Wastewater Collection Systems
G. Solid Waste Collection and Disposal

**Programs for Illicit Discharge Control**
A. Public Reporting
B. Illicit Discharge Investigation
C. Spill Control Programs
D. Water Conservation/Reuse

**Programs for Land Development**
A. Education/Outreach to Land Developers
B. Land Use Planning and Zoning
C. Development Standards and Reviews
D. Permits and Inspection

**Programs for Construction Sites**
A. Education/Outreach to Construction Site Personnel
B. Co-Permittees Public Works Projects
C. Public Agency and Private Sector Projects



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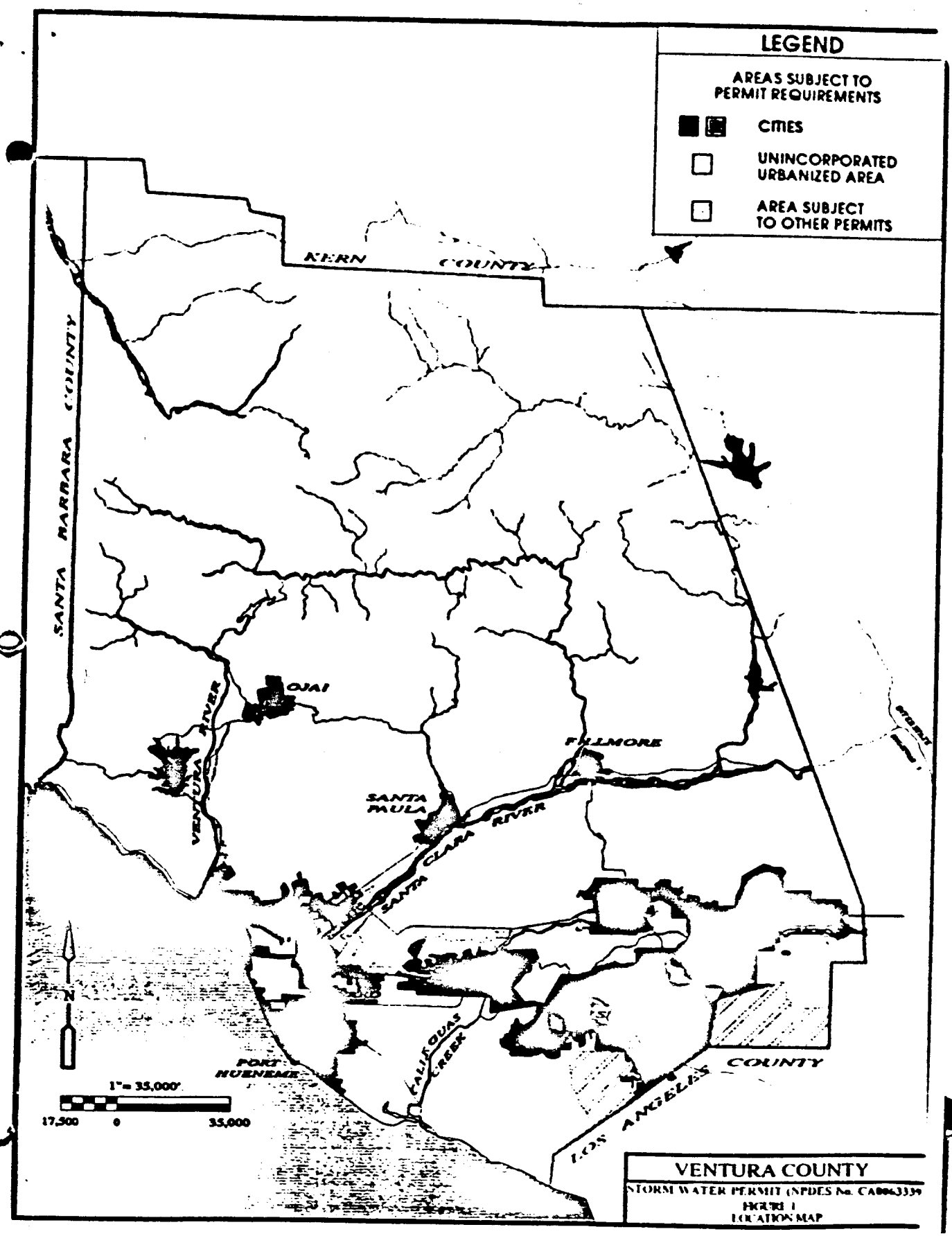


VENTURA COUNTY
STORM WATER PERMIT (NPDES No. CA0063339
FIGURE 1
LOCATION MAP

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State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. CI 7388
FOR
STORM WATER MANAGEMENT/URBAN RUNOFF DISCHARGES
FOR
VENTURA COUNTY FLOOD CONTROL DISTRICT,
COUNTY OF VENTURA, AND THE CITIES OF VENTURA COUNTY

NPDES PERMIT NO. CAS063339

I. Reporting Requirements

A. The Discharger shall develop, and submit to the Regional Board by March 1, 1995, an internal audit program to verify the timely and comprehensive implementation of the Plan by each Co-Permittee. The Principal Co-Permittee shall be responsible for carrying out such a program and reporting to the Regional Board the result of the audit in the annual report.

B. The Discharger shall submit, by March 1 of each year, a semi-annual progress report documenting the progress of the implementation of the Plan.

C. The Discharger shall submit, by September 1 of each year, an annual report documenting the status of all the general program and individual tasks contained in the Plan. The annual report shall be a detailed compilation of all the deliverables and milestones completed as described in the Plan. On an annual basis, each Co-Permittee shall conduct an evaluation of the effectiveness of its scheduled activities as described in the Plan. Measures of effectiveness include, but are not limited to, quantitative monitoring to assess the effectiveness of control measures, detailed accounting of program accomplishments, funds expended, and staff hours utilized. This annual report shall provide an overall evaluation of the program and set forth plans and a schedule of implementation for the upcoming year.

D. All applications, reports, or information submitted to the Regional Board shall be signed and certified pursuant to EPA regulations 40 CFR 122.41 (k).

II. Monitoring Requirements

A. The Discharger shall develop and submit to the Regional Board all available water quality data and flow data from 1980 to the present to facilitate identification of sources of pollutants present in discharges from the areas subject to the requirements of this permit. These data must be submitted to the Regional Board by November 22, 1994.



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B. The Discharger shall implement the Countywide Monitoring Plan, as described in Chapter 6 of the Application, which will address discharge characterization (outfall monitoring), pollutant source identification, receiving water quality impacts, and management program effectiveness. To achieve this, the Discharger shall:

1. Conduct outfall monitoring at six sites, during a minimum of three storm events per year, to characterize storm water runoff from various land uses: one commercial, two industrial, two residential, and one agricultural. This program shall be in place and operational prior to October 1, 1994.

2. Conduct receiving water monitoring during a minimum of three storm events at two sites in a major tributary to the Arroyo Simi, upstream and downstream of its passage through the urban area. This program shall be conducted in conjunction with the outfall monitoring.

3. Analyze the monitoring samples, at a minimum, for the following constituents:

Composite samples:
- Dissolved and total recoverable metals including arsenic, cadmium, chromium (total), copper, lead, nickel, selenium, silver, and zinc;
- Biochemical oxygen demand ($BOD_5$), chemical oxygen demand (COD), total organic carbon (TOC), total dissolved solids (TDS), total suspended solids (TSS), and total hardness;
- Total phosphorous, ortho-phosphorous, nitrate nitrogen, organic nitrogen, and ammonia nitrogen;
- Acute toxicity using fathead minnow (*Pimephales promelas*)[1].

Grab samples:
- Field pH and field specific conductance;
- Oil and Grease and total recoverable petroleum hydrocarbons;
- Total and fecal coliform, and fecal streptococcus;
- Total mercury;
- Volatile organics and semi-volatile organics.

[1]This analysis shall be done for two storm events per year for all stations except for the agriculture land use area.



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Samples from agricultural land uses shall also be analyzed for organochlorine and organophosphate pesticides and chlorinated herbicides.

4. Use the results of the annual outfall monitoring and illicit discharge program along with a review of potential pollutant sources, to select suspected pollutant sources. Verify this selection using grab sampling during storm events to identify the presence and concentration of specific pollutants in storm water runoff from the identified areas or facilities. Identify toxicity and schedule for Toxicity Identification Evaluations (TIE), as necessary, in the annual reports.

5. Employ appropriate techniques to evaluate the monitoring data and produce pollutant load estimates, identify long term storm water pollutant loading trends, and assess receiving water quality impacts.

The above monitoring program, or subsequent modification thereto, shall become effective when Order No. 94-082 is adopted. All reports shall be signed by a responsible officer or duly authorized representative (as specified in 40 CFR Section 122.2) of the Discharge and submitted under penalty of perjury.

Ordered by:

Robert P Ghirelli

ROBERT P. GHIRELLI, D.Env
Executive Officer

Date: August 22, 1994

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STATE OF CALIFORNIA - Environmental Protection Agency
PETE WILSON, Governor
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
3614 East Ashlan Avenue
Fresno, CA 93726
PHONE: (209) 445-5116
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| To MARK BUMFORD | From D. EVENSEN |
|---|---|
| Co. | Co. |
| Dept. | Phone # |
| Fax # | Fax # |

29 September 1994

CERTIFIED MAIL
P 044 443 381

Mr. Doug Harrison, General Manager
Fresno Metropolitan Flood Control District
5469 East Olive Avenue
Fresno, CA 93727

**TRANSMITTAL OF ADOPTED WASTE DISCHARGE REQUIREMENTS FOR FRESNO METROPOLITAN FLOOD CONTROL DISTRICT, CITY OF FRESNO, CITY OF CLOVIS, COUNTY OF FRESNO, CALIFORNIA STATE UNIVERSITY FRESNO AND CALTRANS, URBAN STORM WATER DISCHARGES, FRESNO COUNTY**

Enclosed is an official copy of Order No. 94-244 as adopted by the California Regional Water Quality Control Board, Central Valley Region, at its 16 September 1994 meeting.

BERT L. VAN VORIS
Supervising Engineer
RCE No. 24105

DE:cjs

Enclosures: Adopted Order
Standard Provisions (Discharger only)

cc: Office of the Chief Counsel, State Water Resources Control Board, Sacramento
Bruce Fujimoto, Division of Water Quality, State Water Resources Control Board, Sacramento
U.S. Environmental Protection Agency, Region 9, San Francisco
Robert L. Binger, District Director, California Department of Transportation, District 6, Fresno
Ray Salazar, Acting Director of Public Works, City of Fresno
Cecil Leonardo, Public Utilities Director, City of Clovis
Richard Welton, Director of Public Works and Development Services, County of Fresno
David Terstegen, Director of Environmental Health and Occupational Safety, Office of Environmental & Occupational Health, CSUF
Nancy Gardner, Project Manager, Woodward-Clyde Consultants, Oakland
Michael Drennan, Principal, Michael Drennan Associates, Pacific Palisades

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 94-244

NPDES NO. CA0083500

# WASTE DISCHARGE REQUIREMENTS FOR FRESNO METROPOLITAN FLOOD CONTROL DISTRICT CITY OF FRESNO, CITY OF CLOVIS COUNTY OF FRESNO CALIFORNIA STATE UNIVERSITY FRESNO AND CALTRANS URBAN STORM WATER DISCHARGES FRESNO COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The Fresno Metropolitan Flood Control District (District), City of Fresno, City of Clovis, County of Fresno (County), California State University Fresno (CSUF), and Caltrans (hereafter referred to separately as Permittees and jointly as the Discharger) submitted Part 1 of a National Pollutant Discharge Elimination System (NPDES) area-wide municipal storm water permit application on 18 May 1992, and Part 2 of the application on 17 May 1993. They request an NPDES permit for continued discharge of urban storm water runoff. They propose to implement their "Storm Water Quality Management Plan" dated 17 May 1993 (hereafter SWMP) within District boundaries.

2. The City of Fresno is defined as a medium municipality (population greater than 100,000 but less than 250,000) in Appendix G to Part 122 of Title 40 of the Code of Federal Regulations (40CFR). The District owns and operates the municipal separate storm sewer system for the Cities of Fresno and Clovis, and portions of the County.

3. The permit application designates the District as the lead agency for permit implementation and the other Permittees as co-permittees. As lead agency, the District will compile and submit annual reports to the Board, and serve as primary contact and liaison with the Board regarding permit matters.

4. The Permittees are legal entities with authority to develop, administer, implement, and enforce storm water management programs within their own jurisdictions (See Attachment A, Vicinity Map). Each Permittee is responsible for compliance of this Order for portions under their jurisdiction. If a Permittee is in noncompliance with the terms of the permit for its jurisdiction, the Board may consider taking enforcement action against only that specific Permittee. To provide the additional legal authority required by 40 CFR 122.26(d)(2)(i), the Discharger is preparing a master storm water

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quality ordinance and accompanying memoranda of understanding between the participating Permittees, and proposes to make them effective by 1 July 1996.

5. All applicants must obtain a permit because:

   a. The District is the primary owner/operator of the municipal separate storm sewer system which serves the urbanized portion of the permit area;

   b. The cities of Fresno and Clovis, and the County, control development and land use in the permit area and are responsible for construction and maintenance of streets and roads;

   c. The County owns and operates limited roadway drains along the outskirts of the urban area.

   d. The CSUF owns and operates a storm sewer system for its campus which discharges to the District system; and,

   e. Caltrans owns and operates major transportation corridors in the Fresno-Clovis metropolitan area, which discharge into the District's system or directly to waters of the United States.

6. Parts I and II of the permit application include pertinent information required by 40CFR 122.26(d)(1&2). Part II of the application includes the SWMP, which describes in detail all group and entity-specific activities that will be conducted over the 5-year term of this Order. The SWMP describes the Best Management Practices (BMPs) currently being implemented, and proposed BMPs to be implemented. It defines the goals and objectives of the BMPs, and provides a detailed list of tasks required to implement and evaluate the BMPs with an implementation schedule.

7. The permit area is defined in the Fresno-Clovis Storm Water Quality Management Program Part 2 NPDES Storm Water Permit Application. The permit area is defined by the District's Storm Drainage and Flood Control Master Plan drainage area boundaries and the County's Copper-Friant Study Area which lies adjacent to the District's northern boundary between the San Joaquin River and the Friant-Kern Canal. The permit area encompasses approximately 127,000 acres. The permit area includes future urban drainage service areas that will be established by the Permittees during the term of the permit.

8. Predominant land use types within County jurisdiction include agriculture, open space, and rural land development. It is not the intent of the federal storm water regulations

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to regulate storm water discharges from land used in this manner (40CFR 122.26 (a)(v)).

9. The term "storm water", as used in this permit, includes storm water runoff, snowmelt runoff, and surface runoff and drainage from areas other than those land use types identified in Finding No. 8.

10. This permit regulates the discharge of all wet weather urban storm runoff and dry weather runoff generated from drainage areas within the jurisdiction of the Discharger, as it depicted in Figure 5-2 of Part 1 of the application, that discharge to waters of the United States. Waters of the U.S. receiving runoff include the San Joaquin River, other eastside streams, and valley floor waters, including Fresno Irrigation District canals. The Discharger identified major outfalls defined in 40 CFR 122.26(b)(5) as outfalls with a pipe diameter of 36 inches or greater from various land use watersheds (or drainage areas 50 acres or greater), and outfalls with a pipe diameter of 12 inches or greater (or drainage areas 2 acres or greater) from industrial land use drainage areas in the SWMP. There are seven major outfalls that discharge to the San Joaquin River, four of which discharge directly to the river without prior detention. Thirty major outfalls discharge to the Fresno Irrigation District's irrigation canals or channels, including nine outfalls which have no prior detention.

11. Precipitation in the Fresno-Clovis metropolitan area, as measured at the Fresno Air Terminal weather station, averages 10.7 inches per year.

12. Industrial facilities within the permit area discharge urban storm water runoff to storm sewers, maintained channels, and natural watercourses within the jurisdiction of the Discharger. These discharges contain typical urban storm water runoff pollutants and may also contain pollutants from industrial activities.

13. National and local studies have documented that urban storm water runoff can contribute significant levels of pollutants to receiving waters and may impact beneficial uses. The Nationwide Urban Runoff Program (NURP) Study concluded that discharges of urban storm water runoff were one of the main unregulated sources of pollutants to waters of the United States. The Fresno NURP Study, conducted in 1984, and studies done by the Board in the Sacramento area have documented a seasonal flush of metals, oils, and grease during the first few storms of the wet season.

14. Section 402(p) of the Clean Water Act (CWA) as amended by the Water Quality Act of 1987 (WQA), requires that persons who discharge storm water from separate municipal storm sewer systems obtain NPDES permits and it prohibits non-storm water discharges into these systems. On 16 November 1990, the US Environmental Protection Agency (USEPA) published regulations for storm water discharges, pursuant

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to Section 402(p). The SWMP submitted by the Discharger is Part 2 of its permit application, and dated 17 May 1993, was prepared to comply with EPA regulations codified in 40 CFR 122. The SWMP and other information contained in the Discharger's application package are generally found by Board staff to satisfy EPA's NPDES permit application requirements for medium municipal storm water discharges, except for not providing adequate legal authority and, annual and seasonal pollutant load estimates.

15. The SWMP establishes a phased and tiered approach over the next five years to reduce the discharge of pollutants to storm drains within the area defined in Attachment A to the maximum extent practicable (MEP). The SWMP emphasizes pollution prevention activities through the following BMPs:

a. **Public Involvement and Education**

Educate the public to better understand and participate in the control of urban runoff pollution and to solicit support for the program.

b. **Illicit Discharges**

Identify and eliminate illicit connections and illegal dumping to the storm drain system.

c. **Operation and Maintenance**

Review and revise current maintenance practices to increase removal of storm water pollutants and reduce pollutants in storm water runoff.

d. **Structural Controls**

Continue to plan, design, and build storm water retention basins to provide storm drainage services, pollutant removal, flood control, and ground water recharge.

e. **Construction and Development**

Control storm water pollution related to construction and development.

f. **Commercial and Industrial**

Monitor and control pollutants in storm water discharges to the municipal storm water system from landfills; hazardous waste treatment, storage, disposal, and recovery facilities; and industrial facilities.

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16. The SWMP emphasizes incorporating storm water BMPs into established programs as much as possible in order to maximize the use of existing resources, minimize the risk of creating redundant and overlapping regulatory programs, and expedite the implementation of the SWMP.

17. The State Water Resources Control Board (State Board) has issued NPDES General Permits for the regulation of storm water discharges associated with industrial and construction activities. To implement the industrial, new development, and construction elements of the SWMP effectively, the Discharger will, as necessary, conduct inspection activities at industries or construction sites covered by the State NPDES General Permit. Under the CWA, the Discharger cannot directly enforce the State NPDES General Permit. However, the Discharger will have adequate legal authority (master storm water quality ordinance and accompanying memoranda of understanding between the participating permittees) to enforce its own ordinances, orders, and permits. Board staff shall coordinate activities with the Discharger to insure that industries, businesses, and developers within the permit area comply with the CWA without being subjected unnecessarily to duplicate or overlapping storm water regulatory activities.

18. The Board adopted Water Quality Control Plans for the Tulare Lake Basin and San Joaquin River Basin, Second Edition, (hereafter Basin Plans) which contain water quality objectives for all waters of the Basins. These requirements implement the Basin Plans.

19. The Basin Plans designate the beneficial uses of the San Joaquin River downstream of the discharge as municipal, domestic, industrial, and agricultural supply; water contact and non-contact water recreation; esthetic enjoyment; navigation; ground water recharge, fresh water replenishment; and preservation and enhancement of fish, wildlife and other aquatic resources.

20. As it is not feasible at this time to establish reasonable numeric effluent limits for storm water, the Discharger must reduce the discharge of pollutants to the maximum extent practicable. The Discharger proposes to accomplish this reduction through implementation of its SWMP, which is an approach acceptable to the Board. Accordingly, the SWMP shall be incorporated herein by reference and made an integral and enforceable part of this Order.

21. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Given the continuing development within the area, it is possible that future degradation in water quality could occur. The programs required pursuant to this order and implemented to the MEP constitute treatment or control of discharges intended to assure that pollution

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or nuisance will not occur and the highest receiving water quality consistent with maximum benefit to people of the State will be maintained. Hence, the discharge will not result in receiving water quality less than that prescribed in policies of the State Board.

22. Section 402(p)(4)(B) of the CWA requires that the Discharger achieve full compliance as expeditiously as practicable, but in no event later than three (3) years after issuance of this permit. Implementation of the SWMP, in accordance with its schedule, is recognized as achieving the MEP standard and will result in substantial compliance being achieved within three (3) years.

23. The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Water Code.

24. The Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

25. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

26. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided EPA has no objections.

**IT IS HEREBY ORDERED** that Fresno Metropolitan Flood Control District, City of Fresno, City of Clovis, County of Fresno, California State University Fresno, and Caltrans, their agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

**A. Discharge Prohibitions**

1. Discharge of non-storm water, except as allowed by Provision D.4. or an individual NPDES permit, is prohibited.

2. Discharge of material other than storm water is prohibited (see Provision D.2).

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**B. Discharge Specifications:**

1. The Discharger shall reduce the discharge of pollutants into the storm drainage system to the maximum extent practicable by implementing the SWMP.

**C. Receiving Water Limitations:**

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

Discharges to structural controls, such as detention and terminal basins, shall not cause underlying ground water to be degraded.

Discharges from the municipal separate storm sewer system shall not cause the following in the San Joaquin River and other receiving waters:

1. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.
2. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.
3. Aesthetically undesirable discoloration.
4. Fungi, slimes, or other objectionable growths.
5. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
6. Deposition of material that causes a nuisance or adversely affects beneficial uses.
7. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
8. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

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9. Violations of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder.

**D. Provisions:**

1. The Discharger shall comply with Prohibition A.1. by implementing and enforcing institutional controls that effectively prohibit discharge of non-storm water (except as noted in Provision D.4) through its system into waters of the United States.

2. The Discharger shall comply with Prohibition A.2. by implementing and enforcing controls on spills, dumping, and disposal of materials other than storm water into the municipal storm sewer system, and by establishing and maintaining an effective spill emergency response program to respond to and contain spills that inadvertently occur.

3. The Discharger shall comply with Discharge Specification B.1 by implementing the SWMP, pursuant to time schedules contained therein, by 17 October 1994.

4. Unless determined by the Discharger to be significant sources of pollutants, the following non-storm waters may be discharged through the storm water drainage system:

   a. water line flushing;
   b. landscape irrigation;
   c. diverted stream flows;
   d. rising ground waters;
   e. uncontaminated ground water infiltration (as defined in 40CFR 35.2005(20)) to separate storm sewers;
   f. uncontaminated pumped ground water;
   g. discharges from potable water sources;
   h. foundation drainage;
   i. air conditioning condensate;
   j. irrigation water;
   k. springs;
   l. water from crawl space pumps;
   m. footing drainage;
   n. lawn waters;
   o. individual residential car wash water;
   p. flows from riparian habitats and wetlands;

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q. dechlorinated swimming pool discharges;
r. street wash waters
s. waters from fire fighting activities

5. Major outfalls not identified in the SWMP, but constructed during the term of this Order to receiving waters identified herein, shall not be considered a material change in character, location, or volume of the permitted discharge, and shall be allowed under the terms of this Order without permit application or permit modification, provided at least 90 days prior to construction of the outfall the Discharger submits a report that includes:

a. Receiving water name;
b. Storm water outfall location map;
c. Drainage area (in acres);
d. Land use designation; and
e. Certification that the SWMP shall be amended to include the drainage area.

6. Storm water drainage areas predominantly agricultural, open space, or rural residential not subject to planned development, are not subject to this Order.

7. The Discharger shall perform the actions set forth in the SWMP and Part 2 of the application to achieve compliance with the terms of this Order, including, but not limited to:

a. Implementing the necessary legal authorities as required in 40CFR 122.26(d)(2)(i);

b. Performing inspection, surveillance, and monitoring procedures necessary to determine compliance with ordinances, permits, and other components of the SWMP;

c. Implementing programmatic functions as described in the SWMP;

d. Providing the requisite funding and personnel to implement the storm water program as described in the SWMP; and,

e. Enforcing codes, ordinances, and permits.

8. The Discharger may require that any industrial discharger with a general industrial NPDES storm water permit discharging to the municipal storm sewer system comply with more stringent local conditions specified in the SWMP, including a local prohibition. In no case shall a municipality be less stringent than

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the NPDES requirements. The Discharger shall develop appropriate legal authority to allow the Discharger to conduct adequate enforcement and compliance activities to insure an industry's compliance with the Discharger's ordinance or statute. An element of the Discharger's enforcement plan may include requesting assistance from Regional Board to pursue a noncomplying industrial facility, once the Discharger has exhausted all enforcement actions provided in its legal authority.

9. If the Discharger determines through implementation of the SWMP that a general storm water permittee (industrial and construction) may be violating the terms of the State's general storm water permit, it shall notify Board staff within 72 hours. The Discharger shall submit all documents and other pertinent information regarding the possible noncompliance, and any information regarding follow-up enforcement activities conducted by the Discharger, when requested to do so by Regional Board staff.

10. If the Discharger chooses to implement any portion of the SWMP through the use of an agency or department not under the jurisdictional control of the Discharger, it shall first enter into an intra/interagency agreement, and submit a signed copy of said agreement to the Board.

11. By 6 January 1995, the Discharger shall submit a technical report that estimates the annual average percentage of storm water that originates within the District's boundaries and flows into waters of the United States. The report shall include a rationale for the estimate and shall indicate the probable percentages of the total discharge to surface waters that will occur at each discharge location. By 7 April 1995, the Discharger shall estimate annual pollutant load and seasonal pollutant load of discharges to waters of the United States to comply with 40CFR 122.26(d)(2)(iii)(B-D).

12. By 1 July 1995, the Discharger shall submit the draft master storm water quality ordinance and accompanying draft memoranda of understanding between the participating Permittees. By 1 July 1996, the Discharger shall submit the adopted master storm water quality ordinance and accompanying memoranda of understanding to comply with 40CFR 122.26(d)(2)(i) for adequate legal authority.

13. The Discharger shall update the data regarding regulated industrial dischargers at least annually.

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14. The SWMP, and any modifications or revisions to the SWMP that are approved in accordance with Provision D.16 of this Order, are an enforceable component of this Order. The timely implementation of BMPs and other actions to reduce pollutants in storm water discharges in accordance with the SWMP and any of its modifications, revisions, or amendments thereto shall serve to demonstrate compliance with federal requirements to implement BMPs to the MEP and this Order.

15. The SWMP may need to be revised or amended to respond to changed conditions and to incorporate more effective approaches to pollutant control. Requests for changes may be initiated by the Board's Executive Officer or by the Discharger. Administrative changes may be made by the Discharger with the Executive Officer's approval or at his request and will be reported to the Board as information items. Major changes shall be submitted to the Board as technical reports as needed and brought before the Board as permit modifications.

16. This Order may be modified, or alternatively, revoked or reissued, prior to the expiration date in order to comply with any applicable requirements, guidelines, or regulations issued or approved under Section 402(p) of the CWA, if the requirement, guideline, or regulation so issued or approved contains different conditions or additional requirements not provided for in this Order.

17. The Discharger shall comply with all applicable Standard Provisions of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provision(s)".

18. A copy of this Order and the SWMP shall be kept at the appropriate offices of the Permittees. Personnel responsible for supervising compliance with this Order and implementing the SWMP shall be provided copies and be familiar with the contents of each.

19. The Discharger shall comply with the attached Monitoring and Reporting Program No. 94-244, which is part of this Order, and any revisions thereto, as ordered by the Executive Officer.

20. The Discharger may request changes to the Monitoring and Reporting Program. Revisions to the Monitoring and Reporting Program shall be subject to approval of the Executive Officer.

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21. This Order expires on 1 September 1999. The Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of this NPDES Storm Water Permit.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 16 September 1994.

WILLIAM H. CROOKS, Executive Officer

DE:cjs 9/16/94 AMENDED

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 94-244

NPDES NO. CA0083500

FOR
FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
CITY OF FRESNO, CITY OF CLOVIS
COUNTY OF FRESNO
CALIFORNIA STATE UNIVERSITY FRESNO
AND CALTRANS
URBAN STORM WATER DISCHARGES
FRESNO COUNTY

Specific sample station locations shall be established with concurrence of the Board's staff, and a description of the stations shall be attached to this Order. Sampling and analytical procedures shall be in accordance with the Environmental Protection Agency's recommended procedures. A complete list of all substances which are tested for and reported on by the testing laboratory shall be provided to the Board. Chain of custody forms shall be completed for each sample collected and copies provided to the Regional Board.

## IN-SYSTEM STORM WATER MONITORING

By 7 April 1995, the Discharger shall submit a monitoring plan with the goal of evaluating the effectiveness of best management practices implemented in compliance with this Order. Upon approval of the Executive Officer, the Discharger shall implement the plan.

## RECEIVING WATER MONITORING

By 6 January 1995, the Discharger shall submit a monitoring plan for evaluating the effects of urban storm water runoff on receiving waters using information from its technical report that will be submitted to comply with Provision No. D.10. Upon approval by the Executive Officer, the Discharger shall implement the plan.

## REPORTING

The Discharger shall submit, by 1 September each year, an annual report which includes:

1. The implementation status of program tasks contained in the SWMP;
2. The status or completion of all deliverables and milestones described in the SWMP;
3. Program accomplishments;

4. Monitoring information collected pursuant to the Storm Water Monitoring program, including

   a. results of sampling;

   b. estimation of pollutant loads generated within the drainage area;

   c. percent change in pollutant load

5. Results of the Illicit Discharge Elimination Program, including

   a. number, quantity, and quality of identified dry weather flows, and

   b. number, quantity, quality, and source of identified illicit discharges existing and eliminated;

6. A summary of industrial and construction activity storm water inspections conducted, including

   a. number of inspections conducted,

   b. follow-up activities,

   c. results of follow-up activities, and

   d. problem areas to be considered for further attention;

7. Known spill incidents that resulted in a discharge to the storm sewer or water of the United States, including the type, quantity, quality, and source of spill;

8. Public education activities;

9. The names, titles, and phone numbers of personnel responsible for supervising implementation of the SWMP;

10. A report assessing the effectiveness of pollution control activities described in the SWMP including information gathered to qualitatively and quantitatively evaluate the ability of the SWMP to reduce pollutants;

11. A discussion of the adequacy of legal authority and/or legal controls for implementing and carrying out the SWMP; and

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**MONITORING AND REPORTING PROGRAM**
**FRESNO-CLOVIS METROPOLITAN AREA**
**URBAN STORM WATER DISCHARGES**
**FRESNO COUNTY**

12. An overall evaluation of the SWMP.

13. Recommended changes and/or modifications to the SWMP.

In addition, the Discharger shall submit by 6 January 1995 a proposed format for the annual report, subject to Executive Officer approval. Format changes proposed for subsequent annual reports are subject to prior approval of the Executive Officer.

In its annual report, the Discharger shall demonstrate whether the discharge of pollutants to the storm sewer system has been reduced to the maximum extent practicable, and whether it is in substantial compliance with the SWMP.

All reports submitted in response to this Order shall comply with the signatory requirements stipulated in Standard Provision D.6.

The Discharger shall implement this program on the first day of the month following the effective date of this Order.

Ordered by: _____
WILLIAM H. CROOKS, Executive Officer

16 September 1994
Date

DE:cja: 9/16/94 AMENDED

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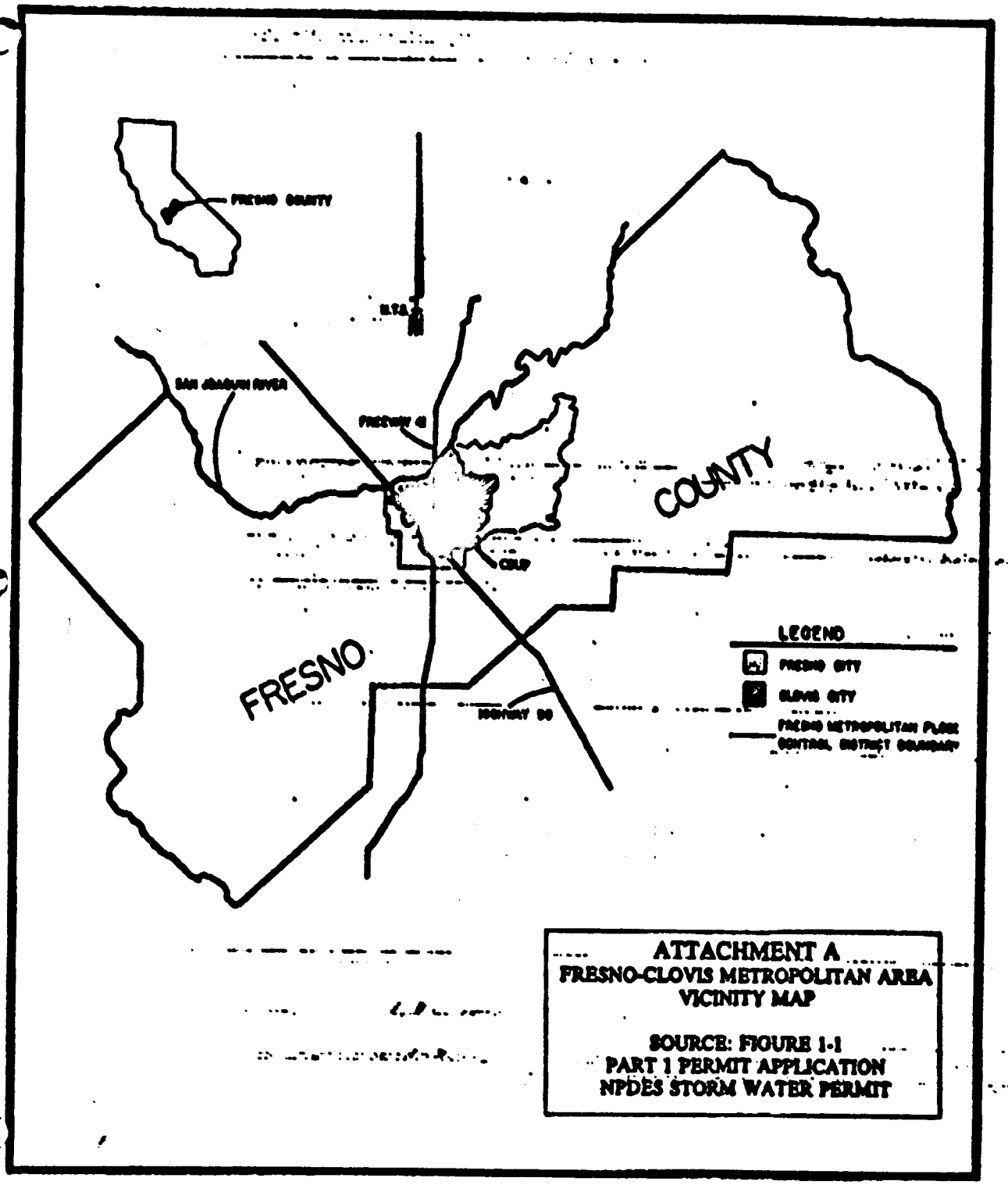


**ATTACHMENT A**
**FRESNO-CLOVIS METROPOLITAN AREA**
**VICINITY MAP**

**SOURCE: FIGURE 1-1**
**PART 1 PERMIT APPLICATION**
**NPDES STORM WATER PERMIT**

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# INFORMATION SHEET

## STORM WATER PERMIT
## FRESNO-CLOVIS METROPOLITAN AREA
## FRESNO COUNTY

The 1972 Amendments to the federal Clean Water Act (CWA) prohibited the discharge of any pollutants from a point source into waters of the United States unless permitted under the National Pollutant Discharge Elimination System (NPDES). Storm water and urban runoff discharges that occur through discreet conveyance systems are considered point sources subject to NPDES requirements. The 1987 amendments to the CWA mandated the USEPA to publish regulations establishing permit requirements for storm water discharges associated with industrial activities, and large and medium municipal separate storm sewer systems that service an urbanized area with a population greater than 100,000. On 16 November 1990, USEPA published these Regulations which were codified in Title 22, Code of Federal Regulations (40CFR), Part 122.

The Regulations allow for the issuance of area-wide municipal NPDES storm water permits. This approach allows the Board to designate as a medium or large municipal separate storm sewer system, municipal separate storm sewers located within the boundaries of a municipality that are required by the Regulations to obtain storm water permits. This has resulted in many cities throughout California with populations less than 100,000, or government entities such as flood control districts or transportation districts, being required to obtain storm water permits.

Under the area-wide approach, the Regulations allow multiple entities to be named as permittees under one NPDES permit. The Regulations recognize differences between permittees with regard to responsibilities for discharges from municipal storm sewer systems, and allows permittees to develop site-specific storm water programs.

The Fresno Metropolitan Flood Control District, the City of Fresno, the City of Clovis, the County of Fresno, the California State University of Fresno and Caltrans (referred to jointly as the Discharger) have applied jointly for an NPDES permit to reduce pollutants in storm water and urban runoff discharges throughout the Fresno-Clovis metropolitan area.

Appendices to Part 122 of the Regulations provide a listing of the cities and counties throughout the United States that meet threshold urbanized population criteria that requires a municipality to obtain a NPDES storm water permit. Appendix G of the Regulations has listed the City of Fresno as a city with an incorporated urbanized area population greater than 100,000 but less than 250,000. In listing the City, the Regulations have identified it as a medium municipality that is required to obtain a municipal NPDES storm water permit.

The proposed permit requires that the permittees control the discharge of pollutants in storm water to the Maximum Extent Practicable (MEP). In accordance with the Regulations, implementation of Best Management Practices (BMPs) is an acceptable control to meet MEP. Timely and effective implementation of the BMPs and other program elements outlined in the SWMP will constitute compliance with MEP.

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INFORMATION SHEET - Continued

STORM WATER PERMIT
FRESNO-CLOVIS METROPOLITAN AREA
FRESNO COUNTY



The SWMP proposes a number of BMPs and controls to be implemented over the 5-year period of the permit. To facilitate planning and implementation, these practices and controls were organized in six program elements. The program elements for the SWMP are as follows:

- Public Involvement and Education
- Illicit Discharges
- Operation and Maintenance
- Structural Controls
- Construction and Development
- Commercial and Industrial

This Order requires implementation of the above programs within 30 days to reduce the level of storm water pollutants at industrial and construction sites, new developments, and existing urbanized areas that discharge to receiving waters.

A key element in the controlling of pollutants in storm water lies with source identification and characterization of the discharge. Each year the monitoring data will be analyzed and evaluated to assess its effectiveness in assisting the permittees determine compliance with its permit. Based on the results of the assessment, the permittees or Board staff may request that the monitoring program be modified.

Annually, the permittees are required to evaluate the overall effectiveness of their SWMP. Assessment activities will include quantitative analysis based on sampling results from the monitoring data, and qualitative analysis based on sampling results from the monitoring data, and qualitative analysis based on indirect measures, such as level of effort. Qualitative analysis will be used throughout the early stages of the permit to evaluate the nonstructural, nonconventional BMPs. Upon completion of the evaluation assessment, the permittees or Board staff may request modifications to the SWMP.

The permittees are required to oversee implementation of the SWMP and compile annual report information within their respective areas of legal jurisdiction throughout the fiscal year to be submitted to the District.

Implementation and ongoing evaluation of the SWMP will reduce discharge of pollutants into storm water runoff to the maximum extent practicable, improve water quality, and protect beneficial uses.

The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resource Code Section 21000, et. seq.), in accordance with Section 13389 of the California Water Code.

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STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER No. 90-079

NPDES NO. CA0061654 (CI 6948)

# WASTE DISCHARGE REQUIREMENTS STORMWATER/URBAN RUNOFF DISCHARGE for LOS ANGELES COUNTY and CO-PERMITTEES

The California Regional Water Quality Control Board, Los Angeles, (Regional Board) finds :

1. The County of Los Angeles, in cooperation with the following cities : Agoura Hills, Beverly Hills, Culver City, El Segundo, Hermosa Beach, Inglewood, Los Angeles, Manhattan Beach, Rancho Palos Verdes, Redondo Beach, Rolling Hills Estates, Rolling Hills, Santa Monica, Torrance, West Hollywood, and Westlake Village, has submitted a report of waste discharge (NPDES permit application) dated March 15, 1990 for issuance of waste discharge requirements for the County of Los Angeles and other cities tributary to Los Angeles County (excluding Antelope Valley) under the National Pollutant Discharge Elimination System. (NPDES Permit No. CA0061654).

2. The discharges consist of surface runoff generated from various land uses in all the hydrologic drainage basins which discharge into water courses flowing into water bodies in Los Angeles County. The quality of these discharges varies considerably and is affected by land use, basin hydrology and geology, season, and the frequency and duration of storm events. The constituents of concern and significance in these discharges are: total and fecal coliform and enterococci bacteria, total suspended solids, biochemical oxygen demand, oil and grease, heavy metals, nutrients, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, pesticides and herbicides, and petroleum hydrocarbons.

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3. The objective of this permit is to develop a timely, comprehensive, and cost-effective stormwater pollution control program to minimize pollutants in urban runoff/stormwater discharges to water bodies in Los Angeles County.

4. Due to the complexity and networking of drainage facilities within and tributary to Los Angeles County, the county and adjacent areas discharging storm water into Los Angeles County are divided and prioritized into five drainage basins for the implementation of the permit. The owners/operators of all facilities impacting stormwater quality will be ultimately a party to these waste discharge requirements. The County of Los Angeles together with the cities identified above, the initial parties filing for the system-wide permit, are 'Permittees', with the County of Los Angeles as the 'Principal Permittee' and the rest as 'Co-Permittees'. All other cities and recognized entities such as Caltrans, college/university campuses, hospitals, parks, agricultural areas, real estate developments and waste disposal facilities identified in this Order, are designated 'Co-Participants'. A 'Co-Participant' will be a 'Co-Permittee' upon becoming an active party to the permit.

   Attachments 1 and 2 show, respectively, the list of cities and a partial list of entities designated as Co-Participants for this permit. The list of entities will be revised as necessary. .

5. The County of Los Angeles, as the 'Principal Permittee', will obtain the cooperation of 'Co-Participants' to become 'Co-Permittees'. The Regional Board has the discretion and authority to require non-cooperating cities and/or entities to become 'Co-Permittees' or obtain individual stormwater discharge permits, pursuant to 40 CFR 122.26 (a).

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6. Los Angeles County as the 'Principal Permittee' is the permit coordinator responsible for general administration of this Order, and coordinating cooperation by 'Co-Permittees', including but not limited to the implementation of local self-monitoring programs and Best Management Practices, and the preparation and submittal of reports required by this Order.

7. Los Angeles County obtains its authority to :

   - control pollutants in stormwater discharge
   - prohibit illegal discharges and control spills
   - require compliance and carry out inspections



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of drainage facilities in the County of Los Angeles from the Los Angeles County Flood Control Act and various county ordinances which address industrial wastes and waste discharges within the unincorporated areas of Los Angeles County and contract cities. 'Co-Permittees' with the status of incorporated cities have various forms of legal authority in place, such as charters, State Code provisions for General Law cities, city ordinances and applicable portions of Municipal Codes and the State Water Code, to regulate stormwater/urban runoff discharges.

8. The division and prioritization of Los Angeles County and adjacent areas into five drainage basins for program implementation are based on hydrological characteristics of the watersheds, perceived importance and beneficial uses of water bodies, and the existence of an adequate infrastructure for program implementation. The five drainage basins are :

I : Santa Monica Bay Drainage Basin

II : Upstream Los Angeles River Drainage Basin, to and including Sycamore Canyon Channel (San Fernando Valley);

III : Upper San Gabriel River (San Gabriel Valley) Drainage Basin.

IV : Lower Los Angeles River Drainage Basin

V : Lower San Gabriel River Drainage Basin; and Santa Clarita Valley Basin.

Attachment 3 shows a map of Los Angeles County with the boundary delineations of the five drainage basins.

Attachment 4 shows Co-Participant cities in Los Angeles County (and their respective populations).

[ Note: Detailed maps of the Los Angeles County storm drain system with boundary delineations of drainage basins are available for review at the Regional Board Office.]



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9. A number of studies on stormwater/urban runoff pollution in the permit areas has been conducted by agencies such as the City of Los Angeles, the Southern California Coastal Water Research Project and the Southern California Association of Governments. These studies indicate stormwater/urban runoff contributes significantly to the deterioration of the quality of water bodies in Los Angeles County.

   The University of California at Los Angeles, under the sponsorship of the Santa Monica Bay Restoration Project, is currently compiling and summarizing data and information on stormwater/urban runoff discharges for the Santa Monica Bay watershed.

10. The Los Angeles County Department of Public Works has an active surface water quality monitoring program in the permit area, comprising twenty-eight monitoring stations located at principal storm drains and water conservation facilities. The Surface Water Quality Monitoring Program comprises the collection and analysis of dry weather water samples for general minerals, pesticides, total petroleum hydrocarbons, heavy metals and bacteria (total and fecal coliform, KF streptococci and enterococci). Volatile organic constituents are tested semi-annually at selected stations. Stormwater runoff is monitored three to four times annually at twenty-one stations for minerals, pesticides, heavy metals (total and dissolved), bacteria, total and organic suspended solids, oil and grease, biochemical oxygen demand, total organic carbon and volatile organics.

11. The Los Angeles County Department of Public Works and some cities have on-going activities that reduce stormwater/urban runoff pollutant loads. These activities include periodic catch-basin cleaning and street sweeping, public information on proper disposal of household hazardous waste, and emergency responses to reports of illegal dumping, illicit disposal, illegal connections, and industrial waste spills. The Los Angeles County Department of Public Works also participates and coordinates action with local, State, and Federal agencies responding to spills and illegal dumping reports that threaten surface waters.

12. The Regional Board currently regulates industrial process and point source non-process wastewater and stormwater discharges to storm drain systems through NPDES permits. Point source discharges including stormwater will continue to be regulated by the Regional Board. An information system will be developed and maintained to update pollutant loadings to designated



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drainage facilities and water bodies from permitted point source discharges.

13. The State Water Resources Control Board (State Board) adopted a Water Quality Control Policy for the Enclosed Bays and Estuaries of California on May 16, 1974. The policy provides that the discharge of industrial process waters to enclosed bays and estuaries shall be prohibited. Storm water and urban runoff are not considered industrial process waters for the purpose of that policy.

14. The State Board adopted a revised Water Quality Control Plan for Ocean waters of California (Ocean Plan) on March 22, 1990, which amended the Plan adopted on September 22, 1988. The Plan contains water quality objectives for the coastal waters of California.

15. The Regional Board adopted a revised Water Quality Control Plan for the Los Angeles River Basin (Basin Plan) on November 27, 1978. The Basin Plan incorporates the Ocean Plan, and contains water quality objectives for the basin, including the beneficial uses of water bodies.

16. The beneficial uses of water bodies in Los Angeles County and their tributary streams include contact water recreation, non-contact water recreation, wildlife habitat, preservation of rare and endangered species, marine habitat, estuarine habitat, fish migration, fish spawning, industrial service and process supply, agricultural water supply, shellfish harvesting, navigation, commercial and sport fishing, and groundwater recharge.

17. Section 405 of the Water Quality Act of 1987 added Section 402(p) to the Clean Water Act of 1972 to require the Environmental Protection Agency (EPA) to establish regulations for stormwater/urban runoff discharge under the National Pollutant Discharge Elimination System (NPDES).

18. The Federal Clean Water Act allows EPA to delegate its NPDES permitting authority to States with an approved environmental regulatory program. The State of California is one of the delegated States. The Porter-Cologne Act (State Water Code) authorizes the State Board, through its Regional Boards, to regulate and control the discharge of pollutants into waters of the state and tributaries thereto.

19. Although Water Code Section 13263 (a) requires that waste discharge requirements issued by Regional Boards shall include provisions to implement water quality based objectives, numerical water quality standards



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are not provided in this Order. Information is not available to establish appropriate numerical limits, and determine locations where permittees shall be made accountable. The requirements in this Order will provide the necessary information while concurrently achieving reductions in pollutant loads to water bodies from stormwater/urban runoff discharges. Numerical water quality objectives will be developed by Board staff for consideration in the permit renewal process and utilized for the evaluation of Best Management Practices.

20. Due to the significance of the Los Angeles County Stormwater/Urban Runoff Program, the Regional Board, in recognition of the need for public involvement and participation in the development and implementation of an effective program will conduct at a minimum an annual workshop, prior to approving plans submitted by Permittees, to solicit comments and to inform the public of the progress of the program. Comments presented will be referred to Los Angeles County for response.

21. Stormwater/urban runoff discharges to drainage facilities that cross County boundaries and Regional Board jurisdictions, and which are regulated under NPDES permits, are the regulatory responsibility of those agencies issuing the permits.

22. The issuance of waste discharge requirements for this discharge is exempt from the provisions of the California Environmental Quality Act (CEQA); Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code in accordance with Water Code Section 13389.

The Board has notified the Permittees and interested agencies and persons of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

The Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Clean Water Act, or amendments thereto, and shall take effect at the end of ten days from the date of its adoption provided the Regional Administrator, EPA, has no objections.

IT IS HEREBY ORDERED that the Permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder,



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and the provisions of the Clean Water Act as amended and regulations and guidelines adopted thereunder, shall comply with the following:

## 1.0 COMPLIANCE

1.1 The Permittees and Co-Permittees shall comply with the requirements contained in this Order according to the following schedule:

| | DRAINAGE BASIN | STARTING DATE FOR COMPLIANCE WITH REQUIREMENTS |
|---|---|---|
| I. | Santa Monica Bay | July 1, 1990 |
| II. | Upper Los Angeles River (San Fernando Valley) | July 1, 1992 |
| III. | Upper San Gabriel River (San Gabriel Valley) | July 1, 1992 |
| IV. | Lower Los Angeles River | July 1, 1993 |
| V. | Lower San Gabriel River and Santa Clarita Valley | July 1, 1993 |

## 2.0 REQUIREMENTS - YEAR 1

2.1 For each Drainage Basin, prepare and submit to the Regional Board within 12 months of the starting date for compliance, according to the schedule under 1.1:

2.1.1 Water quality data and flow data from 1980 to the present to facilitate identification of sources of pollutants present in discharges from the prioritized drainage basin. "Drainage areas" in the drainage basin are to be reported and the "drainage areas" associated with each drainage basin clearly identified.



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For purposes of stormwater/urban runoff, a "drainage area" is defined as a subdivision of a drainage basin which is unique in land use patterns, and pollutant characteristics and loadings.

2.1.2 The 90th percentile value for the water quality parameters, (i) Total Suspended Solids (TSS), and (ii) Oil and Grease, from the data set of all wet weather samples collected from 1980 to the present. These data will be used to establish guidance for early action control of stormwater pollution.

The 90th percentile for a given water quality parameter is defined as the concentration value exceeded in ten percent of the samples of the reference data set.

2.1.3 Additional information of a qualitative nature that would contribute to isolating and identifying sources of problems. Such information should include but not be limited to visual observations of factors exacerbating stormwater contamination, principal land use classifications and Standard Industrial Code (SIC) categories of facilities in "drainage areas", and a description of soils, dumps, landfills, waste disposal sites and Resource Conservation and Recovery Act (RCRA) facilities associated with each area.

2.1.4 Monthly precipitation data from rain gauge stations, relevant to the drainage basin, for the years 1980 to the present, and an estimate of the area of impervious surfaces (including paved areas and building roofs) within each "drainage area".

2.1.5 Documentation of existing procedures to detect and address illegal discharges and illicit disposal practices.

2.1.6 Documentation of existing practices and improvement plans to control pollutants in stormwater/urban runoff from construction sites.

2.1.7 Documentation of existing stormwater/urban runoff management practices and existing Best Management Practices (BMPs) for the control of pollutants in discharges from residential, commercial and industrial areas.

For purposes of this permit, a Best Management Practice is defined as a stormwater quality management practice that has been demonstrated to reduce stormwater/urban runoff constituents of concern in studies in the United States and elsewhere, or a stormwater/urban runoff quality management practice that can significantly control stormwater/urban runoff pollution.



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2.1.8 Plan with schedule of implementation, for approval by the Executive Officer, of early action BMPs.

For purposes of this permit, an early action BMP is defined as an existing stormwater/urban runoff quality management practice that is optimized to the maximum extent practicable (MEP) in efficiency for the control of stormwater runoff pollution, such as improving the frequency of storm drain catchment basin cleaning or the stricter enforcement of existing regulations, or a BMP that is not specific to stormwater/urban runoff constituents or "drainage area" in its constituent removal capacity and can be applied on a system-wide basis, such as public outreach and educational programs.

For purposes of this permit, maximum extent practicable means to the maximum extent possible, taking into account equitable considerations of synergistic, additive and competing factors, including but not limited to gravity of the problem, fiscal feasibility, public health risks, societal concern, and social benefits.

The Principal-Permittees, in the submittal of plans and schedules to the Executive Officer, shall demonstrate that public input has been obtained.

For purposes of this permit, public input is demonstrated by, (i) disseminating the notice of availability of plans for review and comment, to the public at large, environmental groups, Federal, State and local officials and other interested parties, and (ii) addressing concerns expressed by the public.

The Board may modify the plans in response to public input received at the Board during its comment/review period. Permittees are required to implement the original or modified plan on approval by the Executive Officer.

2.1.9 A workplan for the development of a stormwater/urban runoff monitoring program, for approval by the Executive Officer, to include but not be limited to the following information :

- o listing of constituents and parameters to be monitored and the rationale for their choice.
- o listing of monitoring locations and the rationale for their choice.
- o listing of sampling methodology of choice and frequency of sampling for both wet weather and dry weather flow.
- o supplementary information that influences the design of the monitoring plan.



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The Principal-Permittee, in the submittal of the workplan to the Executive Officer, shall demonstrate that public input has been obtained.

2.1.10 Documentation that each Permittee, individually and/or jointly, through the establishment of a joint powers authority or a stormwater utility, possesses adequate legal authority to operate and manage stormwater/urban runoff quality management programs, and/or plans to obtain the necessary legal authority to regulate illegal discharges and illicit disposal practices into storm drains, and to prosecute violators.

## 3.0 REQUIREMENTS - YEAR 2

3.1 For each Drainage Basin, prepare and submit to the Regional Board, for approval by the Executive Officer, within 24 months of the starting date of compliance, according to the schedule under 1.1:

3.1.1 A monitoring program based on the approved workplan. This program shall be designed to:

- detect accurately the constituents and parameters of concern, in discharges indicated in the workplan, and to identify their possible sources.
- identify illegal dischargers and/or locations of illicit disposal practices.

Monitoring reports for this program shall be submitted according to the format and frequency to be approved by the Executive Officer.

3.1.2 Plan with schedule of implementation for additional BMPs, judged appropriate for each city or drainage basin, to control pollutants from residential, commercial and industrial sites to the maximum extent practicable.

Both structural and non-structural BMP measures are to be evaluated at the MEP standard. Examples of non-structural measures include catch basin cleaning, street sweeping and public education, while controls such as detention/retention basins, first flush diversions, grassy swales and porous pavements are examples of structural measures.



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3.1.3 Plan with schedule of implementation of procedures to detect and eliminate illegal discharges and illicit disposal practices.

3.1.4 Plan with schedule of implementation of measures to control pollutants in surface runoff from construction sites.

The Principal Permittee, in the submittal of plans and schedules (items 3.1.2, 3.1.3, and 3.1.4) to the Executive Officer shall demonstrate that public input has been obtained. The Board may modify the plans in response to public input received at the Board during its comment/review period. Permittees are required to implement the original or modified plans on approval by the Executive Officer.

3.2 Evidence of satisfactory progress of implementation of plan and schedule for early action BMPs.

3.3 Evidence of all requisite legal authority to regulate illegal discharges and illicit disposal practices to drainage facilities, and to prosecute violators.

## 4.0 REQUIREMENTS - YEAR 3

4.1 For each Drainage Basin, submit to the Regional Board, within 36 months of the starting date of compliance, according to the schedule under 1.1, the following:

4.1.1 Evidence of satisfactory progress of implementation of plan and schedule for early action BMPs and additional BMPs.

4.1.2 Evidence of implementation and progress of procedures to detect and eliminate illegal discharges and eliminate illicit disposal practices.

4.1.3 Evidence of implementation and progress of measures to control pollutants in surface runoff from construction sites.

## 5.0 EXPIRATION AND RENEWAL

5.1 This Order expires on June 18, 1995.

5.2 The Permittees shall file a report of waste discharge (ROWD), not later than 180 days before the expiration date, as application for reissuance of waste discharge requirements. This report of waste discharge shall include but not be limited to the following:



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5.2.1 Summary of the results of the monitoring program.

5.2.2 Summary of BMPs implemented and evaluations of their effectiveness.

5.2.3 Summary of procedures implemented to detect illegal discharges and illicit disposal practices and an evaluation of their effectiveness.

5.2.4 Summary of measures implemented to control pollutants in surface runoff from construction sites and an evaluation of their effectiveness.

5.2.5 Evaluation of the need for additional BMPs, source control, and/or structural control measures.

5.2.6 Proposed plan of stormwater/urban runoff quality management activities that will be undertaken during the term of the next permit.

I, Robert P. Ghirelli, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on June 18, 1990.

Robert P. Ghirelli

ROBERT P. GHIRELLI, D.Env.
Executive Officer



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## ATTACHMENT 1

## LIST OF CO-PARTICIPANT CITIES

Agoura Hills
Arcadia
Avalon
Baldwin Park
Bellflower
Beverly Hills
Burbank
Cerritos
Commerce
Covina
Culver City
Downey
El Monte
Gardena
Glendora
Hawthorne
Hidden Hills
Industry
Irwindale
La Habra Heights
La Mirada
La Verne
Lawndale
Long Beach
Lynwood
Maywood
Montebello
Norwalk
Palos Verdes Estates
Pasadena
Pomona
Redondo Beach
Rolling Hills Estates
San Dimas
San Gabriel
Santa Clarita
Sant Monica
Signal Hill
South Gate
Temple City
Torrance
Walnut
West Hollywood
Whittier
Alhambra
Artesia
Azusa
Bell
Bell Gardens
Bradbury
Carson
Claremont
Compton
Cudahy
Diamond Bar
Duarte
El Segundo
Glendale
Hawaiian Gardens
Hermosa Beach
Huntington Park
Inglewood
La Canada Flintridge
Lakewood
La Puente
Lancaster
Lomita
Los Angeles
Manhattan Beach
Monrovia
Monterey Park
Palmdale
Paramount
Pico Rivera
Rancho Palos Verdes
Rolling Hills
Rosemead
San Fernando
San Marino
Santa Fe Springs
Sierra Madre
South El Monte
South Pasadena
Thousand Oaks
Vernon
West Covina
Westlake Village

CA0061654

ATTACHMENT

LIST OF ENTITIES (PARTIAL LIST)

Caltrans
Army Corps of Engineers
Railroad Rights of Way
Federal Hospitals

The State University System
University of California Campuses
National Forest Service
Federal Military Facilities

[This list will be updated during the permit process to indicate actual identity of agencies and entities.]



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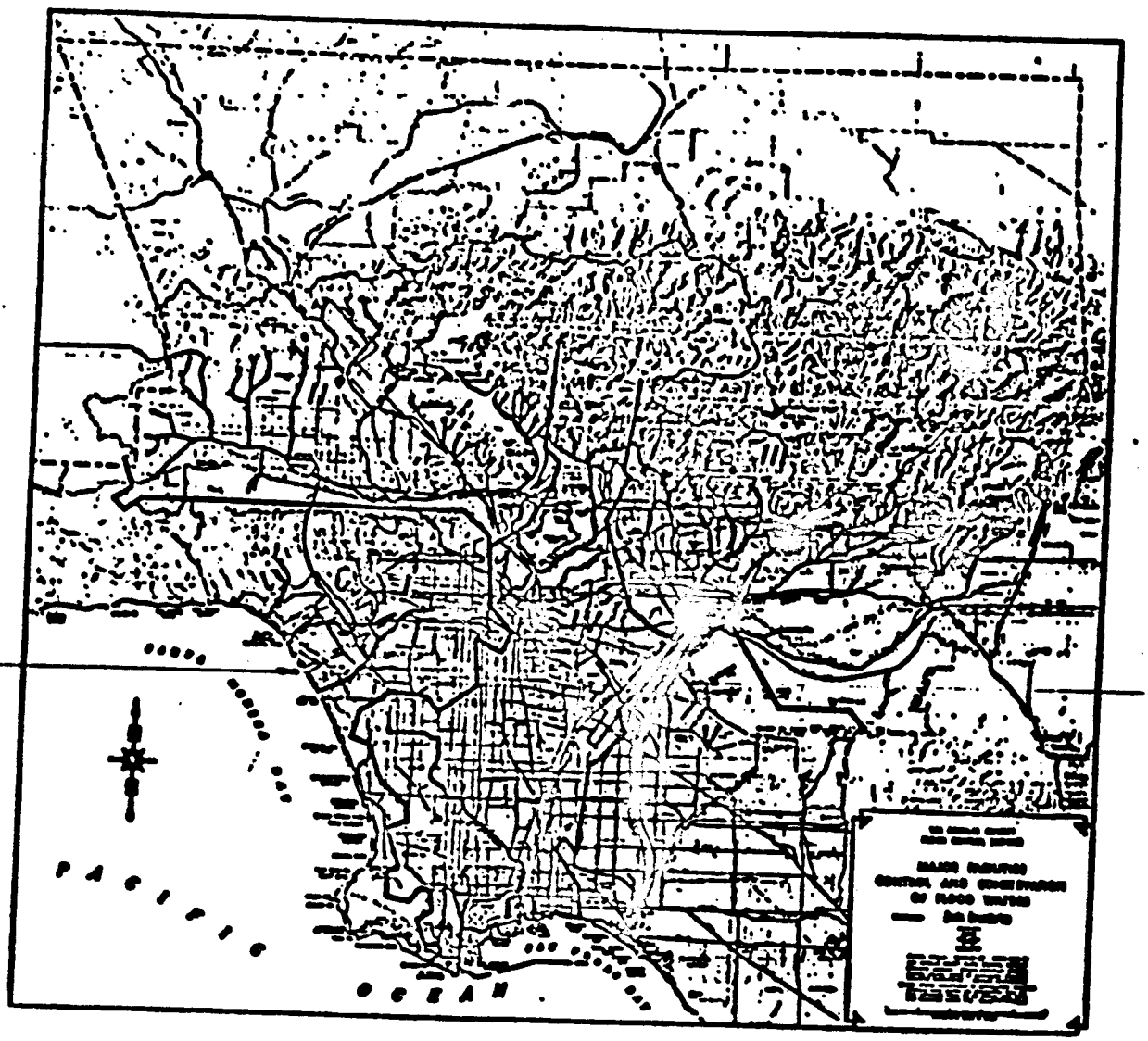
ATTACHMENT 1

DELINEATIONS OF DRAINAGE BASIN BOUNDARIES FOR
LOS ANGELES COUNTY



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ATTACHMENT 2

## CITIES (AND POPULATIONS) TRIBUTARY TO DRAINAGE BASINS

### Santa Monica Bay

| | | | |
|---|---|---|---|
| Agoura Hills | 19,000 | Rancho Palos Verdes | 46,000 |
| Beverly Hills | 34,000 | Redondo Beach | 64,700 |
| Culver City | 40,950 | Rolling Hills | 2,000 |
| El Segundo | 15,750 | Rolling Hills Estates | 7,875 |
| Hermosa Beach | 19,750 | Santa Monica | 96,500 |
| Inglewood | 102,300 | Thousand Oaks | 104,400 |
| Los Angeles | 3,400,500 | Torrance | 142,200 |
| Manhattan Beach | 35,300 | West Hollywood | 38,400 |
| Westlake Village | 8,025 | Palos Verdes Estates | 15,000 |

### Upper Los Angeles River

| | | | |
|---|---|---|---|
| Burbank | 93,800 | Glendale | 166,100 |
| Hidden Hills | 1,950 | Los Angeles | 3,310,057 |
| San Fernando | 20,700 | | |

### Upper San Gabriel River

| | | | |
|---|---|---|---|
| Alhambra | 74,900 | Arcadia | 49,100 |
| Azusa | 38,250 | Baldwin Park | 63,300 |
| Bradbury | 930 | Claremont | 36,550 |
| Covina | 43,250 | Diamond Bar | 74,120 |
| Duarte | 21,350 | El Monte | 95,400 |
| Glendora | 47,400 | Industry | 370 |
| Irwindale | 1,230 | La Canada Flintridge | 20,800 |
| La Habra Heights | 5,450 | La Puente | 33,550 |
| La Verne | 30,900 | Monrovia | 34,000 |
| Montebello | 58,200 | Monterey Park | 64,600 |
| Pasadena | 132,200 | Pomona | 119,000 |
| Rosemead | 47,700 | San Dimas | 32,500 |
| San Gabriel | 34,900 | San Marino | 13,800 |
| Sierra Madre | 11,250 | South El Monte | 18,700 |
| South Pasadena | 24,500 | Temple City | 31,900 |
| Walnut | 26,400 | West Covina | 94,200 |



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Lower Los Angeles River

| | | | |
|---|---|---|---|
| Alhambra | 74,900 | Bell | 28,250 |
| Bell Gardens | 38,300 | Carson | 88,800 |
| Commerce | 11,700 | Compton | 93,000 |
| Cudahy | 20,700 | Downey | 86,800 |
| El Segundo | 15,750 | Gardena | 50,900 |
| Glendale | 166,100 | Hawthorne | 67,400 |
| Huntington Park | 51,200 | Inglewood | 102,300 |
| La Canada Flintridge | 20,800 | Lakewood | 76,500 |
| Lawndale | 27,300 | Lomita | 20,300 |
| Los Angeles | 3,400,500 | Lynwood | 53,700 |
| Maywood | 24,650 | Montebello | 58,200 |
| Monterey Park | 64,600 | Palos Verdes Estates | 15,000 |
| Paramount | 44,450 | Pasadena | 132,200 |
| Pico Rivera | 57,300 | Rancho Palos Verdes | 46,000 |
| Redondo Beach | 64,700 | Rolling Hills | 2,090 |
| Rolling Hills Estates | 7,875 | Signal Hill | 8,150 |
| South Gate | 79,200 | South Pasadena | 24,500 |
| Torrance | 142,200 | Vernon | 80 |

Lower San Gabriel River

| | | | |
|---|---|---|---|
| Artesia | 14,950 | Bellflower | 60,900 |
| Cerritos | 58,400 | Downey | 86,800 |
| Hawaiian Gardens | 12,350 | La Habra Heights | 5,450 |
| Lakewood | 76,500 | La Mirada | 42,600 |
| Long Beach | 419,800 | Norwalk | 90,800 |
| Paramount | 44,450 | Pico Rivera | 57,300 |
| Santa Clarita | 115,700 | Santa Fe Springs | 16,400 |
| Signal Hill | 8,150 | Whittier | 74,100 |

Population estimates are taken from Report 89 E-1 published by the State of California Department of Finance.

The cities of Avalon (Pop: 2,490), Lancaster (Pop: 82,200), and Palmdale (Pop: 45,850) which are within Los Angeles County are not part of this permit.



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To Carlos | From Pavlova
Co. | Co.
Dept. | Phone #
Fax # | Fax #

California Regional Water
Santa Ana

July 13,

ITEM: 11

SUBJECT: Waste Discharge Requirements for the Riverside County Flood Control & Water Conservation District, the County of Riverside, and the Incorporated Cities of Riverside County Within the Santa Ana Region, Stormwater Runoff Management Program, Riverside County, Order No. 90-104 (NPDES No. CA 8000192)

DISCUSSION:

See attached Fact Sheet.

RECOMMENDATION:

Adopt Order No. 90-104, NPDES No. CA 8000192, as presented.

In addition to the dischargers, comments were solicited from the following agencies and/or persons:

U. S. Environmental Protection Agency - Robert Wills, Pretreatment, Sludge, and Stormwater Section
U.S. Army District, Los Angeles, Corps of Engineers - Permits Section
NOAA, National Marine Fisheries Service
U.S. Fish and Wildlife Service
State Water Resources Control Board - Ted Cobb, Office of the Chief Counsel
State Water Resources Control Board - Archie Matthews, Division of Water Quality
State Department of Water Resources - Los Angeles
California Regional Water Quality Control Board, San Francisco Bay Region (2) - Tom Mumley
California Regional Water Quality Control Board, Los Angeles Region (4) - David Gildersleeve
California Regional Water Quality Control Board, Central Valley Region (5) - Wayne Pierson
California Regional Water Quality Control Board, Colorado River Basin Region (7)
California Regional Water Quality Control Board, San Diego Region (9) - Bruce Posthumus
State Department of Fish and Game - Marine Resources Region
State Department of Health Services - Santa Ana
State Department of Health Services - San Diego
State Department of Health Services - San Bernardino
State Department of Parks and Recreation - Henry R. Agonia
Orange County Health Care Agency - Robert Marryman

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Orange County Environmental Management Agency, Environmental Resources Division - Bob Collacott
San Bernardino County Department of Health Services - Paul Ryan
San Bernardino County Flood Control District - Chuck Laird
Riverside County Health Department - John Fanning
South Coast Air Quality Management District, El Monte - James Lents
Caltrans, District 8 - San Bernardino
Southern Pacific Railroad
Atchison, Topeka & Santa Fe Railway Company
U. S. Army Corps of Engineers
Department of the Air Force, March Air Force Base
National Forest Service
Brown & Caldwell - Jack Baylis
Uribe And Associates - Geoff Brosseau
Bill Dendy & Associates - Bill Dendy
Building Industry Association - Governmental Affairs Council
L.A. County Department of Public Works - John Mitchell
AMI Circle City Hospital
Corona Community Hospital
Riverside Community Hospital
Riverside General Hospital
Chapman College
Mt. San Jacinto College
University of California, Riverside
Riverside Community College
School Districts
Alvord Unified School District
Corona-Norco Unified School District
Hemet Unified School District
Lake Elsinore Unified School District
Menifee Union School District
Moreno Valley Unified School District
Nuview Union School District
Perris Elementary School District
Perris Union High School District
Riverside Unified School District
Romoland School District
San Jacinto Unified School District
Val Verde School District
Environmental Organizations
Sierra Club, Orange County Chapter
Sierra Club, Los Angeles Chapter - Dick Hingson
Natural Resources Defense Council (NRDC)
Tri-County Conservation League - Gertrude Hagum
Press Enterprise

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Santa Ana Watershed Project Authority - Neil Cline
Orange County Water District - Bill Mills
Metropolitan Water District - Ed Means
Western Municipal Water District - Don Harriger
Eastern Municipal Water District - Bill Plummer
San Bernardino Valley Municipal Water District - Louis Fletcher
Elsinore Valley Municipal Water District - James Laughlin
Lee Lake Water District - P. E. Wood
City of Ontario - City Manager/Director of Public Works
City of San Bernardino - City Manager/Director of Public Works
City of Fontana - City Manager/Director of Public Works
City of Rancho Cucamonga - City Manager/Director of Public Works

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California Regional Water Quality Control Board
Santa Ana Region
6809 Indiana Avenue, Suite 200
Riverside, CA 92506-4298

## FACT SHEET

### PROJECT

The attached pages contain information concerning an application for waste discharge requirements and a National Pollutant Discharge Elimination System (NPDES) permit. Order No. 90-104, NPDES No. CA 8000192, prescribes waste discharge requirements for urban stormwater runoff from the cities and the unincorporated areas in Riverside County within the jurisdiction of the Santa Ana Regional Board. On May 8, 1990, the Riverside County Flood Control & Water Conservation District (RCFC&WCD) and the County of Riverside, in cooperation with the cities of Beaumont, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as the dischargers), submitted NPDES Application No. CA 8000180 for an areawide stormwater discharge permit under the National Pollutant Discharge Elimination System (NPDES). As part of the permit application, a topographic map, storm drain system maps, listings of cities and entities participating in this program, and copies of ordinances relevant to the urban stormwater runoff from the Cities of Riverside and Moreno Valley were submitted. Copies of ordinances from the remaining seven cities participating in this program will be submitted at a later date.

### PROJECT AREA

The permitted area is delineated by the San Bernardino-Riverside County boundary line on the north and northwest, the Orange Riverside County boundary line on the west, the Santa Ana-San Diego Regional Board boundary line on the south, and the Santa Ana Colorado River Basin Regional Board boundary line on the east (see Attachment "A").

### CLEAN WATER ACT REQUIREMENTS

The Federal Clean Water Act (CWA) allows the U. S. Environmental Protection Agency (EPA) to delegate its NPDES permitting authority to states with an approved environmental regulatory program. The State of California is one of the delegated states. The Porter Cologne Act (California Water Code) authorizes the State Board, through its Regional Boards, to regulate and control the discharge of pollutants into waters of the state and tributaries thereto.



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CLEAN WATER ACT REQUIREMENTS - CONT'D

Section 405 of the Water Quality Act (WQA) of 1987 added Section 402(p) to the CWA. Pursuant to Section 402(p)(4) of the CWA, the EPA is required to promulgate regulations for stormwater permit applications for stormwater discharges associated with industrial activities and municipal separate storm drain systems serving a population of 100,000 or more. Section 402 (p)(4) of the CWA also requires dischargers of stormwater associated with industrial activities and municipal separate storm drain systems serving a population of 250,000 or more to file stormwater permit applications by February 4, 1990.

On December 7, 1988, EPA published its proposed regulations in the Federal Register to solicit public comments. Final regulations are tentatively scheduled to be promulgated on July 20, 1990 and to be published in the Federal Register on August 4, 1990. In the absence of final stormwater regulations, a permit governing municipal stormwater discharges should meet both the statutory requirements of Section 402 (p)(3)(B) and all requirements applicable to a NPDES permit issued under the issuing authority's discretionary authority in accordance with Section 402 (a)(1)(B) of the CWA.

AREAWIDE STORMWATER PERMIT

To regulate and control stormwater discharges from the Riverside County area to the Riverside County storm drain systems, an areawide approach is essential. The entire storm drain system is not controlled by a single entity; the RCFC&WCD, several cities, and the State Department of Transportation (Caltrans) manage the system. In addition to the cities and the RCFC&WCD, there are a number of other significant contributors of urban stormwater runoff to these storm drain systems. These include: large institutions such as the State University system, schools, hospitals etc.; federal facilities such as military sites etc.; state agencies such as Caltrans; water and wastewater management agencies such as Eastern & Western Municipal Water Districts; the National Forest Service; and state parks. The management and control of the entire flood control system cannot be effectively carried out without the cooperation and efforts of all these entities. Also, it would not be meaningful to issue a separate stormwater permit to each of the entities within the permitted area whose land/facilities drain into the county storm drain systems. The Regional Board and a majority of the cities and the county have concluded that the best management option for the Riverside County area is to issue an areawide stormwater permit.

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AREAWIDE STORMWATER PERMIT - CONT'D

Some of the RCFC&WCD storm drain systems discharge into storm drain systems controlled by other entities, such as the Orange County Flood Control District, which is regulated under the Regional Board's Order No. 90-71, NPDES No. CA 8000180. Some of the storm drain systems discharge into drainage areas of Riverside County within the Colorado River Basin and San Diego Regional Boards' jurisdiction. Permit requirements for stormwater runoff from the drainage areas of Riverside County within the jurisdiction of the San Diego and Colorado River Basin Regional Boards will be addressed by these Regional Boards.

COORDINATION WITH OTHER REGIONAL AGENCIES

In developing best management practices and monitoring programs, consultation/coordination with other flood control districts and other regional boards is essential. Regional Board staff will coordinate the program with other regional boards and other flood control districts/cities on an "as needed" basis.

EXISTING FACILITIES AND PROGRAMS

Within the Santa Ana Region, the RCFC&WCD serves a population of approximately 0.8 million, occupying an area of approximately 1,300 square miles. The District's system includes an estimated 200 miles of opened and closed storm channels. The cities' systems include an estimated 57 miles of opened and closed storm channels. Approximately one-quarter (1/4) of Riverside County drains into water bodies within this Regional Board's jurisdiction. Stormwater discharges from urbanized areas consist mainly of surface runoff from residential, commercial, and industrial developments. In addition, there are stormwater discharges from agricultural land uses, including dairy operations. The constituents of concern and significance in these discharges are: total and fecal coliform, enterococcus, total suspended solids, biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), oil and grease (O&G), heavy metals, nutrients, base/neutral and acid extractibles, pesticides, herbicides, and petroleum hydrocarbon components.

The RCFC&WCD has an active surface water quality monitoring program in the permit area. This monitoring program includes 12 water quality monitoring stations, 11 continuous stream gaging stations and 6 crest stage gaging stations, and 51 automatic precipitation gaging stations. Water quality sampling is performed quarterly in January, April, July, and October under dry weather conditions. Samples collected are analyzed for nutrients, metals, minerals, specific conductance, total filtrable residue, and pH. Most of the water quality monitoring stations are located at stormwater drain systems in the Santa Ana River area.

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EXISTING FACILITIES AND PROGRAMS - CONT'D

To protect the beneficial uses of waters of the state, the pollutants from all sources need to be controlled. Recognizing this, and the fact that stormwater discharges contain significant amounts of pollutants, the RCFC&WCD, the County of Riverside, the incorporated cities of Riverside County, and the Regional Board have all agreed that an areawide stormwater permit is the most effective way to develop and implement a comprehensive stormwater management program in a timely manner. This areawide stormwater permit contains requirements with time schedules that will allow the County of Riverside and the cities to address water quality problems caused by urban stormwater runoff by developing and implementing management programs to reduce pollutants in stormwater discharges to the maximum extent practicable.

PERMIT REQUIREMENTS

In accordance with Section 402(p)(3), as part of a program to reduce the pollutants in stormwater discharges to the maximum extent practicable, the dischargers are required to submit existing management plans and programs being implemented in the localities, and information that could lead to successful identification of illegal discharges and sources of pollutants in stormwater discharges. In addition, the dischargers will be required to adopt and implement effective management programs and control measures in accordance with a time schedule approved by the Executive Officer of the Regional Board. Due to the large number of water bodies covered in this order, it is necessary to prioritize water bodies for the development and implementation of the stormwater management program. The stormwater management program will be developed and implemented in two phases, Phase I and Phase II. In Phase I, the dischargers will be required to submit existing stormwater qualitative data and to develop stormwater management and monitoring programs for those water bodies where beneficial uses are threatened or impaired due to runoff of stormwater and urban nuisance water. These water bodies include Reaches 3 and 4 of the Santa Ana River, Prado area streams, San Gabriel Mountain Streams (Valley Reaches), Lake Evans, Lee Lake, Lake Mathews, Lake Elsinore, and Canyon Lake. In Phase II, the dischargers will be required to submit existing stormwater qualitative data and to develop stormwater management and monitoring programs for the remaining water bodies which include the San Jacinto River and its tributaries, San Timoteo Creek and its tributaries, Lake Perris, Lake Fulmor, Lake Hemet, Lake Norconian, and Mockingbird Reservoir.

If existing management programs are not effective in controlling pollutant loading and in achieving the water quality objectives of the receiving waters, additional programs shall be developed and implemented.

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PERMIT REQUIREMENTS - CONT'D

The permit also requires the development and implementation of management programs (best management practices) during the life of the permit such that the quality of stormwater discharged can be improved and the water quality objectives of the receiving waters can be met ultimately. It is also expected that the beneficial uses of the receiving waters will be protected through implementation of best management practices.

Currently, the RCFC&WCD has 12 monitoring stations throughout its system. The proposed order requires the dischargers to submit a stormwater system monitoring program that will meet the objectives, as outlined in Item VII.1., of the program.

BENEFICIAL USES

Stormwater flows which are discharged to storm drain systems in Riverside County are tributary to various water bodies (inland surface streams and lake and reservoirs) of the state. The beneficial uses of these water bodies include municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and preservation of rare and endangered species. The ultimate goal of this stormwater management program is to protect the beneficial uses of the receiving waters.

ANTIDEGRADATION ANALYSIS

The Regional Board has considered whether a complete antidegradation analysis, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, is required for the stormwater discharges. The Regional Board finds that the pollutant loading rates to the receiving waters will be reduced with the implementation of the requirements in this order. As a result, the quality of stormwater discharges and receiving waters will be improved, thereby protecting the beneficial uses of waters of the United States. This discharge is consistent with the federal and state antidegradation requirements and a complete antidegradation analysis is not necessary.

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PUBLIC WORKSHOP

The Regional Board recognizes the significance of Riverside County's Stormwater/Urban Runoff Management Program and will conduct at least one workshop every year during the term of this permit to discuss the progress of the stormwater management program. The details of the annual workshop will be published in local newspapers and mailed to interested parties. Persons wishing to be included in the mailing list for any of the items related to this permit may register their name, mailing address and phone number with the Regional Board office at the address given below.

PUBLIC HEARING

The Regional Board will hold a public hearing regarding the proposed waste discharge requirements. The public hearing is scheduled to be held on Friday, July 13, 1990, at 9:00 a.m. at the City Council Chambers in Riverside. Further information regarding the conduct and nature of the public hearing concerning these waste discharge requirements may be obtained by writing or visiting the Santa Ana Regional Board office, 6809 Indiana Avenue, Suite 200, Riverside.

WRITTEN COMMENTS

Interested persons are invited to submit written comments on the proposed waste discharge requirements and the Executive Officer's proposed determinations. Comments should be submitted by June 22, 1990, either in person or by mail to:

Joanne Lee
California Regional Water Quality Control Board
Santa Ana Region
6809 Indiana Avenue, Suite 200
Riverside, CA 92506-4298

INFORMATION AND COPYING

Persons wishing further information may write to the above address or call Joanne Lee at (714)782-4130. Copies of the application, proposed waste discharge requirements, and other documents (other than those which the Executive Officer maintains as confidential) are available at the Regional Board office for inspection and copying by appointment scheduled between the hours of 10:00 a.m. and 4:00 p.m., Monday through Thursday (excluding holidays).

REGISTER OF INTERESTED PERSONS

Any person interested in a particular application or group of applications may leave his name, address, and phone number as part of the file for an application. Copies of tentative waste discharge requirements will be mailed to all interested parties.

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California Regional Water Quality Control Board
Santa Ana Region

ORDER NO. 90-104

NPDES No. CA 8000192

Waste Discharge Requirements
for
the Riverside County Flood Control & Water Conservation District
and
the County of Riverside, and
the Incorporated Cities of Riverside County Within the Santa Ana Region
Areawide Urban Stormwater Runoff
Riverside County

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On May 8, 1990, the County of Riverside and the Riverside County Flood Control & Water Conservation District (RCFC&WCD), in cooperation with the cities of Beaumont, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as the dischargers), submitted NPDES Application No. CA 8000192 for an areawide stormwater discharge permit under the National Pollutant Discharge Elimination System (NPDES).

2. The 1972 Clean Water Act (CWA) recognised the need to prohibit the discharge of pollutants to surface water bodies from point sources such as industrial facilities and municipal sewage treatment plants. The discharges of pollutants from point sources are regulated by the NPDES permit system, which required technology-based controls for treatment of wastewater. Stormwater point source discharges were exempt from the NPDES permitting requirements unless these discharges were contaminated by industrial/commercial activity. The Regional Board recognised the water quality problems associated with stormwater discharges from industrial facilities and has issued a number of stormwater permits for such facilities in accordance with the EPA regulations.

3. In 1976, the United States Environmental Protection Agency (EPA) issued new regulations establishing a comprehensive permitting program for all stormwater discharges except for rural runoff uncontaminated by industrial/commercial activity. Channelised stormwater runoff from rural areas continued to be defined as nonpoint source unless designated otherwise by the permitting authority.



R0061556

4. Since 1976, EPA has issued several revisions to the stormwater regulations. Section 405 of the Water Quality Act (WQA) of 1987 added Section 402(p) to the CWA. Pursuant to Section 402(p)(4) of the CWA, EPA is required to promulgate regulations for stormwater permit applications for stormwater discharges associated with industrial activities and municipal separate storm drain systems serving a population of 100,000 or more. Section 402 (p)(4) of the CWA also requires dischargers of stormwater associated with industrial activities and municipal separate storm drain systems serving a population of 250,000 or more to file stormwater permit applications by February 4, 1990.

5. On December 7, 1988, EPA published its proposed regulations in the Federal Register to solicit public comments. Final regulations are tentatively scheduled to be promulgated on July 20, 1990 and to be published in the Federal Register on August 4, 1990. In the absence of final stormwater regulations, a permit governing municipal stormwater discharges should meet both the statutory requirements of Section 402 (p)(3)(B) and all requirements applicable to a NPDES permit issued under the issuing authority's discretionary authority in accordance with Section 402 (a)(1)(B) of the CWA.

6. The beneficial uses of a number of water bodies within Riverside County are threatened or impaired wholly or in part due to urban stormwater runoff and nuisance water. These water bodies include the Santa Ana River (SAR), Reaches 3 and 4, Canyon Lake, Lake Elsinore, Lake Evans, and Lake Mathews. A comprehensive stormwater and urban runoff management and regulatory program is essential for the protection of the water resources of the Region. The RCFC&WCD, the County of Riverside, the cities in Riverside County, and the Regional Board have recognized this fact, and as a first step towards protecting water quality in the area, a comprehensive management program is being developed. This order outlines the existing programs and specifies additional requirements to achieve water quality objectives for the Riverside County drainage areas. The intent of this permit is to regulate pollutant discharges and improve water quality in the Region in a timely manner.

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7. Within the Santa Ana Region, the RCFC&WCD, serves a population of approximately 0.8 million, occupying an area of approximately 1,300 square miles. The District's system includes an estimated 200 miles of opened and closed storm channels and the cities' systems include an estimated 57 miles of opened and closed storm channels. Approximately one-quarter (1/4) of the entire Riverside County area drains into water bodies within this Regional Board's jurisdiction. The project area is shown on Attachment "A" and the drainage areas are characterised as shown on Attachment "B". Approximately 5/8 of the Riverside County drainage areas is within the jurisdiction of the Colorado River Basin Regional Board and the remaining one-eighth (1/8) of the Riverside County drainage areas is within the jurisdiction of the San Diego Regional Board. Urbanization of the drainage areas within the Colorado River Basin and San Diego Regional Boards is minimal in comparison to that in the drainage areas under the Santa Ana Regional Board's jurisdiction. Permit requirements for stormwater runoff from the drainage areas of Riverside County within the jurisdiction of the San Diego and Colorado River Basin Regional Boards will be addressed by these Regional Boards.

8. The discharges consist of surface runoff generated from various land uses in all the hydrologic drainage areas which discharge into water bodies in Riverside County. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events, and the presence of illicit connections to the storm drain systems. The constituents of concern and significance in these discharges are: total and fecal coliform, enterococcus, total suspended solids, biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), oil and grease, heavy metals, nutrients, base/neutral and acid extractibles, pesticides, herbicides, and petroleum hydrocarbon components.

9. There are several entities whose land/facilities drain into the Riverside County storm drain systems. The RCFC&WCD has control over approximately 85% percent of the storm drain systems within the Region and has agreed to be the major responsible party in implementing the provisions of this order. The remaining storm sewer systems are owned and operated by the cities within the county and by the State Department of Transportation (Caltrans). The County of Riverside, and the incorporated cities within the county have agreed to

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9. (cont'd)

cooperate with the RCFC&WCD in controlling and improving the quality of urban runoff from their respective areas. The RCFC&WCD has been named as the "principal permittee" and the County of Riverside and the incorporated cities have been named as the "co-permittees". Attachment "C" lists the incorporated cities with their 1990 estimated populations. Of the nine cities listed, there are two cities with an estimated 1990 population over 100,000.

10. Due to the enormous variability in stormwater quality and the complexity of the urban runoff management program, this areawide stormwater permit is categorized as a major NPDES permit. This areawide stormwater permit requires all entities discharging stormwater/urban runoff into the storm drain systems or any surface water bodies to have appropriate controls for proper management of this runoff. The Regional Board has the discretion and authority to require non-cooperating entities to participate in this areawide permit or obtain individual stormwater discharge permits, pursuant to 40 CFR 122.26(a). The entities listed in Attachment "D" are considered as potential dischargers of stormwater to the Riverside County drainage areas. It is expected that these entities will also work cooperatively with the County of Riverside to manage urban runoff.

11. The RCFC&WCD, as the "principal permittee", will obtain the cooperation of all entities in implementing the provisions of this order. The dischargers have agreed upon the responsibilities as outlined in the draft June 6, 1990 Implementation Agreement. In general, the RCFC&WCD, as the "principal permittee", will be responsible for preparing operating budgets, preparing and monitoring the implementation programs, coordinating and submitting reports to the Regional Board, and conducting inspections on District's storm drain systems. The County of Riverside and the incorporated cities, as the "co-permittees", will develop site-specific compliance requirements, perform compliance monitoring and inspections, submit storm drain maps and compliance reports to the RCFC&WCD, exercise enforcement authority for achieving compliance, and review and implement stormwater management programs.

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12. The RCFC&WCD obtains its authority to control pollutants in stormwater discharges, to prohibit illegal discharges and control spills, and to require compliance and carry out inspections of the storm drain systems in the County of Riverside from the Riverside County Flood Control and Water Conservation District Act and various county ordinances which address industrial wastes and waste discharges, and land use within the unincorporated areas of Riverside County and contract cities. The "co-permittees" have various forms of legal authority in place, such as charters, State Code provisions for General Law cities, city ordinances, and applicable portions of municipal codes and the State Water Code, to regulate stormwater/urban runoff discharges.

13. The RCFC&WCD has an active surface water quality monitoring program in the permit area. This monitoring program includes 12 water quality monitoring stations, 11 continuous stream gaging stations and 6 crest stage gaging stations, and 51 automatic precipitation gaging stations. Water quality sampling is performed quarterly in January, April, July, and October under dry weather conditions. Samples collected are analyzed for nutrients, metals, minerals, specific conductance, total filtrable residue, and pH. Most of the water quality monitoring stations are located at stormwater drain systems in the Santa Ana River area.

14. A Water Quality Control Plan was adopted by the Regional Board on May 13, 1983. The Plan contains water quality objectives and beneficial uses of waters in the Santa Ana Region. On July 14, 1989, the Regional Board adopted a Basin Plan amendment, incorporating revised beneficial use designations for the ground and surface waters of the Region.

15. The requirements contained in this order are necessary to implement the Water Quality Control Plan.

16. An attempt has been made to incorporate all of the essential elements of the proposed federal stormwater regulations in this permit.

17. Stormwater discharges to the storm drain systems in Riverside County within the Santa Ana Region are tributary to various water bodies of the state. The identified water bodies are as follows (Only a portion of some of the water bodies listed below is within the Santa Ana Regional Board's jurisdiction):

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17. (cont'd)

Inland Surface Streams

A. Santa Ana River
Santa Ana River, Reaches 3 and 4

B. Prado Area Streams
Tequesquite Arroyo (Sycamore Creek)
Chino Creek
Temescal Creek, Reaches 1, 2, 3, 4, 5, and 6
Coldwater Canyon Creek
Bedford Canyon Creek
Other tributaries to these Creeks.

C. San Gabriel Mountain Streams (Valley Reaches)
Day and East Etiwanda Creek
Cucamonga Creek

D. San Jacinto River Basin
San Jacinto River, Reaches 1, 2, 3, 4, 5, 6, and 7
Bautista Creek - Headwaters to Debris Dam
Strawberry Creek and San Jacinto River, North Fork
Fuller Mill Creek
Stone Creek
Salt Creek
Other tributaries: Indian, Murkey, Poppet and Potrero Creeks, and other tributaries to these Creeks

E. San Timoteo Creek Area Streams
San Timoteo Creek, Reaches 3 and 4
Little San Gorgonio Creek
Yucaipa Creek
Other Tributaries to these Creeks - Valley Reaches
Other Tributaries to these Creeks - Mountain Reaches

Lake and Reservoirs

F. Lake Evans
G. Lee Lake
H. Lake Mathews
I. Mockingbird Reservoir
J. Lake Norconian
K. Canyon Lake
L. Lake Elsinore
M. Lake Fulmor
N. Lake Hemet
O. Lake Perris

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17. (cont'd)

The beneficial uses of these water bodies include municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PROC), groundwater recharge (GWR), water contact recreation (REC-1), non-contact water recreation (REC-2), warm freshwater habitat (WARM), cold freshwater habitat (COLD), wildlife habitat (WILD), and preservation of rare and endangered species (RARE). The beneficial uses of individual water bodies are shown on Attachment "E".

18. Stormwater discharged from the storm drain systems operated by the County of San Bernardino drain into various water bodies in the project area. These water bodies include the Santa Ana River and San Timoteo Creek. The County of San Bernardino will also be required to obtain an areawide stormwater permit for effective control of the pollutants in the stormwater runoff discharged from its storm drain systems.

19. Due to the large number of water bodies covered in this order, it is necessary to prioritise these water bodies for the development and implementation of the stormwater management program to effectively control the pollutants in the stormwater discharges. The stormwater management program will be developed and implemented in two phases, Phase I and Phase II. In Phase I, the dischargers will be required to submit existing stormwater qualitative data and develop management and monitoring programs for those water bodies where beneficial uses are threatened or impaired due to runoff of stormwater and urban nuisance water. These water bodies include Reaches 3 and 4 of the Santa Ana River, Prado area streams, Temescal Creek and its tributaries, Lake Evans, Lee Lake, Lake Mathews, Lake Elsinore, and Canyon Lake. In Phase II, the dischargers will be required to submit existing stormwater qualitative data and to develop stormwater management and monitoring programs for the remaining water bodies which include the San Jacinto River and its tributaries, San Timoteo Creek and its tributaries, Lake Perris, Lake Fulmor, Lake Hemet, Lake Norconian, and Mockingbird Reservoir.

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20. Numeric and narrative water quality standards exist for the water bodies listed in Item No. 17, above. Currently, this permit does not contain numeric limitations for any constituents because the impact of stormwater discharges on the water quality of the above named receiving waters has not been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. This order requires the dischargers continue to monitor the stormwater discharges or begin monitoring as necessary, and to analyze the data. Additionally, the order also requires development and implementation of best management practices[1] (BMPs) in accordance with the WQA of 1987. It is anticipated that with the implementation of BMPs by the dischargers, the pollutants in the stormwater runoff will be reduced and the quality of the receiving waters will be improved. The ultimate goal of the urban stormwater runoff management program is to attain water quality consistent with the water quality objectives for the receiving waters to protect the beneficial uses.

21. With respect to industrial activities, the Regional Board currently regulates discharges of point source process wastewater and non-process wastewater and stormwater discharges to storm drain systems through NPDES permits. Point source discharges other than stormwater will continue to be regulated by the Regional Board. Industrial stormwater dischargers are required to cooperate with the RCFC&WCD to control the discharge of pollutants in the stormwater runoff from individual facilities or to obtain individual industrial stormwater discharge permits from the Regional Board.

22. Recognizing the need for public involvement and participation in the development and implementation of an effective stormwater/urban runoff management program, the Regional Board will conduct at least one workshop each year during the term of this permit. The purposes of the workshops will be to solicit comments and to inform the public of the progress of the program. Written comments submitted will be forwarded to the State Board, EPA, and the RCFC&WCD for their review and comments.

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[1] Best Management Practices (BMPs) are water quality management practices that are maximized in efficiency for the control of stormwater runoff pollution.

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23. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

24. The Regional Board has considered an antidegradation analysis, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the stormwater discharges are consistent with the federal and state antidegradation requirements and a complete antidegradation analysis is not necessary.

25. The Regional Board has notified the dischargers and interested agencies and persons of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

26. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

IT IS HEREBY ORDERED that the dischargers, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and regulations and guidelines adopted thereunder, shall comply with the following:

I. RESPONSIBILITIES OF PRINCIPAL PERMITTEE

The principal permittee shall be responsible to manage the program overall, including:

1. Administer the Riverside County Flood Control and Water Conservation District Act.

2. Conduct water quality and hydrographic monitoring of the storm drain system outfalls as agreed upon by the Executive Officer.

3. Develop uniform criteria for storm drain system inspections.

4. Conduct inspections of the storm drain systems within its jurisdiction.

5. Implement management programs, monitoring programs, and implementation plans within its jurisdiction as required by this order.

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I. RESPONSIBILITIES OF PRINCIPAL PERMITTEE - CONT'D

6. Prepare and submit to the Regional Board all the reports, plans, and programs as required in this order.

7. Monitor the implementation of the plans and programs and determine their effectiveness in attaining water quality objectives.

8. Coordinate all the activities with the Regional Board.

9. Enact legislation and ordinances as necessary to establish legal authority.

10. Obtain public input[2] for any proposed management and implementation plans.

11. Pursue enforcement actions as necessary to ensure compliance with stormwater management programs and implementation plans.

12. Respond to emergency situations such as accidental spills, leaks, illegal discharges/illicit connections etc. to prevent or reduce the discharge of pollutants to storm drain systems and waters of the United States.

II. RESPONSIBILITIES OF THE CO-PERMITTEES

The co-permittees shall be responsible to manage the program within its jurisdiction, including:

1. Administer the county and city ordinances.

2. Conduct storm drain system inspections in accordance with the uniform criteria developed by the principal permittee.

3. Conduct and coordinate with the principal permittee any surveys and characterizations needed to identify the pollutant sources and drainage areas.

4. Review and approve management programs, monitoring programs, and implementation plans.

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[2] Public input is demonstrated by: (1) disseminating the notice of availability of plans for review and comment to the public at large, environmental groups, federal, state and local agencies and other interested parties; and, (2) addressing concerns expressed by the public.

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II. RESPONSIBILITIES OF THE CO-PERMITTEES - CONT'D

5. Implement management programs, monitoring programs, and implementation plans within each respective jurisdiction as required by this order.

6. Submit storm drain system maps with periodic revisions as necessary.

7. Prepare and submit all reports to the principal permittee in a timely manner.

8. Enact legislation and ordinances as necessary to establish legal authority.

9. Pursue enforcement actions as necessary to ensure compliance with the stormwater management programs and the implementation plans.

10. Respond to emergency situations such as accidental spills, leaks, illegal discharges/illicit connections, etc. to prevent or reduce the discharge of pollutants to storm drain systems and waters of the United States.

III. GENERAL REQUIREMENTS

1. The dischargers shall prohibit illegal discharges from entering into the municipal storm drain systems. Discharges conditionally allowed to enter storm drain systems are specified in Item V.6.

2. The dischargers shall develop and implement best management practices (BMPs) to control discharge of pollutants to the maximum extent practicable[3] to waters of the United States. The BMPs so developed, along with a time schedule for implementation, shall be submitted for the approval of and/or modification by the Executive Officer of the Regional Board. In developing the best management practices, the dischargers shall consider the water quality objectives of all the receiving water bodies.

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[3] Maximum Extent Practicable (MEP) means to the maximum extent possible, taking into account equitable considerations of synergistic, additive, and competing factors, including but not limited to, gravity of the problem, fiscal feasibility, public health risks, societal concern, and social benefits.

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IV. COMPILATION AND SUBMITTAL OF EXISTING DATA - CONT'D

b. An identification of the drainage areas, more than 50 acres in size, that discharge stormwater to the storm drain systems and of those drainage areas that discharge to storm drain systems with pipe diameters greater than 36 inches.

c. The sizes of these drainage areas (acreage) and the sizes (pipe diameters or approximate dimensions of the storm drain systems) and physical characteristics of the storm drain systems. These physical characteristics shall include, but not be limited to, whether the storm drain system is lined or unlined and whether it has intermittent or continuous flow;

d. The names, locations, and Standard Industrial Codes (SIC) of specific industrial sources and principal land use activities in each drainage area, identified in IV.2.a., above, discharging to the storm drain systems. An estimate of the runoff coefficients for these drainage areas shall also be provided;

e. The locations of present storm drain outfalls discharging to waters of the United States. The name of each receiving water body shall be reported and the location of each outfall shall be indicated on a map;

f. The locations of major structural controls for stormwater discharge (e.g. retention basins, detention basins, etc).

3. Illegal Discharges/Illicit Connections

a. The dischargers shall provide a list of dischargers (permitted and unpermitted) known to exist currently who discharge process or non-process wastewater to the storm drain systems. The dischargers shall also provide any existing procedures used for detecting illegal discharges/illicit connections to the storm drain systems, the rationale for the procedures, and the drainage areas (or cities) in which these programs are practiced; and

b. A description of the present and historic use of ordinances or other controls to prohibit the illegal discharges/illicit connections to storm drain systems;

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IV. COMPILATION AND SUBMITTAL OF EXISTING DATA - CONT'D

4. Stormwater Management Program

A description of the existing stormwater/urban runoff management programs and structural and non-structural BMPs implemented by the dischargers.

5. Stormwater/Urban Runoff Monitoring Program

A description of the existing monitoring programs and the rationale for their selection.

6. Pollutant Information

The dischargers shall provide information regarding the discharge of any pollutant required under 40 CFR 122.21(g)(7)(iii) and (iv).

7. Other Pertinent Existing Information

The dischargers shall provide to the Regional Board any other existing information that is pertinent to this permit. For example, a description of drainage areas hydrologic parameters.

8. The dischargers shall submit the above information, IV.1. - IV.7., for various water bodies within the project area in accordance with the following schedule:

| Phase | Description of Water Body | Compliance Report Due |
|---|---|---|
| I | Santa Ana River, Reaches 3 & 4, Prado area streams, San Gabriel Mountain Streams (Valley Reaches), Lake Evans, Lee Lake, Lake Mathews, Lake Elsinore, and Canyon Lake. | 03/31/91 |
| II | San Jacinto River and its tributaries, San Timoteo Creek and its tributaries, Lake Fulmor, and Lake Hemet, Lake Perris, Lake Moroconian, and Mockingbird Reservoir. | 03/31/92 |

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V. RECONNAISSANCE SURVEY

1. The dischargers shall submit information from a reconnaissance survey to be conducted at the storm drain systems. The purpose of the survey is to identify illegal discharges/illicit connections to the storm drain systems. The reconnaissance survey field manual and implementation plan for prosecuting violators and eliminating illegal discharges so developed, along with time schedules for implementation, shall be submitted for the approval of and/or modification by the Executive Officer of the Regional Board.

2. By September 30, 1991, a proposed reconnaissance survey field manual, including a time schedule, for Phase I shall be submitted for approval and/or modification by the Executive Officer of the Regional Board. By September 30, 1992, a proposed reconnaissance survey field manual, including a time schedule, for Phase II shall be submitted.

3. The discharger shall implement the reconnaissance survey field manual after consideration of public comments and approval/modification of the manual by the Executive Officer of the Regional Board. By September 30, 1992 and every year thereafter until the completion of the survey, a progress report containing the following information shall be submitted:

   a. Results of the reconnaissance survey, including an analysis of the results.

   b. Additional information that would lead to isolating and identifying sources of illegal discharges/illicit connections to the storm drain systems. Such information should include, but is not limited to, visual observations (e.g. color, turbidity, odor, etc), major land use activities in the surrounding drainage areas, seasonal change of flow, the surrounding hydrogeologic formation, etc.

   c. A listing of any identified or suspected illegal dischargers including the names, locations, and types of the facilities and the names of the storm drain systems and receiving waters the illegal discharges are discharged to.

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V. RECONNAISSANCE SURVEY - CONT'D

d. A listing of large industrial facilities (with more than 100 employees) where hazardous/toxic substances are stored and/or used, landfills, hazardous waste disposal, treatment, and/or recovery facilities, and any known spills, leaks or other problems in the area.

e. A discussion on all activities, related to the survey, conducted for the past 12 months.

4. By September 30, 1992, the dischargers shall submit a proposed implementation plan, including a tentative time schedule, for Phase I to prosecute violators and eliminate such discharges to the storm drain systems. By September 30, 1993, a proposed implementation plan to prosecute violators and eliminate illegal discharges/illicit connections shall also be submitted for Phase II. The proposed plan shall also include a description of the legal authorities for prosecuting violators and eliminate or control illicit disposal practices and illegal discharges to the storm drain systems, and a proposed time schedule for obtaining such legal authorities, if necessary.

5. The dischargers shall implement the program for prosecuting violators and eliminate illegal discharges to the storm drain systems after consideration of public comments and approval/modification of the program by the Executive Officer of the Regional Board. By September 30, 1993 and every year thereafter, the discharger shall submit a progress report evaluating the effectiveness of the plan in detecting and eliminating illegal discharges to the storm drain systems.

6. The permittees shall effectively eliminate all identified illegal discharges/illicit connections in the shortest time practicable, and in no case later than July 1, 1995. Those illegal discharges/illicit connections identified after July 1, 1995 shall be eliminated in the shortest time practicable. The following discharges shall not be considered illegal discharges provided the discharges do not cause or contribute to violations of water quality standards and are not significant contributors of pollutants to waters of the United States: discharges composed entirely of stormwater, discharges covered under NPDES permits or waivers/clearances, discharges to storm drain systems form potable water line flushing, fire fighting, landscape irrigation, diverted stream flows, rising groundwaters (not including active dewatering systems), groundwater infiltration as defined at 40 CFR

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V. RECONNAISSANCE SURVEY - CONT'D

6. (cont'd)

35.2005(20), discharges from potable water sources, passive foundation drains (not including active groundwater dewatering), air conditioning condensation, irrigation water, water from crawl space pumps, passive footing drains (not including active groundwater dewatering systems), lawn watering, individual residential vehicle washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, street wash waters related to cleaning and maintenance by permittees, or waters not otherwise containing wastes as defined in California Water Code Section 13050 (d). If it is determined that any of the preceding discharges cause or contribute to violations of water quality standards or are significant contributors of pollutants to waters of the United States, the permittees shall prohibit these discharges from entering storm drain systems.

VI. DRAINAGE AREA MANAGEMENT PROGRAM

1. The dischargers shall develop and implement best management practices (BMPs) to control the discharge of pollutants to waters of the United States. The discharger shall submit information pertaining to the proposed stormwater system management programs for approval of and/or modification by the Executive Officer of the Regional Board. The information shall include, but need not be limited to, the following:

a. A brief description of the existing BMPs and stormwater management programs.

b. Proposed modifications to the existing BMPs and stormwater/urban runoff management programs to reduce pollutants in the stormwater discharges from industrial, commercial, and residential areas to the maximum extent practicable. At a minimum, the following shall be considered in developing the BMPs:

Structural Controls

i. For the permitted area, wherever appropriate, structural controls such as first flush diversion, detention/retention basins, infiltration trenches/basins, porous pavement, oil/grease separators, grass swales, wire concentrators, etc.

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VI. DRAINAGE AREA MANAGEMENT PROGRAM - CONT'D

Non-Structural Controls

ii. Programs to educate the public on proper disposal of hazardous/toxic wastes. These may include public workshops, meetings, notifications by mail, collection programs for household hazardous wastes, etc.

iii. Management practices such as street sweeping, proper maintenance of streambanks, erosion control structures, etc.

iv. Regulatory approaches such as county and local ordinances, permitting of construction sites, etc.

v. Enforcement programs, established by the county and cities, including response to emergency incidents, field inspections, and identification and elimination of illegal discharges/illicit connections to the storm drain systems.

c. An implementation plan for site-specific BMPs which are required to reduce pollutants in the stormwater discharges from residential, commercial and industrial areas, and construction sites. Requirements for the implementation of BMPs at these sites are described below:

i. New Construction Sites

Runoff from construction sites has the potential to adversely impact the quality of waters of the United States. A full range of structural and non-structural BMPs shall be required at new construction sites. All industrial/commercial construction operations that result in a disturbance of one acre or more of total land area (or a smaller parcel of land which is a part of a larger common development) and residential construction sites that result in a disturbance of five acres or more of total land area (or a smaller parcel of land which is a part of a larger common development) shall be required to develop and implement BMPs, including a long term funding mechanism and commitment to support required maintenance of the BMPs, to control erosion/siltation and contaminated runoff from the construction sites.

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VI. DRAINAGE AREA MANAGEMENT PROGRAM - CONT'D

ii. Residential and Commercial/Industrial Sites

Numerous studies have shown that runoff from residential and commercial/industrial areas has contributed a number of pollutants to waters of the United States. As development progresses, the percentage of paved surface increases, the rate of runoff increases, and the amount of pollutants in the runoff also increases. To prevent the increase of pollutants in the stormwater discharges, all new developments and existing facilities with significant redevelopment, irrespective of their size, must develop individual comprehensive, long-term, post construction stormwater management plans, incorporating structural and non-structural BMPs. These management plans shall include a long term funding mechanism and commitment to support required maintenance of the BMPs.

d. A description of the legal authorities for implementing the programs, and a proposed time schedule for obtaining such legal authorities, if necessary.

e. A description of staff, equipment, and funds available to implement the programs.

2. The dischargers shall submit the BMPs so developed, along with a time schedule for implementation, for the approval of and modification by the Executive Officer of the Regional Board in accordance with the following schedule:

| Phase | Description of Water Body | Compliance Report Due |
|---|---|---|
| I | Santa Ana River, Reaches 3 & 4, Prado area streams, San Gabriel Mountain Streams (Valley Reaches), Lake Evans, Lee Lake, Lake Mathews, Lake Elsinore, and Canyon Lake. | 03/31/92 |
| II | San Jacinto River and its tributaries, San Timoteo Creek and its tributaries, Lake Fulmor, and Lake Hemet, Lake Perris, Lake Norconian, and Mockingbird Reservoir. | 03/31/93 |

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VI. DRAINAGE AREA MANAGEMENT PROGRAM - CONT'D

3. The dischargers shall implement the BMPs and other stormwater management programs after consideration of public comments and approval/modification of the programs by the Executive Officer of the Regional Board. By October 31, 1992 and every year thereafter, the dischargers shall submit a progress report assessing the reduction of pollutants discharged to waters of the United States and evaluating the effectiveness of the BMPs developed for the stormwater discharges. The dischargers shall also include recommended BMP modifications, with a time schedule for implementation, needed to achieve compliance with any water quality objectives not attained.

VII. STORMWATER SYSTEM MONITORING PROGRAM

1. The discharger shall submit a stormwater system monitoring program for approval of and/or modification by the Executive Officer. The objectives of the stormwater system monitoring program are:

   a. To define the type, magnitude (concentration and mass load), and sources of pollutants in the stormwater system discharges within each permittee's respective jurisdiction so that appropriate pollution prevention and correction measures can be identified;

   b. To evaluate the effectiveness of pollution prevention and correction measures; and

   c. To evaluate the compliance with water quality objectives established for the stormwater system or its components.

2. At a minimum, the stormwater system monitoring program shall include the following:

   a. A brief description of the existing monitoring programs.

   b. For both storm and non-storm conditions, sampling of the stormwater system discharges at major and representative outfalls discharging to waters of the United States to determine the pollutant loading rates to each receiving water body listed in Attachment "E".

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VII. STORMWATER SYSTEM MONITORING PROGRAM - CONT'D

c. For both storm and non-storm conditions, a description of the number of monitoring stations, the locations of these monitoring stations, and the rationale for their selection.

d. For both storm and non-storm conditions, a description of the physical, chemical, and biological parameters selected for analysis, the method of analysis, the type of sampling, and the sampling frequency proposed. The rationale for each of these selections shall be provided.

e. Monitoring of the stormwater system discharges to identify illicit connections shall be conducted.

f. Quality assurance and quality control plans for the stormwater system monitoring program shall be submitted.

g. A data base that consolidates all monitoring information shall be maintained.

h. A description of the staff, equipment, and funds available to implement the monitoring program shall be provided.

i. A description of the legal authorities for implementing the program, and a proposed time schedule for obtaining such legal authorities (if necessary) shall be provided.

3. The dischargers shall submit the stormwater monitoring program so developed, along with a time schedule, for various water bodies in the project area in accordance with the following schedule:

| Phase | Description of Water Body | Compliance Report Due |
|---|---|---|
| I | Santa Ana River, Reaches 3 & 4, Prado area streams, San Gabriel Mountain Streams (Valley Reaches), Lake Evans, Lee Lake, Lake Mathews, Lake Elsinore, and Canyon Lake. | 03/31/92 |
| II | San Jacinto River and its tributaries, San Timoteo Creek and its tributaries, Lake Fulmor, and Lake Hemet, Lake Perris, Lake Norconian, and Mockingbird Reservoir. | 03/31/93 |

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VII. STORMWATER SYSTEM MONITORING PROGRAM - CONT'D

3. The dischargers shall implement the stormwater system monitoring program after consideration of public comments and approval/modification of the program by the Executive Officer of the Regional Board. By March 31, 1992 and every year thereafter, the dischargers shall submit a report on progress towards implementation of the approved monitoring program.

VIII. RECEIVING WATER MONITORING PROGRAM

1. The discharger shall develop a receiving water monitoring program to assess the effects of pollutants from the stormwater system discharges on receiving water bodies, and to evaluate compliance with water quality objectives of the receiving water bodies. All the water bodies listed in Attachment "E" shall be addressed. The receiving water monitoring program shall be coordinated with the stormwater system monitoring program required under Section VII such that the aforestated objectives of the receiving water monitoring program will be achieved.

2. At a minimum, the receiving water monitoring program shall include the following:

   a. A brief description of the existing monitoring programs.

   b. A description of the number of monitoring stations, the location of these monitoring stations, and the rationale for their selection.

   c. A description of the physical, chemical and biological selected for analysis, the type of sampling, and the sampling frequency proposed. The rationale for each of these selections shall be provided.

   d. Quality assurance and quality control plans for the receiving water monitoring program.

   e. Maintenance of a data base that consolidates all monitoring information. This data base shall be coordinated with the data base required for the stormwater system monitoring program (VII.2.g.).

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VIII. RECEIVING WATER MONITORING PROGRAM - CONT'D

3. The dischargers shall submit the receiving water monitoring programs for various water bodies within the project area in accordance with the following schedule:

| Phase | Description of Water Bodies | Compliance Report Due |
|---|---|---|
| I | Santa Ana River, Reaches 3 & 4, Prado area streams, San Gabriel Mountain Streams (Valley Reaches), Lake Evans, Lee Lake, Lake Mathews, Lake Elsinore, and Canyon Lake. | 03/31/92 |
| II | San Jacinto River and its tributaries, San Timoteo Creek and its tributaries, Lake Fulmor, and Lake Hemet, Lake Perris, Lake Moroconian, and Mockingbird Reservoir. | 03/31/93 |

4. The dischargers shall implement the receiving water monitoring program after consideration of public comments and approval/modification of the program by the Executive Officer of the Regional Board. By March 31, 1992 and every year thereafter, the discharger shall submit a report on progress towards implementation of the approved receiving water monitoring program.

IX. FISCAL ANALYSIS

1. By July 31 of each year, a fiscal analysis of the capital and operation and maintenance expenditures necessary to accomplish the activities of the proposed plans and programs shall be performed.

2. By August 31, 1991 and every year thereafter, a fiscal analysis of the capital and operation and maintenance expenditures shall be submitted for review by EPA and the Regional Board.

X. DATA ANALYSIS

1. For the stormwater system monitoring program, the results of the chemical analysis and quantitative data (such as flow, precipitation, and discharge data) shall be compiled for each drainage area, each storm event, and for different times during the same storm event. The mass loading rates for the pollutants of concern shall be calculated.

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X. DATA ANALYSIS - CONT'D

2. An evaluation shall be performed for the calculated mass loading rates from the stormwater system monitoring program and the receiving water monitoring program. Any impact of the discharges from the stormwater systems on the receiving waters shall be discussed, starting with the most significantly impacted receiving water bodies. The evaluation shall be concluded with recommendations and the corrective actions proposed for any resulting discrepancies.

3. By January 31, 1993 and every year thereafter, the analysis of all the above data shall be submitted.

XI. PROGRAM ANALYSIS

1. In January of every year, the principal permittee shall conduct an analysis of the effectiveness of the overall stormwater management program. If the water quality objectives of the receiving waters are violated as a result of stormwater/urban runoff discharges, the principal permittee shall identify proposed programs which will result in the attainment of the water quality objectives, and a time schedule to implement the new programs.

2. By March 31, 1993 and every year thereafter, the analysis of the overall program and any proposed programs, to achieve compliance with water quality objectives of water bodies that have not been attained, shall be submitted.

XII. REPORTING

1. All reports shall be signed by the "principal permittee" or duly authorized representative of the dischargers and shall be submitted to EPA and the Regional Board under penalty of perjury.

2. A signed copy of the Implementation Agreement between the RCFC&WCD, the County of Riverside, and the cities shall be submitted by January 31, 1991. Any revisions to the Implementation Agreement shall be forwarded to the Executive Officer within 30 days of approval by all the dischargers.

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X. DATA ANALYSIS - CONT'D

2. An evaluation shall be performed for the calculated mass loading rates from the stormwater system monitoring program and the receiving water monitoring program. Any impact of the discharges from the stormwater systems on the receiving waters shall be discussed, starting with the most significantly impacted receiving water bodies. The evaluation shall be concluded with recommendations and the corrective actions proposed for any resulting discrepancies.

3. By January 31, 1993 and every year thereafter, the analysis of all the above data shall be submitted.

XI. PROGRAM ANALYSIS

1. In January of every year, the principal permittee shall conduct an analysis of the effectiveness of the overall stormwater management program. If the water quality objectives of the receiving waters are violated as a result of stormwater/urban runoff discharges, the principal permittee shall identify proposed programs which will result in the attainment of the water quality objectives, and a time schedule to implement the new programs.

2. By March 31, 1993 and every year thereafter, the analysis of the overall program and any proposed programs, to achieve compliance with water quality objectives of water bodies that have not been attained, shall be submitted.

XII. REPORTING

1. All reports shall be signed by the "principal permittee" or duly authorized representative of the dischargers and shall be submitted to EPA and the Regional Board under penalty of perjury.

2. A signed copy of the Implementation Agreement between the RCFC&WCD, the County of Riverside, and the cities shall be submitted by January 31, 1991. Any revisions to the Implementation Agreement shall be forwarded to the Executive Officer within 30 days of approval by all the dischargers.

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XII. REPORTING - CONT'D

3. Other reports and information required to be submitted to the Regional Board under the requirements specified above shall be reported in accordance with the following schedule:

Phase I

| TASK | | COMPLIANCE REPORT DUE |
|---|---|---|
| a. | Existing reports and programs IV.1.-IV.7. | 03/31/91 |
| b. | Proposed Reconnaissance Survey Field Manual - V.2. | 09/30/91 |
| c. | Proposed Implementation Plan for Prosecuting Illegal Dischargers - V.4. | 09/30/92 |
| d. | Management Programs (MMPs) and Implementation Plan - VI.1.- VI.2. | 03/31/92 |
| e. | Stormwater Monitoring Program VII.1. - VII.3 | 03/31/92 |
| f. | Receiving Water Monitoring Program VIII.1. - VIII.3. | 03/31/92 |
| g. | Progress Reports after Plan Implementation | |
| | i. Reconnaissance Survey Progress Report - V.3. | 09/30 of every year[4] |
| | ii. Illegal Discharges - V.5. | 09/30 of every year[5] |
| | iii. Management Programs - VI.3. | 03/31 of every year[6] |

[4] The first progress report is due by September 30, 1992.

[5] The first progress report is due by September 30, 1993.

[6] The first progress report is due by March 31, 1993.

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XII. REPORTING - CONT'D

| TASK | | COMPLIANCE REPORT DUE |
|---|---|---|
| g. | Progress Reports after Plan Implementation | |
| | iv. Stormwater Monitoring Program VII.4. | 03/31 of every year[7] |
| | v. Receiving Water Monitoring Program VIII.4. | 03/31 of every year[8] |
| h. | Compliance - Illegal Discharges | See Item V.6. |
| i. | Fiscal Analysis | 08/31 of every year[9] |
| j. | Data Analysis | 01/31 of every year[10] |
| k. | Program Analysis | 03/31 of every year[11] |

Phase II

| TASK | | COMPLIANCE REPORT DUE |
|---|---|---|
| a. | Existing reports and programs IV.1. - IV.7. | 03/31/92 |
| b. | Proposed Reconnaissance Survey Field Manual - V.2. | 09/30/92 |
| c. | Proposed Implementation Plan for Prosecuting Illegal Dischargers - V.4. | 09/30/93 |
| d. | Management Programs (BMPs) and Implementation Plan - VI.1.- VI.2. | 03/31/93 |

[7] The first progress report is due by March 31, 1993.

[8] The first progress report is due by March 31, 1993.

[9] The first annual fiscal analysis is due by August 31, 1991.

[10] The first data/program analysis is due by January 31, 1993.

[11] The first program analysis is due by March 31, 1993.

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XII. REPORTING - CONT'D

Phase II - cont'd

| TASK | | COMPLIANCE REPORT DUE |
|---|---|---|
| e. | Stormwater Monitoring Program VII.1.- VII.3. | 03/31/93 |
| f. | Receiving Water Monitoring Program VIII.1. - VIII.3. | 03/31/93 |
| g. | Progress Reports after Plan Implementation | |
| | i. Reconnaissance Survey Progress Report - V.3. | 09/30 of every year[12] |
| | ii. Illegal Discharges - V.5. | 09/30 of every year[13] |
| | iii. Management Programs - VI.3. | 03/31 of every year[14] |
| | iv. Stormwater System Monitoring Program VII.4. | 03/31 of every year[15] |
| | v. Receiving Water Monitoring Program VIII.4. | 03/31 of every year[16] |
| h. | Compliance - Illegal Discharges | See Item V.6. |
| i. | Fiscal Analysis | 08/31 of every year[17] |

[12] The first Progress report is due by September 30, 1993.

[13] The first progress report is due by September 30, 1994.

[14] The first progress report is due by March 31, 1994.

[15] The first progress report is due by March 31, 1994.

[16] The first progress report is due by March 31, 1994.

[17] The first annual fiscal analysis is due by August 31, 1991.

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XII. REPORTING - CONT'D

Phase II - cont'd

| TASK | | COMPLIANCE REPORT DUE |
|---|---|---|
| j. | Data Analysis | 01/31 of every year[18] |
| k. | Program Analysis | 03/31 of every year[19] |

XIII. EXPIRATION AND RENEWAL

1. This Order expires on July 1, 1995 and the discharger must file a Report of Waste Discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Code of Regulations not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. This report of waste discharge shall include, but is not limited to, the following:

   a. Summary of the results of the monitoring program.

   b. Summary of the BMPs implemented and evaluations of their effectiveness.

   c. Summary of procedures implemented to detect, identify, and eliminate illegal discharges and illicit disposal practices and an evaluation of their effectiveness.

   d. Summary of enforcement procedures and actions taken to require stormwater dischargers to comply with the approved stormwater management programs.

   e. Summary of measures implemented to control pollutants in surface runoff from construction sites and an evaluation of their effectiveness.

   f. Evaluation of the need for additional BMPs, source control, and/or structural control measures.

[18] The first data analysis is due by January 31, 1994.

[19] The first program analysis is due by March 31, 1994.

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XIII. EXPIRATION AND RENEWAL - CONT'D

g. Proposed plan of stormwater/urban runoff quality management activities that will be undertaken during the term of the next permit.

h. Any significant changes to the storm drain systems, outfall locations, detention/retention basins, and structural/non-structural controls.

2. This order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Clean Water Act, or amendments thereto, and shall become effective 10 days after date of its adoption, provided that the Regional Administrator of the Environmental Protection Agency has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Gerard J. Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on July 13, 1990.

Gerard J. Thibeault
Executive Officer

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STATE OF CALIFORNIA - Environmental Protection Agency
PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
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REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

10 May 1996

**CERTIFIED MAIL**
**Z 175 115 511**

Mr. Robert Shanks
Director of District Engineering
County of Sacramento
827 Seventh Street
Sacramento, CA 95814

**CERTIFIED MAIL**
**Z 175 115 510**

Mr. Robert Kawasaki
City Engineer
City of Galt
380 Civic Drive
Galt, CA 95632

**CERTIFIED MAIL**
**Z 175 115 513**

Mr. James Sequeira
Director Department of Utilities
City of Sacramento
5770 Freeport Blvd., Suite 100
Sacramento, CA 95822-2911

**CERTIFIED MAIL**
**Z 175 115 742**

Mr. Bob Blaser
City Engineer
City of Folsom
50 Natoma Street
Folsom, CA 95630

***TRANSMITTAL OF ADOPTED WASTE DISCHARGE REQUIREMENTS, ORDER NO. 96-105 (NPDES NO. CA 0082597) FOR COUNTY OF SACRAMENTO CITIES OF SACRAMENTO, FOLSOM, AND GALT AREA-WIDE STORM WATER DISCHARGES FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS, SACRAMENTO COUNTY***

Enclosed is an official copy of the subject requirements adopted by the California Regional Water Quality Control Board, Central Valley Region, at its 3 May 1996 meeting.

for PAMELA C. BARKSDALE
Associate Engineer

Enclosures (Adopted Order and Standard Provisions)

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STATE OF CALIFORNIA - Environmental Protection Agency

PETE WILSON, Governc

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VOL 16

9 May 1996

NOTICE OF ADOPTION
OF
WASTE DISCHARGE REQUIREMENTS
NPDES NO. CA 0082597

FOR
COUNTY OF SACRAMENTO
CITIES OF SACRAMENTO, FOLSOM, AND GALT
AREA-WIDE STORM WATER DISCHARGES
FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS
SACRAMENTO COUNTY

Waste Discharge Requirements Order No. 96-105 for the above named dischargers were adopted by the California Regional Water Quality Control Board, Central Valley Region, on 3 May 1996.

PAMELA C. BARKSDALE
Associate Engineer

PCB

Enclosure w/o Standard Provision

cc: (see attached list)

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R0061586

cc: Ms. Donna Dean, Sacramento County, Department of Public Works, Water Resources Division
Mr. Dave Brent, City of Sacramento, Department of Utilities
Mr. Craig Hamner, City of Folsom, Department of Public Works
Mr. Parviz Lashai, City of Galt, Department of Public Works
Mr. Eugene Bromley, Environmental Protection Agency, San Francisco
U.S. Army Corps of Engineer, Sacramento
U.S. Fish and Wildlife Service, Sacramento
Department of Health Services, Office of Drinking Water, Sacramento
Environmental Management Branch, Department of Health Services, Sacramento
Department of Fish and Game, Region II, Sacramento
Mr. Irene T. Itamura, State of California Caltrans District 3
Ms. Betsy Jennings, Office of Chief Counsel, State Water Resources Control Board, Sacramento
Mr. John Norton, Division of Water Quality, State Water Resources Control Board, Sacramento
Mr. Tom Mumley, State of California Regional Water Quality Control Board, San Francisco Region
Mr. Mark Pumford, State of California Regional Water Quality Control Board, Los Angeles Region
Ms. Debra Jayne, State of California Regional Water Quality Control Board, San Diego Region
Mr. Daryl Evensen, State of California Regional Water Quality Control Board, Central Valley Region, Fresno Office
Ms. Carole Crowe, State of California Regional Water Quality Control Board, Central Valley Region, Redding Office
Mr. Nathan Quarles, State of California Regional Water Quality Control Board, North Coast Region
Mr. Adam White, State of California Regional Water Quality Control Board, Central Coast Region
Mr. John Short, State of California Regional Water Quality Control Board, Lahonton Region, South Lake Tahoe Office
Mr. Tom Rheiner, State of California Regional Water Quality Control Board, Lahonton Region, Victorville Office
Mr. Todd Thompson, State of California Regional Water Quality Control Board, Colorado River Basin Region
Ms. Pavlova Vitale, State of California Regional Water Quality Control Board, Santa Ana Region
Sacramento County Planning Department
Sacramento County Department of Environmental Health
Mr. Donald Freitas, Contra Costa County Clean Water Program
Mr. Morris L. Allen, City of Stockton, Department of Municipal Utilities
Mr. Manual Lopez, County of San Joaquin, Department of Public Works
Mr. William A. Wilbanks, Kern County Engineering and Survey Services Department
Mr. Fred L. Kloepper, City of Bakersfield, Department of Public Works
Mr. Joe Turner, City of Bakersfield,
Ms. Alice Tulloch, City of Modesto
Mr. Doug Harrison, Fresno Metropolitan Flood Control District
Mr. Richard Boone, Orange County, Environmental Management Agency
Mr. Bill Jennings, DeltaKeeper, Stockton
Citizens for Better Environment
Natural Resources Defense Council, San Francisco
Environmental Defense Fund, Oakland

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 96-105

NPDES NO. CA 0082597

# WASTE DISCHARGE REQUIREMENTS FOR COUNTY OF SACRAMENTO CITIES OF SACRAMENTO, FOLSOM, AND GALT AREA-WIDE STORM WATER DISCHARGES FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS SACRAMENTO COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Board) finds that:

1. The County of Sacramento, and the cities of Sacramento, Folsom, and Galt (hereafter collectively referred to as Dischargers) have submitted a completed permit application on 3 March 1995, for re-issuance of waste discharge requirements under the National Pollutant Discharge Elimination System (NPDES) to discharge storm water runoff from storm drains and watercourses within the Dischargers' jurisdictions.

2. The Dischargers are currently subject to NPDES area-wide municipal storm water permit, Order No. 90-158 (NPDES No. CA0082597) adopted on 22 June 1990.

3. The County of Sacramento (hereafter referred to as the County) and the City of Sacramento are defined as large municipalities (with populations greater than 250,000) in Appendices H and F, respectively, of Part 122 of Title 40 of the Federal Code of Regulations (40CFR). As such, the County and the City of Sacramento must obtain an NPDES municipal storm water permit for storm water discharges associated with urbanized areas in their respective jurisdictions.

4. The Cities of Galt and Folsom are urbanized areas with populations less than 100,000. Due to their proximity to the urbanized areas of the County, and the location of their storm sewer system discharges relative to discharges from the County's system, the Cities of Galt and Folsom are designated as part of the large municipal separate storm sewer system (40 CFR 122.26(b)(7)(iii)). Attachment A shows Sacramento County and illustrates the relationship of the co-permittees in Sacramento County.

5. As directed by Section 402(p)(4)(a) of the Federal Clean Water Act (CWA), the United States Environmental Protection Agency (hereafter referred to as U.S. EPA) promulgated regulations addressing NPDES permit application requirements for storm water discharges (hereafter referred to as the regulations) on November 16, 1990. The Dischargers' current NPDES permit for storm water discharges was adopted prior to the promulgation of these regulations. The requirements of the Dischargers' current NPDES permit, and subsequent compliance with the permit requirements by the Dischargers, adequately addressed the regulations.

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6. The regulations do not address renewal application requirements for storm water discharges from separate municipal storm sewer systems. Renewal application requirements were established by Board staff, in consultation with U.S.EPA, and the Dischargers, and consisted of the Dischargers submitting the following:

   a. USEPA General Information, Form 1, and the State of California Application for Facility Permit/Waste Discharge, Report of Waste Discharge, Form 200, submitted on 23 November 1994.
   b. Comprehensive Stormwater Management Program submitted on 21 June 1994, which provided a plan, with a schedule, for the development, implementation, and monitoring of best management practices, and other programs and activities required to reduce the discharge of pollutants in storm water discharges to the maximum extent practicable (MEP) during the life of this Order.
   c. Effectiveness Evaluation Report submitted on 3 March 1995, summarized the effectiveness of the Dischargers' Storm Water Management Program under the current Permit requirements, provided an Effectiveness Evaluation Plan on how the effectiveness of the storm water program for this Order will be evaluated, and provided an evaluation of the achievement of water quality standards through implementation of the Program to that date.

   The Comprehensive Stormwater Management Program and Effectiveness Evaluation Plan were developed, approved, and implemented during the term of the prior Order. Full and complete implementation of the programs, in accordance with the implementation schedules provided by the Dischargers, involves many years that will extend beyond the term of current and future Orders. In accordance with various Provisions and as discussed in subsequent findings of this Order, the Dischargers will review, evaluate, revise, and amend the programs, as necessary, over the implementation schedule to ensure compliance with the requirements of this Order.

7. The Dischargers have jurisdiction over, and/or maintenance responsibility for certain municipal separate storm drain systems, and/or watercourses in the County. Discharges consist of surface runoff generated from various land uses that discharge into the Sacramento and American Rivers through natural water courses or manmade conveyances. Based on monitoring data collected during the term of the current Order, the Dischargers have initially identified the pollutants of concern in runoff and receiving waters as certain heavy metals, petroleum hydrocarbons, and certain pesticides. The quality of the discharge, and resulting impact it may have on receiving waters, varies, and is affected by hydrology, geology, land use, season, and sequence and duration of rainfall events.

   Over the term of this Order, the Dischargers will continue to implement the constituent of concern identification and reduction component of the Effectiveness Evaluation Plan.

8. The permit application submitted by the Dischargers included a Comprehensive Stormwater Management Program (Program), which describes the framework for management of storm water discharges during the term of this Order. The title page and table of contents of the Program are included in Attachment B of this Order. The Program defines the priorities in development and implementation of best management practices (BMPs), and provides an implementation program which summarizes the major activities to be accomplished during the five-year term of this Order. Specific activities regarding implementation of the Program will be provided by the Dischargers on an annual basis through submittal of a work plan as part of the Annual Monitoring and Reporting Program.

   The Program has been designed to implement various MEP control measures to address the many sources pollutants in the different drainage areas covered by this Order. Continued implementation of the Program is expected to cause the Dischargers to meet the MEP discharge standard for stormwater discharges from areas regulated by this permit, at the point of discharge to the receiving waters.

   The Implementation Chapter of the Program consists of the following elements:

   a. Construction Site Management Program
   b. New Development Management Program
   c. Public Education and Awareness Program
   d. Industrial Discharge Management Program
   e. Illegal Discharge Program
   f. Illicit Connection Program
   g. Public Agency Program
   h. Monitoring Program
   i. Intra/Inter-Agency Coordination
   j. Legal Authority
   k. Program Management

9. The Program emphasizes incorporating BMPs into established programs as much as possible in order to maximize the use of existing resources, to minimize the risk of creating redundant and overlapping regulatory programs, and to expedite the implementation of the Program.

10. The permit application included an Effectiveness Evaluation Report. This report summarized the Dischargers' evaluation of the effectiveness of the Program during the current Order, and provided methodologies the Dischargers intend to implement to determine BMP and overall Program effectiveness over the term of this Order. The proposed methodologies are detailed in the Effectiveness Evaluation Plan (EEP) that was included in the Report submittal. The EEP is designed

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to gradually increase the level of sophistication used to judge the effectiveness of the Program, and consists of three principle components:

a. Identification and reduction of constituents of concern (hereafter referred to as COC)
b. Program evaluation
c. Effectiveness evaluation process

Over the course of this Order, the methods for evaluating individual BMP effectiveness will be by both qualitative and quantitative measures including evaluations of performance standards and estimates of water quality improvements by special studies of structural and non-structural BMPs. Overall Program effectiveness may be measured by sub-watershed pilot studies for COC reduction programs, statistical analysis, water quality modeling, and water quality monitoring.

The title sheet, table of contents and a summary of the EEP schedule are included in Attachment C of this Order.

11. The Program and EEP submitted as part of the permit application, all subsequent modifications or revisions to the Program and EEP that are approved in accordance with Provision D.5 of this Order, and yearly work plans submitted in accordance with Monitoring and Reporting Program requirements, are integral and enforceable components of this Order.

12. Under the current permit, the roles and responsibilities of the Dischargers are defined in a Memorandum of Understanding (MOU) that was effective through the term of the current permit, and expired on 1 June 1995. This MOU established that the individual Dischargers are separate legal entities and have the authority to develop, administer, implement, and enforce storm water management programs within their own jurisdiction. Each Discharger shall be responsible for compliance with this permit within their jurisdiction. Provision D.2.b of this Order directs the Dischargers to complete and submit to the Board a MOU that specifically defines the roles and responsibilities of each co-permittee as they relate to compliance and participation with this Order.

13. Discharges from municipal separate storm sewer systems owned or operated by the Dischargers consist of storm water runoff, and non-storm water discharges which discharge directly, or indirectly, to lakes, water-supply reservoirs, ground waters, rivers, tributary streams and water courses and contiguous water bodies in Sacramento County.

14. The regulations require storm water discharges from separate municipal storm drain systems to be subject to MEP discharge standards. Discharges of non-storm water from facilities owned or operated by the Dischargers are subject to Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT).

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This Order regulates both storm water discharges from municipal separate storm sewer systems, and, in accordance with Provision D.4.b of this Order, non-storm water discharges from facilities that are owned or operated by the Dischargers.

15. Clean Water Act Section 402(p)(3)(B)(ii) requires that NPDES permits shall require the Dischargers to effectively prohibit non-storm water discharges into storm sewers. The Regulations [40CFR122.26(d)(2)(iv)(B)(1)] recognize that certain categories of non-storm water discharges do not have to be prohibited if the discharges have not been identified as a source of pollutants by the Dischargers. However, removing the Dischargers regulatory requirement to prohibit such discharge does not remove the liability of owners or operators of the facilities that are the source of non-storm water discharges from obtaining an NPDES permit for such discharge.

The State Water Resources Control Board (State Board) is currently conducting a study of non-storm water discharges. In addition, the Dischargers may, over the term of this Order, conduct studies to determine the threat to water quality for various non-storm water discharges. These studies may result in additional de minimis categories of non-storm water discharges being identified. Provision D.4.a.iv. allows the Program to be amended to include additional de minimis categories of non-storm water discharges.

16. The State Board has issued NPDES General Permits for the regulation of storm water discharges associated with industrial and construction activities. To effectively implement the industrial, new development, and construction elements of the Program, the Dischargers may conduct regulatory activities at industrial or construction sites currently covered by one of the State NPDES General Permits. Under the CWA, the Dischargers do not have the authority to enforce the State's NPDES General Permit. However, Board staff will to work cooperatively with the Dischargers to ensure that industries, businesses, contractors, and developers within the Dischargers' jurisdiction are not subject to duplicate or overlapping storm water regulatory activities.

17. Federal, state, or regional entities within the Dischargers' boundaries, not currently named in this Order, may operate storm drain facilities and/or discharge storm water to the storm drains and watercourses covered by this Order. The Dischargers may lack legal jurisdiction over these entities under the state and federal constitutions. Consequently, the Regional Board recognizes that the Dischargers should not be held responsible for such facilities and/or discharges. The California Department of Transportation (Caltrans) is a state agency that is currently, among others, such an entity. The Regional Board issued a separate storm water permit (Order No. 95-001, NPDES No. CA0083640), to Caltrans in January 1995, and will consider issuing separate NPDES permits for storm water discharges to other federal, state, or regional entities within the Dischargers' boundaries.

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As an alternative to a separate NPDES permit being issued to other federal, state, or regional entities, Provision D.6 allows the Dischargers to request that this Order be amended to allow these entities to be named as co-permittees to this Order.

18. On 6 June 1995, the Dischargers entered into a Memorandum of Understanding (MOU) with Caltrans. This MOU provided agreements and procedures regarding communication, coordination, cooperation, and collaboration between the Dischargers and Caltrans concerning individual or shared activities required to achieve compliance with their respective Board Orders. Attachment D provides a copy of the MOU.

As stated in Finding No. 17, there may be other federal, state or regional agencies, within the Dischargers' boundaries that may be issued separate municipal NPDES permits. Provision D.2.e directs the Dischargers to enter into an agreement that describes communication, coordination, cooperation, and collaboration with other possible future municipal storm water permittees to ensure timely compliance with this Order.

19. The Board adopted a Water Quality Control Plan, Third Edition, Sacramento River Basin and San Joaquin River Basin, (Basin Plan) which contains water quality objectives for all waters in the Basin. This Order implements the Basin Plan.

20. The beneficial uses of the receiving waters, the Sacramento, American, Cosumnes, and Mokelumne Rivers and the Delta are municipal and domestic, industrial, and agricultural supply; water contact and non-contact recreation; aesthetic enjoyment; navigation; ground water recharge; fresh water replenishment; and preservation and enhancement of fish, wildlife and other aquatic resources. Attachment E lists all of the Sacramento area surface waters that could be impacted by storm water discharges.

21. Urban storm water runoff discharges contain pollutants that may lower the quality of receiving waters and impact beneficial uses. Studies indicate there may be increases in pollutant levels and aquatic toxicity in receiving waters as a result of urban storm water discharges.

22. This Order requires evaluation of water quality impacts from urban storm water runoff discharges, and the implementation and evaluation of the Program to reduce the discharge of pollutants into storm water runoff to the maximum extent practicable (MEP) for discharges from municipal separate storm sewer systems to improve water quality and protect beneficial uses. Implementation of the Program to reduce pollutant loads from industrial and construction sites, new developments and existing urbanized areas are required as part of this permit. Additionally, this Order requires that the effectiveness of the Program in reducing the discharge of pollutants, attaining water quality objectives and protecting beneficial uses, be evaluated.

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During the term of the prior Order the Dischargers collected and summarized monitoring data to assess and develop a list of pollutants of concern in stormwater discharges, and assess existing or potential receiving water quality impacts as a result of those pollutants. The Program being implemented through this Order had been developed, and its priorities for implementation has been based on addressing the pollutants of concern. The Program and EEP both contain processes for the Dischargers to continue to assess and develop the list of pollutants of concern, and to assess the effectiveness of the current Program. Through the annual review process, the Dischargers will determine whether the continued implementation of the Program has a reasonable likelihood of preventing exceedances of water quality standards, and ensure the protection of the beneficial uses of the receiving water. The assessment process includes steps to make revisions to the Program and EEP if results of the Dischargers' assessments warrant such action.

23. The permitted discharge is consistent with the anti-degradation provisions of 40CFR 131.12 and the State Board Resolution 68-16.

This Order requires implementation of programs (i.e., BMPs) to reduce the level of pollutants in storm water discharges from municipal separate storm sewer systems. However, given the continuing development within the area, it is possible that future degradation in water quality could occur. Any such change in water quality will not unreasonably affect the present and anticipated beneficial use of water and will not result in water quality less than that prescribed in policies of the State Board. The programs required pursuant to this Order constitute the best practicable treatment or control of discharges necessary to assure that a pollution or nuisance will not occur and the highest quality consistent with maximum benefit to people of the State will be maintained.

24. It is the Regional Board's intent that this Order shall attain and protect the beneficial uses of receiving waters. This Order, therefore, includes Receiving Water Limitations required to implement water quality objectives and to prevent nuisances and water quality impairment in receiving waters. The permit requires the implementation of control measures in accordance with the program that will reduce pollutants in storm water discharges to the MEP. The Receiving Water Limitations require the implementation of control measures that are technically and economically feasible as necessary to protect beneficial uses and water quality objectives of the receiving waters.

The Regional Board finds that the unique aspects of the regulation of storm water discharges through municipal storm sewer systems, including intermittent discharges, difficulties in monitoring and limited physical control over the discharge, will require adequate time to implement and evaluate the effectiveness of best management practices and to determine whether they will adequately protect receiving water. Therefore, the permit includes a procedure for determining whether storm water discharges are causing continuing or recurring exceedances of receiving water limitations and for evaluating whether the Program must be revised. The discharger will be in compliance with the Receiving Water Limitations so long as it complies with that procedure.

25. Congress indicated by statements made in the preamble to the Federal Storm Water Regulations published in the Federal Register on 16 November 1990, that it was aware of the difficulties in regulating discharges from municipal separate storm sewer systems solely through traditional end-of-pipe treatment and intended for EPA and NPDES states to develop permit requirements that were much broader in nature than requirements which are traditionally found in NPDES permits for industrial process discharges or waste water treatment plants. The preamble states "The legislative history indicates, municipal storm sewer system 'permits will not necessarily be like industrial discharger permits. Often, an end-of-pipe treatment technology is not appropriate for this type of discharge.' [Vol. 132 Cong.Rec.S16425(daily ed. Oct. 16, 1986)]."

26. Flexibility has been incorporated into this Order, by allowing the Dischargers to develop a Program that is specific to the water quality concerns in their jurisdiction, and to revise the Program based on annual evaluations of the Program, and based on findings of the monitoring program and special studies being conducted by the Dischargers. At this time, little is known regarding the effectiveness and implementability of various control programs for stormwater discharges, and the association between pollutants found in stormwater discharges with particular pollutant sources. Because of this, it may require many years for pollutant sources to fully identified, and for management practices to be developed, implemented, and evaluated. Due to potential costs associated with implementing an effective stormwater control program to address all pollutants of concerns associated with stormwater runoff from urbanized areas, the implementation of control measures will have to be prioritized, attempting to correct the most serious water quality threats first. Implementation schedules will also incorporate sufficient time to be allocated to research, development, special studies, or other steps deemed necessary to ensure the *best* management measure is being implemented to address pollutants of concern. As discussed in Finding No. 6, full and complete implementation of the Program will extend beyond the term of this Order.

27. It is not feasible at this time to establish numeric effluent limits for pollutants in storm water discharges from municipal storm sewer systems. Therefore, the effluent limitations in the Order are narrative, and include the requirement to reduce pollutants in storm water discharges to the MEP. This Order requires the implementation of BMPs, identified in the Program, to control and abate the discharge of pollutants in storm water discharges. Implementation of BMPs, in accordance with the Program and its schedule, the EEP, and any revisions, modifications, and amendments as approved by the Executive Officer or Board, and the provisions of this Order, constitutes compliance with MEP requirements, and ensure the achievement of the goals of the CWA.

28. It is not feasible at this time to establish numeric effluent limits for pollutants in non-storm water discharges from facilities owned or operated by the Dischargers. Therefore, the effluent limitations in the Order are narrative, and include the requirement to reduce pollutants in non-storm water discharges through implementation of BAT/BCT technologies. Until such time numeric effluent

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limits are developed, implementation of BMPs, both structural and nonstructural, constitute compliance with BAT BCT effluent limitation standards.

29. The Regulations require that the Program be implemented during the entire duration of the Permit (40CFR 122.26(d)(2)(iv)), which is 5 years. As discussed in Finding No. 6, full and complete implementation of the Program will extend beyond the term of this Order. This Order directs the Dischargers to implement the Program in accordance with the Program's schedule and annual work plans as approved by the Executive Officer.

    The Dischargers shall demonstrate substantial compliance with the Program and Permit through the information and data supplied as part of the annual review process.

30. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21100, et seq.), in accordance with Section 13389 of the California Water Code.

31. The Board has notified the Dischargers and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

32. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

33. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided EPA has no objections.

**IT IS HEREBY ORDERED** that Order No. 90-158 is rescinded, and that the Dischargers, their agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Waste Act and regulations and guidelines adopted thereunder, shall comply with the following:

**A. Discharge Prohibitions:**

1. The Dischargers shall effectively prohibit the discharge of non-storm water into the municipal separate storm sewer system. This prohibition does not apply to the following discharges:

    a. water line flushing;
    b. landscape irrigation;
    c. diverted stream flows;
    d. rising ground waters;
    e. uncontaminated ground water infiltration [as defined in 40CFR 35.2005(20)] to separate storm sewers;

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f. uncontaminated pumped ground water;
g. discharges from potable water sources;
h. foundation drains;
i. air conditioning condensate;
j. irrigation water;
k. springs;
l. water from crawl space pumps;
m. footing drains;
n. lawn watering;
o. individual residential car washing;
p. flows from riparian habitats and wetlands;
q. dechlorinated swimming pool discharges;
r. discharges or flows from emergency fire fighting activities.

2. Discharges listed as 'a' through 'r' in Discharge Prohibition A.1 determined to be sources of pollutants are not exempt from this prohibition and shall be addressed in accordance with requirements established in Provision D.4.a of this Order.

3. List 'a' through 'r' in Discharge Prohibition A.1 may be amended, as approved by the Executive Officer, over the term of this Order in accordance with Provision D.4.a.iv. of this Order, to incorporate other de minimis categories of non-storm waters determined as a result of studies conducted by the State and Regional Boards, or Dischargers.

4. NPDES permitted non-storm water discharges are exempt from this prohibition, unless the Dischargers establish legal prohibitions against such discharges into their separate storm sewer systems.

5. This prohibition does not apply to discharges identified and approved by the Executive Officer in accordance with Provision D.4.b of this Order.

**B. Effluent Limitations:**

1. The Dischargers shall reduce the discharge of pollutants from municipal separate storm sewers to the MEP.

2. The Dischargers shall reduce or eliminate, to the extent feasible, the discharge of pollutants in non-storm water discharges from facilities owned or operated by the Dischargers. Discharges of pollutants in non-storm water discharges that cannot be eliminated shall be reduced or eliminated through implementation of Best Available Technologies Economically Achievable for toxic and nonconventional pollutants, and Best Conventional Control Technologies for conventional pollutants.

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C. **Receiving Water Limitations:**

1. Receiving Water Limitations are based upon beneficial uses, water quality objectives and water quality standards contained in the Basin Plan, and amendments thereto, and on ambient water quality. The discharge of storm water, or non-storm water, from a municipal storm sewer system for which the Dischargers are responsible under the terms of this Order shall not cause any of the following conditions to continue or recur in the receiving waters. The Dischargers will not be in violation of this provision so long as they are in compliance with the requirements set forth in 1.b.

   a. Storm water discharges from municipal storm sewer systems that are owned or operated by the Dischargers, and non-storm water discharges from facilities owned or operated by the Dischargers shall not cause the following conditions to create a condition of nuisance or to adversely affect beneficial uses of surface and ground waters of the State:

      (1) Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.
      (2) Oils, greases, waxes, floating material (liquids, solids, foams, and suds) or suspended material to create a nuisance or adversely affect beneficial uses.
      (3) Aesthetically undesirable discoloration.
      (4) Fungi, slime, or other objectionable growths.
      (5) Deposition of material that causes nuisance or adversely affects beneficial uses.
      (6) Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
      (7) Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

   b. If the Executive Officer determines that continuing or recurring exceedance of a Receiving Water Limitations listed in C.1.a.i-vii., has been caused by discharges from the municipal storm sewer system, the following steps shall be taken:

      (1) The Executive Officer will evaluate the adequacy of the Dischargers' implementation of the Program based on the Dischargers' submitted reports. The Executive Officer will determine if implementation of the Program has a reasonable likelihood of preventing future exceedances of receiving water limitations. If the Executive Officer makes this determination, the Dischargers' are required to continue implementing the Program.

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(2) If the Executive Officer determines that implementation of the Program will not have a reasonable likelihood of preventing future exceedances of receiving water limitations, the Dischargers shall, upon notice from the Executive Officer, do the following:

(a) The Executive Officer may require the Dischargers to submit a report that includes an evaluation of the relative contribution of the storm water dischargers to the exceedance of the receiving water limitation. The report shall address the persistence and the causes of the exceedance, and evaluate, if appropriate, whether the pollutant(s) causing the exceedance(s) can be controlled by the Dischargers.

(b) The Executive Officer may require the Dischargers to submit a report reviewing the Program to determine whether it should be revised so there will be a reasonable likelihood of preventing future exceedances of receiving water limitations, or whether revisions to achieve compliance with receiving water limitations cannot be made based on technical feasibility, economic studies, and other pertinent factors. If the report recommends revision of the Program the report shall include a work plan to revise the Program so that it will have a reasonable likelihood of preventing future exceedances of receiving water limitations. If the report concludes that no revisions are necessary to achieve compliance with receiving water limitations, the report shall explain how implementation of the Program will achieve compliance. If the report determines that revisions cannot be made to achieve compliance with receiving water limitations based on technical feasibility, economic studies, and other pertinent factors, or if the Discharger determines that the pollutant(s) causing the exceedance(s) cannot be controlled by the Dischargers, the Dischargers shall continue to comply with the Program, shall fully document this determination, and shall make such recommendations, supported by the report documentation, identifying the nature of theactions that may be necessary to achieve future compliance, and identification of funding sources for such actions.

Any economic study may include evaluating the cost of implementing a control measure against its reasonable relationship to the pollution control benefits to be achieved.

When required under C.1.b.ii.2), the Dischargers shall implement the work plan and their revised Program as approved by the Executive Officer.

2. The Executive Officer shall review and approve or disapprove the reports required under Receiving Water Limitation 1. The reports may be submitted as part of the next Annual Report, or at some other time designated by the Executive Officer. So long as the Dischargers have complied with the procedures set forth in Receiving Water Limitation 1., they do not have to repeat the procedure for continuing or recurring exceedances of the same receiving water limitation. As appropriate, any determination under this part or revisions to the Program may be considered by the Regional Board in a public meeting.

**D. Provisions**

1. The Dischargers shall demonstrate compliance with this Order through timely implementation of the Program, EEP, and monitoring program submitted in their application, and any modifications, revisions, or amendments developed pursuant to Provisions D.5, D.9, and approved pursuant to Provision D.10 to this Order. Each Discharger needs only to comply with all requirements of this Order for storm water discharges from municipal separate storm sewers for which they are operators or owners.

2. **Storm Water Management Plan**

a. The Dischargers shall continue to implement the Storm Water Management Program as approved on 8 September 1994, and all approved revisions to the Program made subsequent to 8 September 1994 and prior to the adoption of this Order, and shall demonstrate its effectiveness and provide for necessary and appropriate revisions, modifications, and improvements in accordance with Provisions D.5, D.9, and as approved per Provision D.10 of this Order.

b. **Storm Water Program Management Activities**

The Dischargers shall complete and submit to the Board a Memorandum of Understanding (MOU), subject to Executive Officer approval, no later than 6 months from the date of adoption of this Order. The MOU should specifically identify those areas where the Dischargers share responsibilities, and other activities required to comply with the requirements of this Order. The MOU will specifically identify the roles and responsibilities of each Discharger named as a co-permittee to this Order for the activities identified.

Any changes, deletions or revisions made to the MOU subsequent to its adoption shall be reported as part of the Annual Report required by Monitoring and Reporting Program No. 96-105.

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c. **Legal Authority**

Annually the Dischargers shall review and assess their legal authority to adequately implement the Program. If the Dischargers find their legal authority is not adequate they shall submit a plan, with a schedule, on how they propose to address and change their legal authorities to cause their authority to be adequate to implement the program. Reporting of the Dischargers findings, and plan, if needed, will be submitted as part of the Annual Report required by Monitoring and Reporting Program No. 96-105.

d. **Fiscal and Staffing Analysis**

Annually the Dischargers shall provide a fiscal and staffing analysis. The fiscal analysis will detail the capital, and operation and maintenance expenditures necessary to accomplish the activities of the Program. Such analysis shall include a description of the source(s) of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds, and staffing requirements. The staffing analysis will detail the equivalent staffing required to accomplish the activities of the Program. The fiscal and staffing analysis will be submitted as part of the Annual Report required to by the Monitoring and Reporting Program No. 96-105.

e. **Local Agencies**

The Dischargers shall enter into an agreement, acceptable to the Executive Officer, that describes communication, coordination, cooperation, and collaboration of the Dischargers' Program, and other pertinent storm water quality activities, with other local, permitted municipal storm water programs that are not named to this Order

f. **Intra/Interagency Agreements**

The Program proposes to utilize agencies or departments in the jurisdiction of the Dischargers, that may not directly report, or receive direction from the storm water personnel or department, to implement some of the BMPs. Some Program BMPs address the need for intra/interagency agreements, while others do not. When necessary and appropriate, the Dischargers shall enter into intra/interagency agreements prior to implementation of all BMPs that would require the use of an agency or department other than that specifically named as the storm water program lead agency or department by each Discharger named to this Order. The agreements must be explicit and formal, and would specify the role and responsibilities of each department or agency in regards to the implementation and enforcement of the BMPs or Program.

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3. **Effectiveness Evaluation Plan (EEP)**

a. The Dischargers shall continue to implement the EEP as submitted on 3 March 1995, and shall demonstrate its effectiveness and provide for necessary and appropriate revisions, modifications, and improvements in accordance with Provisions D.5, D.9, and as approved per Provision D.10 of this Order. In addition, the Dischargers shall comply forthwith with the following:

(1) The primary emphasis in the Program is on nonstructural and source control measures. Currently there is little information statewide regarding the effectiveness of nonstructural and source controls measures. In order to ensure the Dischargers can quantify the effectiveness of such control measures, the Dischargers shall conduct at least two (2) special studies, subject to the Executive Officer approval, over the term of this Order. The studies are to validate the Dischargers selection of source control measures in their Program.

(2) Annually, the Dischargers shall submit a detailed work plan, including a schedule, subject to Executive Officer approval, of the special studies that will be conducted by the Dischargers during the subsequent fiscal year. The special study work plan will be submitted annually as part of the proposed monitoring program required by Monitoring and Reporting Program No. 96-105.

(a) The Dischargers submitted a schedule of the 1995/1996 special studies to be conducted with their proposed 1995/1996 Monitoring Program. In accordance with Provision A.2 of Monitoring and Reporting Program No. 96-105, the Dischargers shall implement the 1995/1996 special studies forthwith upon adoption of this Order.

4. **Non-Storm Water Discharges**

a. ***Discharges from facilities not owned or operated by the Dischargers and from facilities not identified and approved by the Executive Officer in accordance with Provision D.4.b:***

(1) The Dischargers shall identify and describe the categories of non-storm water discharges, including those listed in Discharge Prohibition A of this Order, which they have identified to be a source of pollutants. Such discharges will be either prohibited from being discharged to the municipal storm sewer system, or subject to a separate NPDES permit. For each category determined to be a source of pollutants, the Dischargers shall: 1) identify and describe the discharge, 2) incorporate the detection of such discharges into the Program, 3) develop and implement appropriate

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control measures to either eliminate the discharge, or develop reporting procedures for notifying the Regional Board of these discharges, and 4) develop and implement appropriate procedures for monitoring the implementation and effectiveness of the control measures.

(a) The Regional Board may require dischargers of non-storm water, to apply for and obtain coverage under an NPDES permit.

(b) The Regional Board may prohibit, or establish additional monitoring and reporting requirements, for any non-storm water discharges identified as a non-prohibited discharge by the Dischargers.

(c) Non-storm water discharges identified by the Dischargers as being de minimis per Discharge Prohibition A.3 cannot cause the Dischargers to be in noncompliance with Receiving Water Limitations C.1 through C.3. of this Order.

(d) The Dischargers may propose, as part of their Annual Report required by Monitoring and Reporting Program No. 96-105, additional categories of non-storm water discharges, subject to Executive Officer approval, to be included in the exemption to Discharge Prohibition A.

b. *Discharges from facilities owned or operated by the Dischargers*

(1) Certain discharges of non-storm water from sites owned or operated by the Dischargers are authorized by this Order, provided the following requirements are met:

(a) The Discharger shall provide the following:

(i) A list of the non-storm water discharges they request to be covered by this Order.

(ii) The name and location of the facility that causes the discharge(s) to occur.

(iii) A characterization of the quality and quantity of the discharge(s).

(iv) A description of the control measures, subject to Executive Officer approval, to be implemented, including an implementation schedule, to control, eliminate, or reduce pollutants in non-storm water discharges.

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(v) A proposed monitoring program, subject to Executive Officer approval, to be implemented by the Dischargers to insure control measures are being implemented and are effective. The monitoring program shall include visual monitoring, and, when appropriate, sample collection and analysis.

1) The Regional Board may prohibit, or establish additional monitoring and reporting requirements, for any non-storm water discharges permitted by this Order.

(b) Obtain a letter from the Executive Officer approving such discharges to be permitted by this Order.

(2) Non-storm water discharges to be covered by this Order are subject to Effluent Limitation B.3 at the point of discharge from the facility, and cannot cause the Dischargers to be in noncompliance with Receiving Water Limitations C.1 through C.3, of this Order.

(3) Non-storm water discharges not approved to be covered by this Order are subject to Discharge Prohibition A.1 of this Order.

(4) The Dischargers may propose, as part of their Annual Report required by Monitoring and Reporting Program No. 96-105, additional non-storm water discharges to be covered by this Order in accordance with procedures established in Provision D.4.b.i.

5. It is anticipated that the Program and EEP may be modified, revised or amended as part of the annual review process to respond to changed conditions and to incorporate more effective approaches to pollutant control. Requests for changes may be initiated by the Regional Board's Executive Officer or by the Dischargers. Major revisions to the program will be brought before the Regional Board as permit amendments. Minor changes may be made with the Executive Officers' approval, and will be brought to the Board as informational items. Such proposed changes will be identified in the mid-year review meeting, or through the annual review process and shall be submitted to the Regional Board as technical reports as needed, and shall be reported as part of the Annual Report required by Monitoring and Reporting Program No. 96-105.

6. At the request of the Dischargers, this Order may be amended to name other municipalities, or federal, state, or regional entities that own or operate separate municipal separate storm sewer systems in Sacramento County, as co-permittees.

7. This Order may be modified, or alternatively, revoked or reissued, prior to the expiration date as follows:

   a. to address changed conditions identified in the required technical reports, or other sources deemed significant by the Regional Board;

   b. to incorporate applicable requirements of statewide water quality control plans adopted by the State Board or amendments to the Basin Plan; or

   c. to comply with any applicable requirements, guidelines, or regulations issued or approved under Section 402(p) of the CWA, if the requirement, guideline, or regulation so issued or approved contains different conditions or additional requirements not provided for in this Order. The Order as modified or reissued under this paragraph shall also contain any other requirements of the CWA then applicable; or

   d. to be consistent with any amendments to the CWA regarding the discharges from municipal separate storm sewer systems.

   e. at the request of the discharger, this Order may be modified to revise or amend the Receiving Water Limitations to achieve consistency with State or Federal laws or policies adopted subsequent to the date of this Order.

8. All applications, reports, or information submitted to the Board shall be signed and certified pursuant to signatory requirements specified in 40CFR Part 122.41(k).

9. The Dischargers shall comply with Monitoring and Reporting Program No. 96-105, which is part of this Order, and any revisions or modifications thereto as ordered by the Executive Officer.

   It is anticipated that the monitoring and reporting Program will change as the Program develops and program priorities change. To accommodate such changes, the monitoring program will be subject to review and approval on an annual basis throughout the life of this Order. The Dischargers shall submit a proposed annual monitoring and reporting program for the following year's monitoring period to the Executive Officer for review and approval, such that the proposed monitoring program is approved by 1 May of each year, and implemented by 1 September of each year.

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10. All revisions, modifications, and amendments made to the Program, EEP, and Monitoring and Reporting Program in accordance with Provisions D.5 and D.9, and as approved by the Executive Officer are integral and enforceable parts of this Order.

11. The Dischargers shall comply with all applicable items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions".

12. This Order expires on 1 May 2001. The Dischargers must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, no later than 180 days in advance of such date in application for renewal of waste discharge requirements.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Board, Central Valley Region, on 3 May 1996.

William H. Crooks

WILLIAM H. CROOKS, Executive Officer

PCB

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R0061606

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM 96-105

NPDES NO. CA 0082597

COUNTY OF SACRAMENTO
CITIES OF SACRAMENTO, FOLSOM, AND GALT
AREA-WIDE STORM WATER DISCHARGES FROM
MUNICIPAL SEPARATE STORM SEWER SYSTEMS
SACRAMENTO COUNTY

A. **Monitoring Program**

1. The Dischargers shall develop a monitoring program on a fiscal year basis. The Dischargers shall develop and submit their proposed monitoring program no later than 1 April of each year for review and comments by Board, and to ensure Executive Officer approval of the program by 1 May of each year for implementation by 1 September of each year. Each year's program shall be developed based on past monitoring results, program evaluation and effectiveness, program priorities and direction, and as directed by the Executive Officer. The program should be developed to ensure minor changes or revisions can be accommodated prior to implementation.

   It is recognized that the Dischargers are being directed to submit a proposed monitoring program prior to the submittal of the Monitoring Report on 1 December of each year, and prior to the Dischargers obtaining all analytical results of the current year monitoring program. Therefore, the Dischargers may request minor revisions to the approved monitoring program based on monitoring or special study results, with Executive Officer approval.

   The Monitoring Program shall be developed such that it is an integral part in the evaluation of the Plan's effectiveness, provides quantitative information regarding program priorities and direction, demonstrates the reduction in pollutants in storm water runoff, and is designed to achieve the following objectives:

   a. Characterization of representative drainage areas and storm water discharges, including land use characteristics, pollutants concentrations, and mass loadings;
   b. Assessment of existing or potential adverse impacts on beneficial uses caused by pollutants of concern in storm water discharges, including an evaluation of representative receiving waters;
   c. Identification of potential sources of pollutants of concern found in storm water discharges; and
   d. Evaluation of effectiveness of representative storm water pollution prevention or control measures.
   e. Assess and identify water quality improvements or degradation.

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2. The Dischargers submitted a draft proposed fiscal year 1995-1996 monitoring program in April 1995. The Dischargers shall implement the 1995-1996 monitoring program forthwith upon adoption of this Order.

   The Dischargers shall implement subsequent year monitoring programs by **1 September** of each year.

3. The Dischargers shall develop and implement a monitoring program such that a first flush storm event is monitored during the term of this Order.

4. **On 1 December of each year,** the Dischargers shall report the results of their monitoring program for the preceding year. The report shall be submitted such that it provides a summary of the analytical results, and provides a discussion on the findings, how the analytical results apply to the Dischargers studies towards discharge characterization, Program effectiveness, receiving water impacts, reductions in pollutants, and other pertinent areas or activities required by this Order.

B. **Annual Report and Work Plans**

1. The Annual Report is an important element of the program and reporting procedures. The report is to be formatted such that it provides both the Dischargers and Regional Board staff an opportunity to adequately evaluate and propose:

   a. Implementation progress of the Program;
   b. Summary and evaluation of the monitoring program analytical results and activities, and how these results relate to the Program's priorities and directions;
   c. Dischargers' fiscal and manpower resources, and legal authority to implement an effective Program; and
   d. The overall effectiveness of the Program and its control measures both qualitatively and quantitatively.
   e. Recommended changes, revisions, and amendments to the Program based on the findings of the annual review process and effectiveness evaluation process, and to address other issues or problems that may cause the Dischargers to not fully and completely implement all elements of the Program or approved work plan.
   f. Recommended changes, revisions, amendments to the Program, to address exceedances to receiving water limitations as required in Section C. Receiving Water Limitations of Order No.96-105.

   The Annual Report is a tool for the Dischargers to establish that, through implementing their Program, they have reduced the discharge of pollutants in storm water to the MEP and to ensure

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the goals of the Clean Water Act are being achieved through implementation of the Program. As such, the report format, and its contents, may change as the Program develops, and as the Program, EEP, and monitoring program priorities and direction change.

2. The Dischargers shall submit by **1 September** each year, an Annual Report documenting the status of all the general program and individual tasks contained in the Program and EEP. The Annual Report will be a detailed report on the status of implementation of the Program and EEP and include an evaluation of the effectiveness of the control measures, management practices, and other actions and activities described in the Program and EEP. Measures of effectiveness include, but are not limited to, quantitative monitoring to assess the effectiveness of control measures, detailed accounting of program accomplishments, funds expended and staff hours utilized. The Annual Report shall provide an overall evaluation of the Program and set forth plans and schedule of implementation for the upcoming year. The Annual Report may also include proposed modifications or revisions to the Program and EEP.

   In the report, the Dischargers shall propose pertinent updates, improvements, or revisions to the Program and EEP which shall be deemed to be incorporated into this Order as provided in Provision D.10, of Order No. 96-105.

3. Included in the Annual Report, the Dischargers shall submit a work plan for the following year which describe the proposed implementation of the Program and EEP for the next fiscal year. The work plans shall consider the status of implementation of current year activities and actions of the Dischargers, problems encountered, and proposed solutions, including proposed changes in accordance with Section C. Receiving Water Limitations of Order No. 96-105., and shall address any comments received from the Executive Officer on their previous year Annual Report. The work plans shall include clearly defined tasks, responsibilities, and schedules for implementation of Program, EEP, and Discharger actions for the next fiscal year. The work plans shall be deemed to be incorporated into the Program and EEP as provided in Provision D.10, and shall be implemented by **1 July** of each year except for those parts of the work plan determined to be unacceptable by the Executive Officer.

   All parts, if any, found to unacceptable to the Executive Officer shall be revised or amended as appropriate by the Dischargers, and resubmitted for Executive Officer approval.

4. During the month of February, the Dischargers shall present a mid-year summary and assessment to Board staff of its status in the implementation of their work plan, Program, and EEP, and provide a conceptual work plan for the subsequent year. The Dischargers presentation shall address: 1) Regional Board's comments on the previous year's Annual Reports, 2) status of Program implementation and current year work plan, 3) major and minor modifications proposed or required by the Dischargers or Regional Board, respectively, and

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proposed implementation schedule for modifications, and 4) conceptual work plan for the upcoming year.

C. **Monitoring Program Alternatives**

1. It is recognized that costs associated with storm water monitoring, determination of program effectiveness, and other activities required for the Dischargers to evaluate compliance with this Order could be significant. It is also recognized that municipalities, and other agencies state and country wide are, or will be, permitted by municipal NPDES storm water permits similar to this Order, and will be conducting storm water monitoring, and conducting other special studies similar to the Dischargers'. As such, we recognize that the Dischargers may wish to reduce their costs associated with compliance evaluation by proposing alternative monitoring methods. Alternative methods may include, but not be limited to, special projects, financial participation in regional, state or national special projects or research, literature review, visual observations, use of indicator parameters, recognition and reliance on special studies conducted by others, etc.

   a. The Dischargers may submit a written proposal of alternative monitoring methods, subject to the Executive Officer approval, as part of their work plan to be submitted in accordance with item B.3 above. Such proposal shall be detailed, and provide the Dischargers' justification for requesting the alternative method, and demonstrate how the data or information obtained is applicable and useful to the Dischargers. The proposal shall include a schedule, and define the roles and responsibilities of parties involved in the alternative monitoring proposal.

Ordered by William H. Crooks
WILLIAM H. CROOKS, Executive Officer

3 May 1996
(Date)

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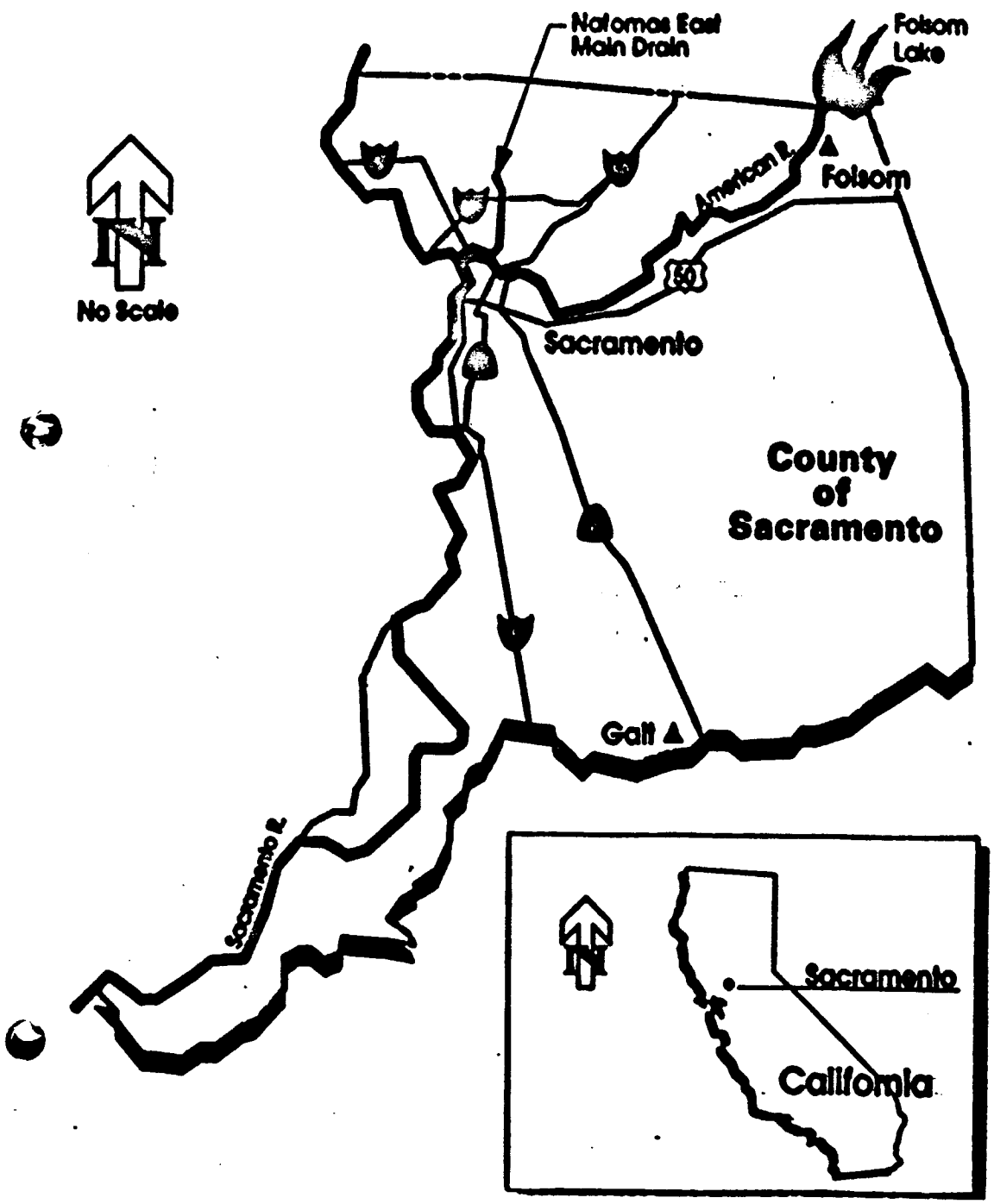
BOUNDARY OF SACRAMENTO COUNTY AND
LOCATION OF CO-PERMITTEES IN SACRAMENTO COUNTY

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ATTACHMENT B

VOL 16

# Comprehensive Stormwater Management Program

## Final Report

Sacramento County Water Agency
City of Sacramento
City of Folsom
City of Galt

June 1994

BROWN AND CALDWELL

Sacramento Stormwater Management Program

02-12

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# FINAL CSWMP REPORT

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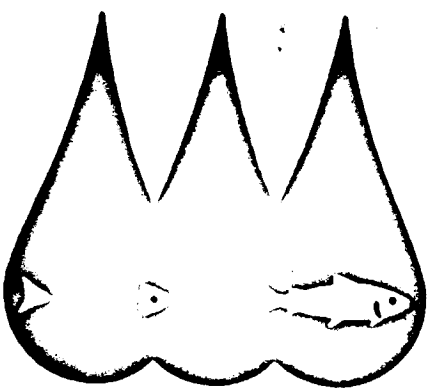
Sacramento Stormwater Management Program

# Effectiveness Evaluation Report

Sacramento County Water Agency
City of Sacramento
City of Folsom
City of Galt



STORMWATER POLLUTION SOLUTIONS

SACRAMENTO
STORMWATER
MANAGEMENT PROGRAM

March 1995

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# MEMORANDUM OF UNDERSTANDING BETWEEN LOCAL AGENCIES AND CALIFORNIA DEPARTMENT OF TRANSPORTATION

This is a Memorandum of Understanding entered into this 6th day of June, 1995, by and between the State of California, Department of Transportation (Caltrans), and the Local Agencies consisting of the County of Sacramento, the City of Sacramento, the City of Galt and the City of Folsom. The purpose of this MOU is to provide communication, coordination, cooperation, and collaboration between the State and Local Agencies concerning National Pollutant Discharge Elimination Systems (NPDES) stormwater requirements as directed by the California Regional Water Quality Control Board Central Valley Region. Each party in this MOU administers its own stormwater management program and is equally represented by this MOU.

This Memorandum of Understanding constitutes solely a guide to the respective intentions and policies of the parties involved. It is not intended to authorize funding or project effort nor is it a legally binding contract. Funding commitments providing for the deposit of funds for specific work phases or project effort committing either equipment or personnel time will be covered by one or more separate cooperative agreements as may be outlined herein.

## AGREEMENTS AND PROCEDURES

**Communication -** Each individual agency has identified a specific contact person to resolve water quality issues pertaining to NPDES.

| | |
|---|---|
| NPDES Coordinator - Caltrans - District 3 | 916-741-4585 |
| Stormwater Program Manager - County of Sacramento | 916-440-6851 |
| Stormwater Program Manager - City of Sacramento | 916-433-6634 |
| Stormwater Program Manager - City of Galt | 209-745-3077 |
| Stormwater Program Manager - City of Folsom | 916-355-7267 |

**Coordination -** The State and Local agencies will meet semi-annually, or more often if needed. The purpose of meeting is to coordinate on-going projects, share information to identify problem areas, discuss and resolve problem areas, and investigate possibilities of pilot programs and special studies.

**Cooperation -** State and Local Agencies agree to share information on approaches and conclusions on the different aspects of stormwater programs on an on-going basis. These programs would include, but are not limited to, construction activities, public information, stormwater monitoring, Best Management Practices (BMP) technology, and illicit connection programs.

**Collaboration -** The group of NPDES coordinators will identify and explore the available resources of the different agencies and determine a means, on a case by case basis, to jointly implement common activities of the individual stormwater programs.

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MEMORANDUM OF UNDERSTANDING
Page 2

**AMENDMENT**

This Memorandum of Understanding may be amended by written agreement of all parties.

**TERMINATION**

This Memorandum of Understanding may be terminated by any party upon sixty (60) days written notice.

| | |
|---|---|
| District Director of Caltrans | Date 6/6/95 |
| Agency Engineer, Sacramento County Water Agency | Date 5/30/95 |
| Director of Utilities City of Sacramento | Date 6/2/95 |
| Director of Public Works City of Galt | Date 5/31/95 |
| Director of Public Works City of Folsom | Date 5/31/95 |

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## Table 1-1 Sacramento Area Surface Waters

| Surface Waters - Hydrologic Order | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Primary | Secondary | Tertiary | Quaternary | Jurisdictions (a) | Watershed area in Sacramento County (square miles) | Current degree of urbanization (b) | Type of channel (c) | Type and season of flow (d) |
| American River | | | | | | | | |
| | Chicken Ranch Slough | | | | 4.8 | predominantly | C | YPer |
| | Strong Ranch Slough (e) | | | | 5.5 | predominantly | C | YPer |
| | Carmichael Creek | | | | 2.9 | predominantly | N | YPer |
| | Morrison Creek | | | | 1.6 | predominantly | N | YPer |
| | Buena Vista Creek | | | | 0.8 | partially | C | YPer |
| | Folsom South Canal | | | | N/A | N/A | M | YPer |
| | Alder Creek | | | | 12.0 | non-urban | N | YPer, NS |
| | Willow Creek | | | | 13.2 (f) | partially | N | YPer, NS |
| | | Humbug Creek | | | 4.0 | partially | N | YPer, NS |
| | Hazel Creek | | | | 0.2 | predominantly | N | YPer |
| Sacramento River | | | | | | | | |
| | Natomas North Drainage Canal | | | | | | | |
| | Natomas Main Drainage Canal (e) | | | | 2.5 | non-urban | M, L | YPer, Ag |
| | | Natomas West Drainage Canal | | | 12.8 | partially | M, L | YPer, Ag |
| | | Natomas East Drainage Canal | | | 3.1 | non-urban | M, L | YPer, Ag |
| | Natomas East Main Drainage Canal | | | | 8.5 | partially | M, L | YPer, Ag |
| | | Arcade Creek (e) | | | 135.7 | partially | M, L | YPer, Ag |
| | | | Verde Cruz Creek | | 53.6 | predominantly | C | YPer |
| | | | Robertson Creek | | 1.7 | predominantly | C | YPer |
| | | | Chicken Creek | | 3.6 | predominantly | C | YPer |
| | | | San Juan Creek | | 9.7 | predominantly | C | YPer |
| | | | Arcade Creek South Branch | | 2.1 | predominantly | C | YPer |
| | | Magpie Creek (e) | | | 2.6 | predominantly | C | YPer |
| | | | Don Julio Watercourse | | 11.7 | predominantly | C | YPer |
| | | Rio Linda Creek (e) | | | 1.5 | predominantly | M, L | YPer |
| | | Dry Creek (e) | | | 17.0 | predominantly | C | YPer |
| | | | Strong Creek (e) | | 11.6 (f) | partially | N | YPer |
| | | | Little Creek | | 2.7 | partially | C | YPer |
| | | NEMDC Tributary 3 (e) | | | 5.1 | partially | N | YPer |
| | | NEMDC Tributary 2 (e) | | | 3.8 | partially | N | E, Ag |
| | | NEMDC Tributary 1 (e) | | | 2.1 | partially | N | E, Ag |
| | Sacramento Drainage Canal | | | | 3.1 | partially | N | E, Ag |
| | Morrison Creek (e) | | | | 5.1 | predominantly | N | |
| | | Laguna Creek (e) | | | 110.7 | partially | C | YPer |
| | | | Whitehouse Creek (e) | | 48.3 | partially | C | YPer |
| | | | Elk Grove Creek (e) | | 2.4 | partially | C | YPer |
| | | | Laguna Creek Tributary 1 | | 6.8 | predominantly | C | YPer |
| | | Unionhouse Creek (e) | | | 6.1 | non-urban | C | YPer |
| | | | Strawberry Creek (e) | | 11.3 | partially | C | YPer |
| | | Elder Creek | | | 4.9 | partially | C | YPer |
| | | | Florin Creek (e) | | 22.3 | partially | C | YPer |
| | | | Chicken Creek | | 5.3 | predominantly | C | YPer |
| | | | | | 4.1 | non-urban | C | YPer |

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## Table 1-1 Sacramento Area Surface Waters

| Surface Waters - Hydrologic Order | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Primary | Secondary | Tertiary | Quaternary | Jurisdiction (a) | Watershed area in Sacramento County (square miles) | Current degree of urbanization (b) | Type of channel (c) | Type and source of flow (d) |
| Cosumnes River | | | | | | | | |
| | Laguna Creek South | | | Co | 116.7 | non-urban | N | E, Ag |
| | | Deadman Gulch | | C, Co | 11.6 | predominately | C | Y, Ag |
| | | Skunk Creek | | Co | 12.5 | non-urban | N | E, Ag |
| | Badger Creek | | | Co | 48.2 | non-urban | N | E, Ag |
| | Deer Creek (e) | | | Co | 78.7 | non-urban | N | E, Ag |
| | | | | | | | | |
| Mokelumne River | | | | | | | | |
| | Dry Creek | | | C, Co | 64.9 | predominately | C | Y, Ag |

Footnotes:

(a) Co = County of Sacramento
S = City of Sacramento
F = City of Folsom
G = City of Galt

(b) Non-urban = 0 to 30% urban
Partially urban = 30 to 70% urban
Predominantly urban = greater than 70% urban

(c) N = natural
M = man-made
C = combination or modified natural
L = lined

(d) E = ephemeral flow
Y = year-round flow
YPre = year-round flow prior to development of the watershed
YPost = year-round flow only after development of the watershed
NS = natural sources of flow (snow melt, springs, groundwater inflow)
NDO = emission water due to no gravity outfall
Ag = agricultural sources of flow

(e) These watersheds have been scheduled for master planning as described in the County of Sacramento's September 5, 1991 "Sacramento County Water Agency New Development Management Program" submitted to the Central Valley Regional Water Quality Control Board

(f) Watershed area extends beyond Sacramento County border. Only Sacramento County watershed area is shown.



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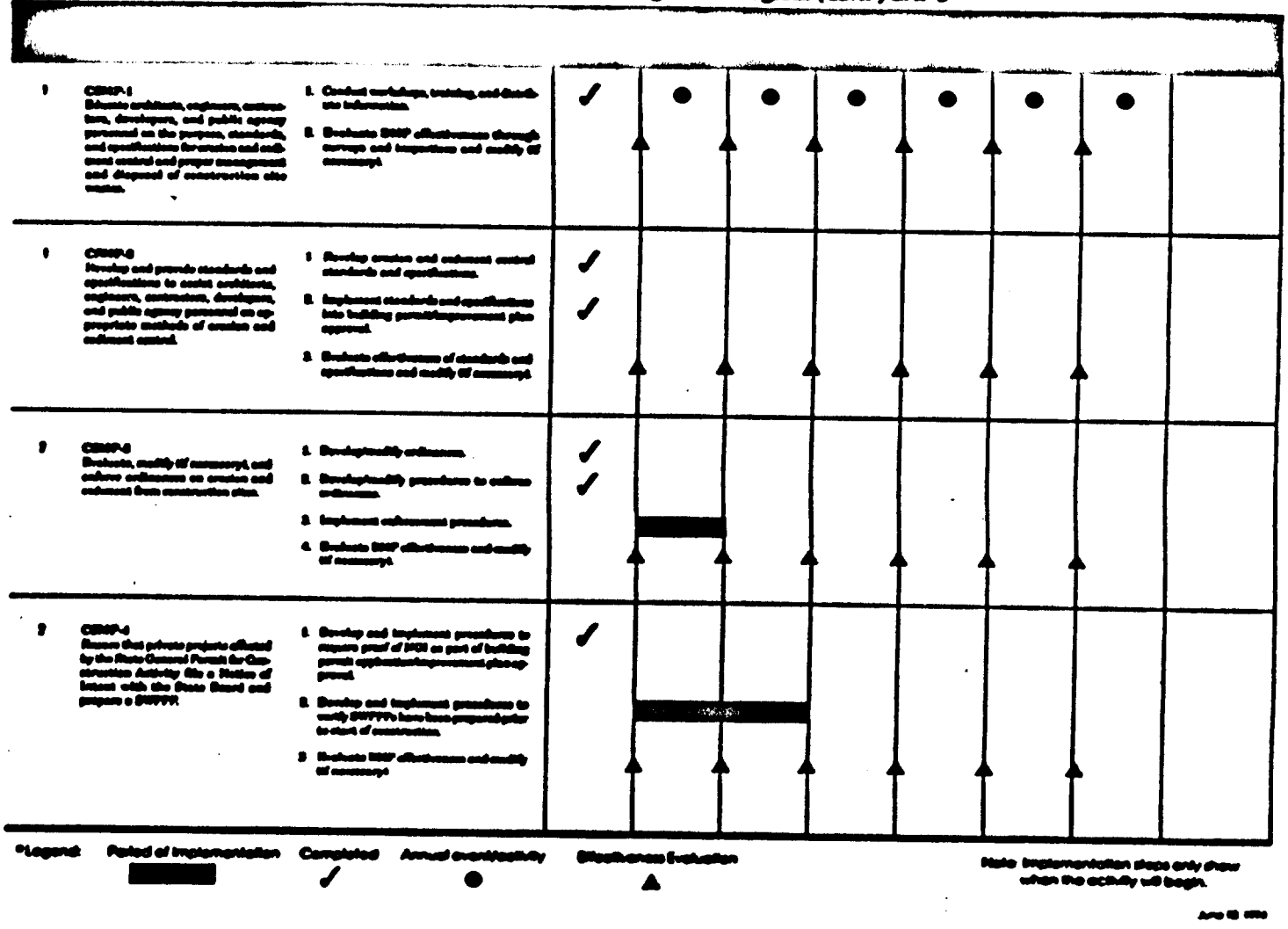
ATTACHMENT F

Table 2-1. Construction Site Management Program (CSMP) BMP's



*Legend: Period of Implementation | Completed ✓ | Annual event/activity ● | Effectiveness Evaluation ▲

Note: Implementation steps only show when the activity will begin.

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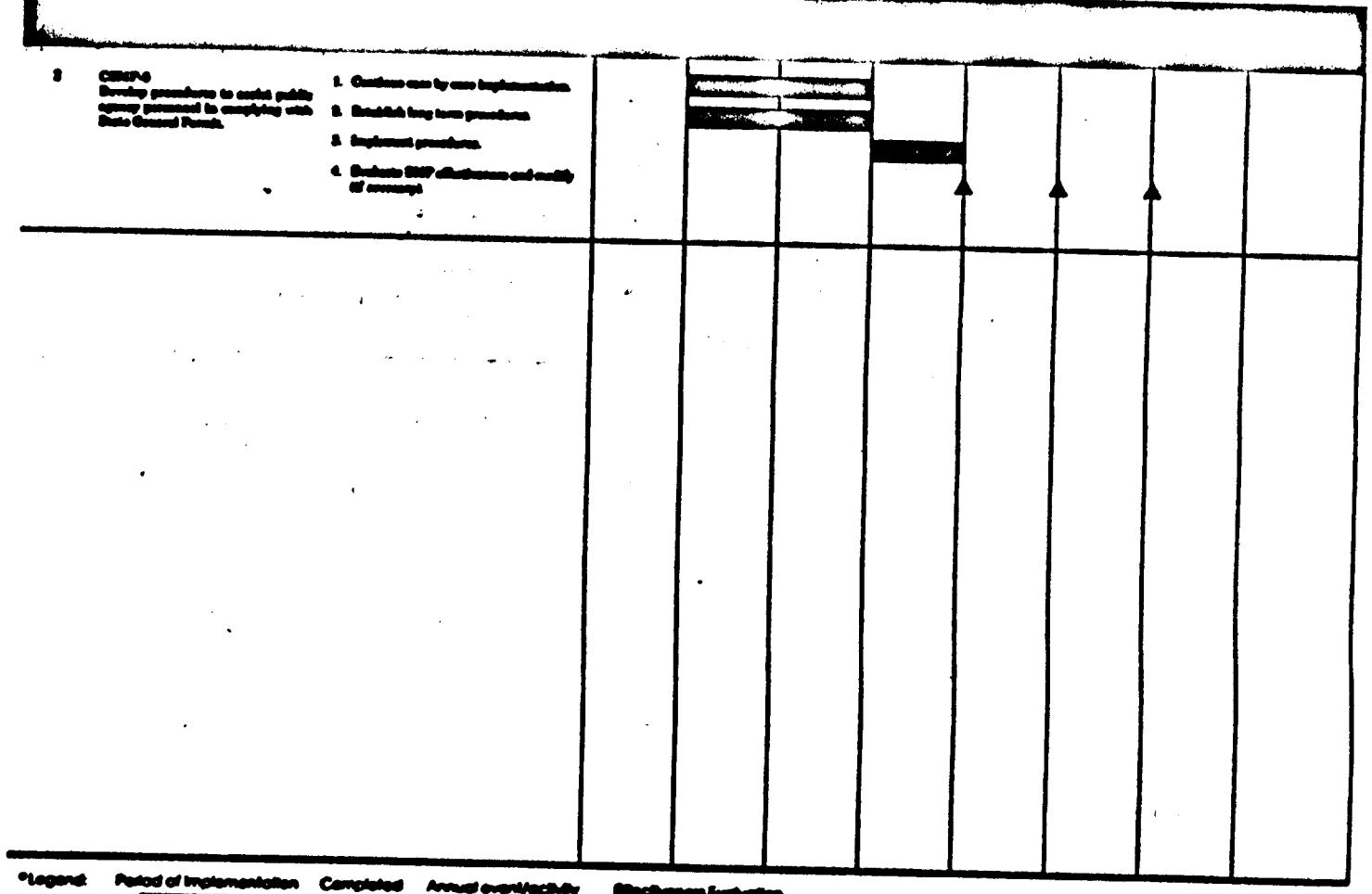
Table 2-1. Construction Site Management Program (CSMP) BMP's, continued



| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | CSMP-6<br>Develop procedures to assist public agency personnel in complying with State General Permits. | 1. Continue case by case implementation.<br>2. Establish long term procedures.<br>3. Implement procedures.<br>4. Evaluate BMP effectiveness and modify (if necessary). | | | | | | | |

*Legend: Period of Implementation ■ Completed ✓ Annual event/activity ● Effectiveness Evaluation ▲

Note: Implementation steps only show when the activity will begin.



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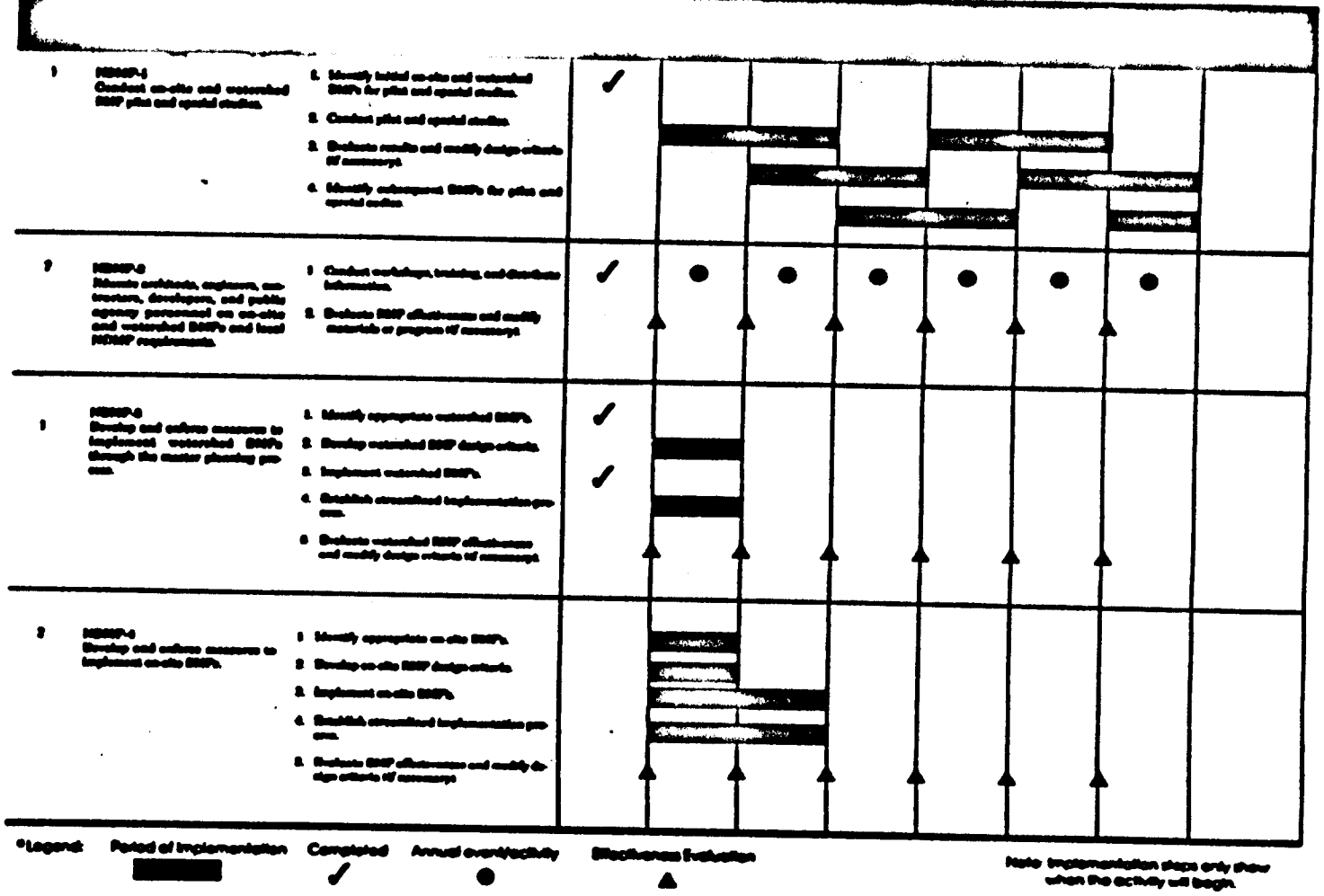
Table 2-2. New Development Management Program (NDMP) BMP's



*Legend: Period of Implementation | Completed ✓ | Annual event/activity ● | Effectiveness Evaluation ▲

Note: Implementation steps only show when the activity will begin.

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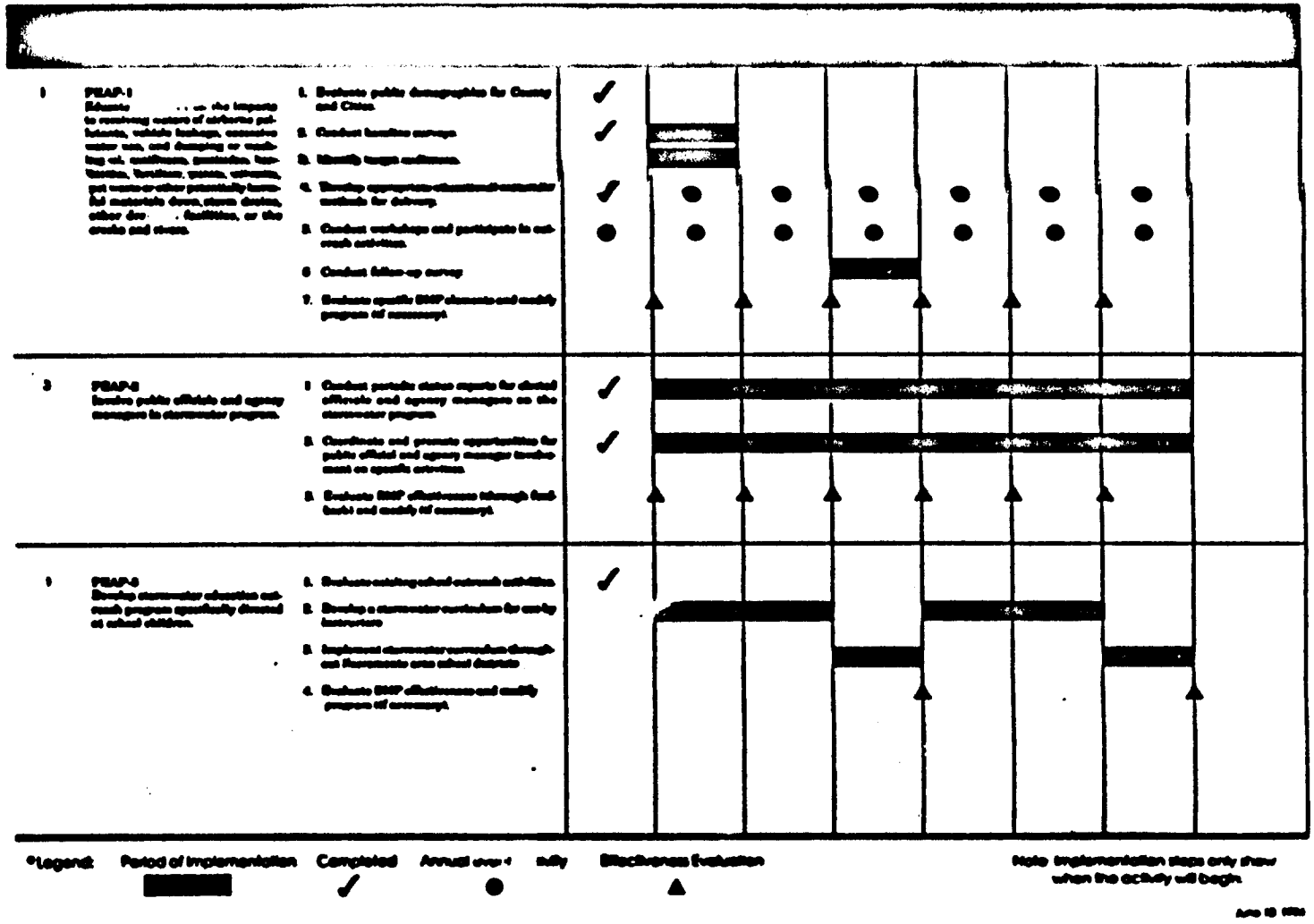
Table 2-3. Public Education and Awareness Program (PEAP) BMP's



*Legend: Period of Implementation | Completed ✓ | Annual ● | Effectiveness Evaluation ▲

Note: Implementation steps only shown when the activity will begin.

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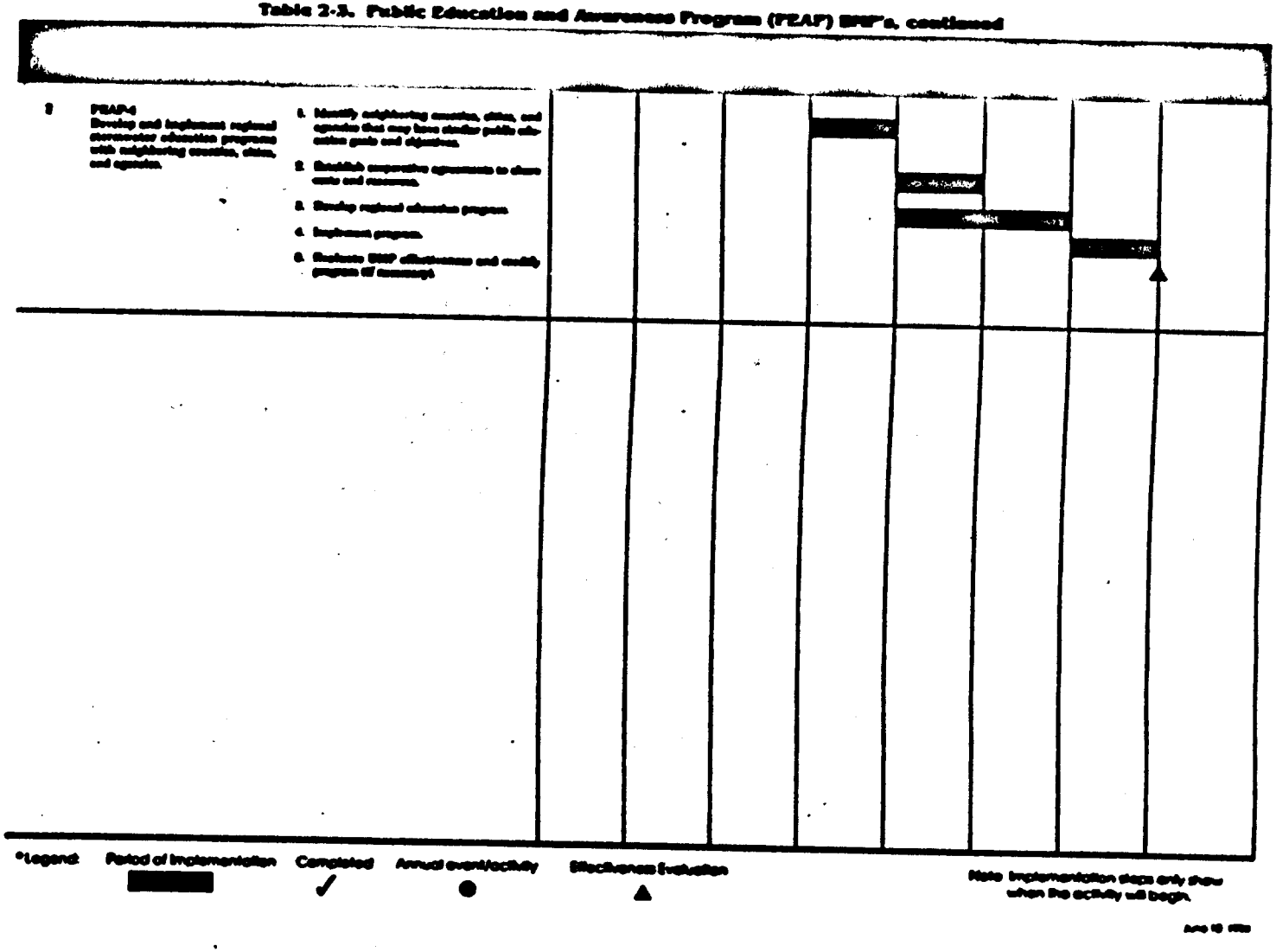
Table 2-3. Public Education and Awareness Program (PEAP) BMP's, continued

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | PEAP-4<br>Develop and implement regional stormwater education programs with neighboring counties, cities, and agencies. | 1. Identify neighboring counties, cities, and agencies that may have similar public education goals and objectives.<br>2. Establish cooperative agreements to share costs and resources.<br>3. Develop regional education program.<br>4. Implement program.<br>5. Evaluate BMP effectiveness and modify program (if necessary). | | | | | | | | |



*Legend: Period of Implementation ■ Completed ✓ Annual event/activity ● Effectiveness Evaluation ▲

Note: Implementation steps only show when the activity will begin.



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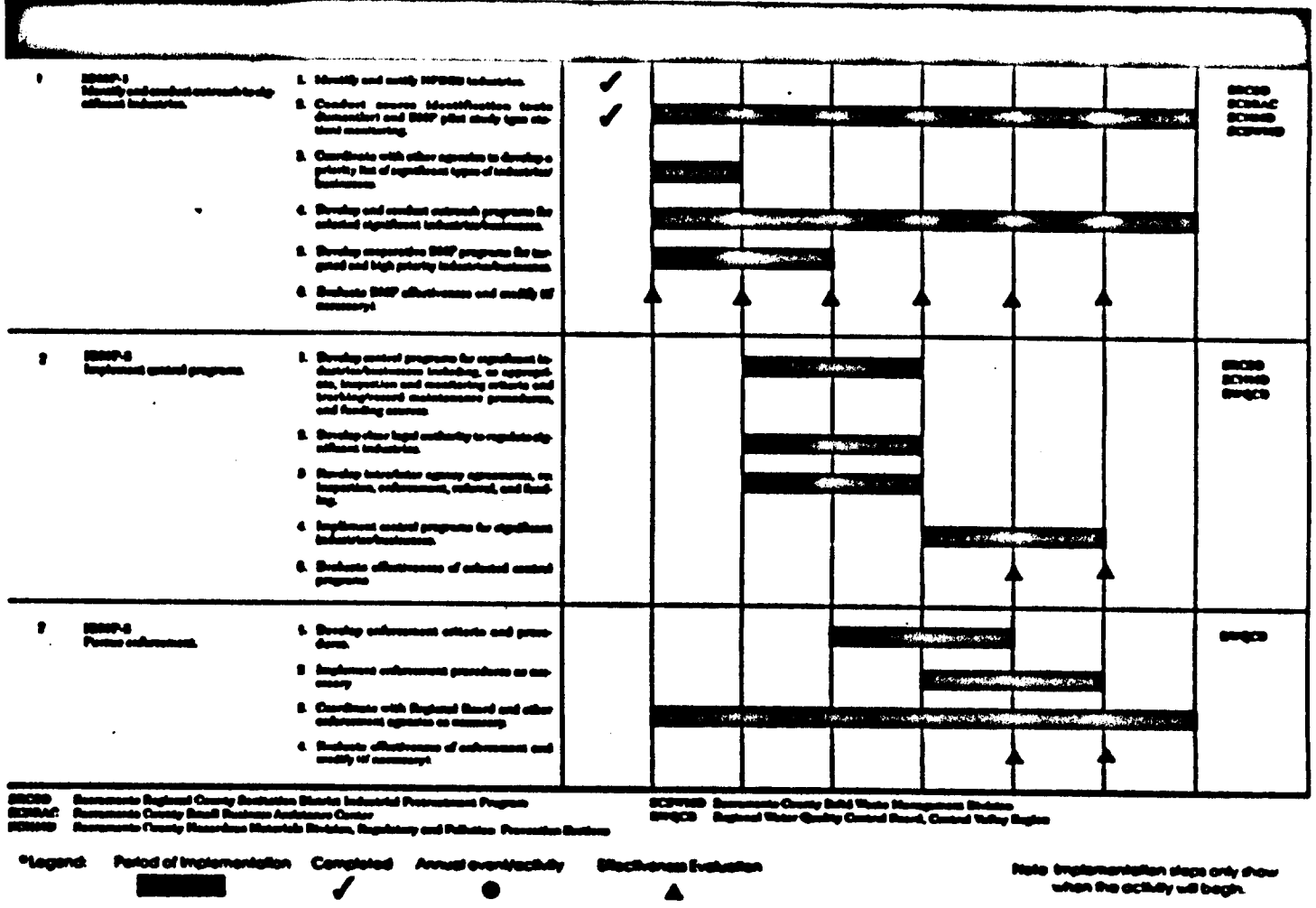
**Table 2-4. Industrial Discharge Management Program (IDMP) BMP's**



| | | | | |
|---|---|---|---|---|
| 1 | IDMP-1 Identify and conduct outreach to significant industries. | 1. Identify and notify NPDES industries. | ✓ | SRCSD, SCSRAC, SCHMD, SCSWMD |
| | | 2. Conduct source identification (auto dismantler) and BMP pilot study (gas station) monitoring. | ✓ | |
| | | 3. Coordinate with other agencies to develop a priority list of significant types of industries/businesses. | | |
| | | 4. Develop and conduct outreach programs for selected significant industries/businesses. | | |
| | | 5. Develop cooperative BMP programs for targeted and high priority industries/businesses. | | |
| | | 6. Evaluate BMP effectiveness and modify (if necessary). | | |
| 2 | IDMP-2 Implement control programs. | 1. Develop control programs for significant industries/businesses including, as appropriate, inspection and monitoring criteria and tracking/record maintenance procedures, and funding sources. | | SRCSD, SCHMD, SWQCB |
| | | 2. Develop clear legal authority to regulate significant industries. | | |
| | | 3. Develop interfaster agency agreements, re: inspection, enforcement, referral, and funding. | | |
| | | 4. Implement control programs for significant industries/businesses. | | |
| | | 5. Evaluate effectiveness of selected control programs. | | |
| 3 | IDMP-3 Pursue enforcement. | 1. Develop enforcement criteria and procedures. | | SWQCB |
| | | 2. Implement enforcement procedures as necessary. | | |
| | | 3. Coordinate with Regional Board and other enforcement agencies as necessary. | | |
| | | 4. Evaluate effectiveness of enforcement and modify (if necessary). | | |

SRCSD Sacramento Regional County Sanitation District Industrial Pretreatment Program
SCSRAC Sacramento County Small Business Assistance Center
SCHMD Sacramento County Hazardous Materials Division, Regulatory and Pollution Prevention Sections
SCSWMD Sacramento County Solid Waste Management Division
SWQCB Regional Water Quality Control Board, Central Valley Region

*Legend: Period of Implementation ■ Completed ✓ Annual event/activity ● Effectiveness Evaluation ▲

Note: Implementation steps only show when the activity will begin.



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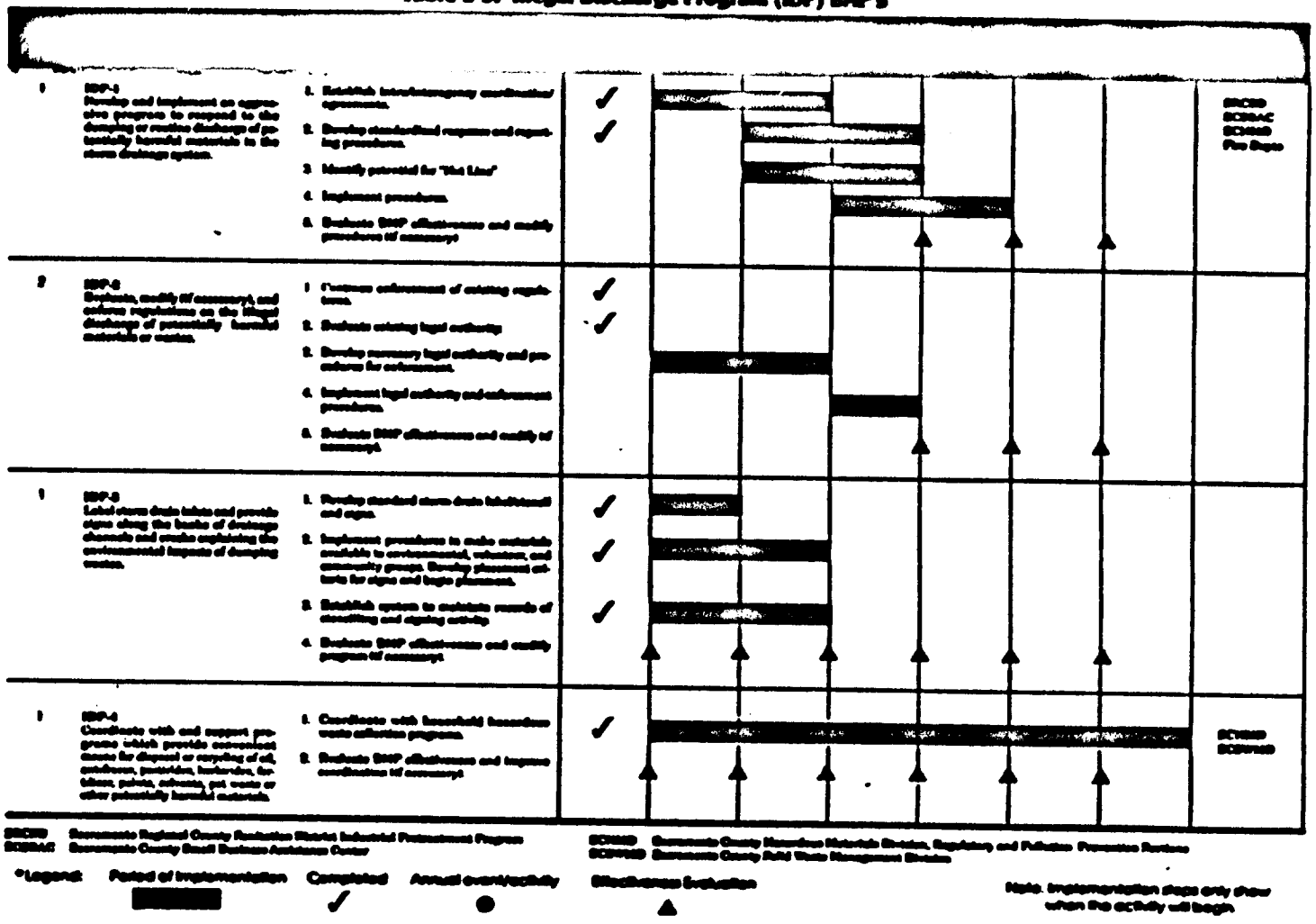
Table 2-8. Illegal Discharge Program (IDP) BMP's



*Legend: Period of Implementation ■ Completed ✓ Annual event/activity ● Effectiveness Evaluation ▲

Note: Implementation steps only show when the activity will begin.

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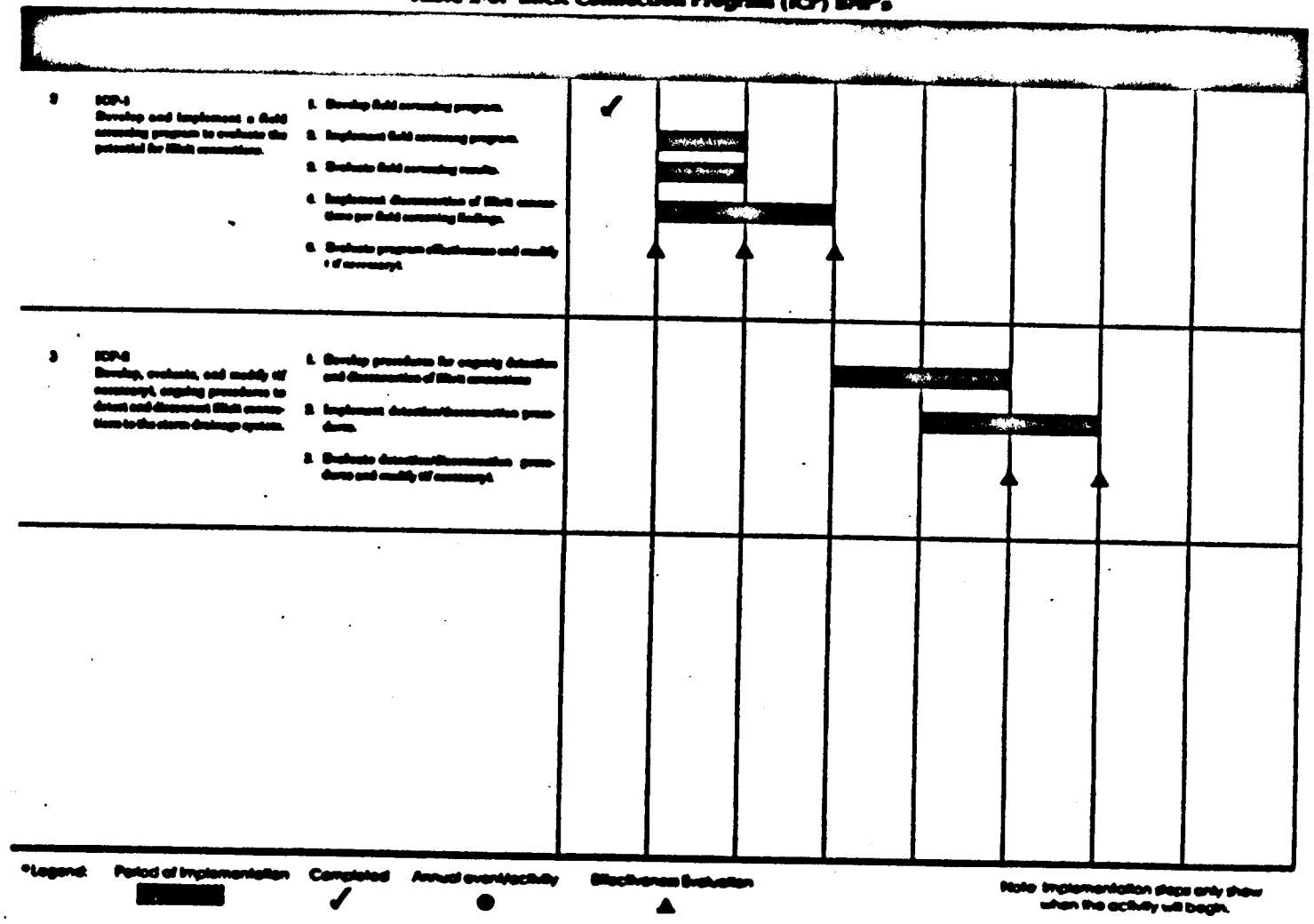
Table 2-6. Illicit Connection Program (ICP) BMP's

| | | | |
|---|---|---|---|
| 2 | ICP-1<br>Develop and implement a field screening program to evaluate the potential for illicit connections. | 1. Develop field screening program.<br>2. Implement field screening program.<br>3. Evaluate field screening results.<br>4. Implement disconnection of illicit connections per field screening findings.<br>5. Evaluate program effectiveness and modify if necessary. | ✓ |
| 3 | ICP-2<br>Develop, evaluate, and modify (if necessary), ongoing procedures to detect and disconnect illicit connections to the storm drainage system. | 1. Develop procedures for ongoing detection and disconnection of illicit connections<br>2. Implement detection/disconnection procedures.<br>3. Evaluate detection/disconnection procedures and modify (if necessary). | |



*Legend: Period of Implementation ■ Completed ✓ Annual event/activity ● Effectiveness Evaluation ▲

Note: Implementation steps only show when the activity will begin.



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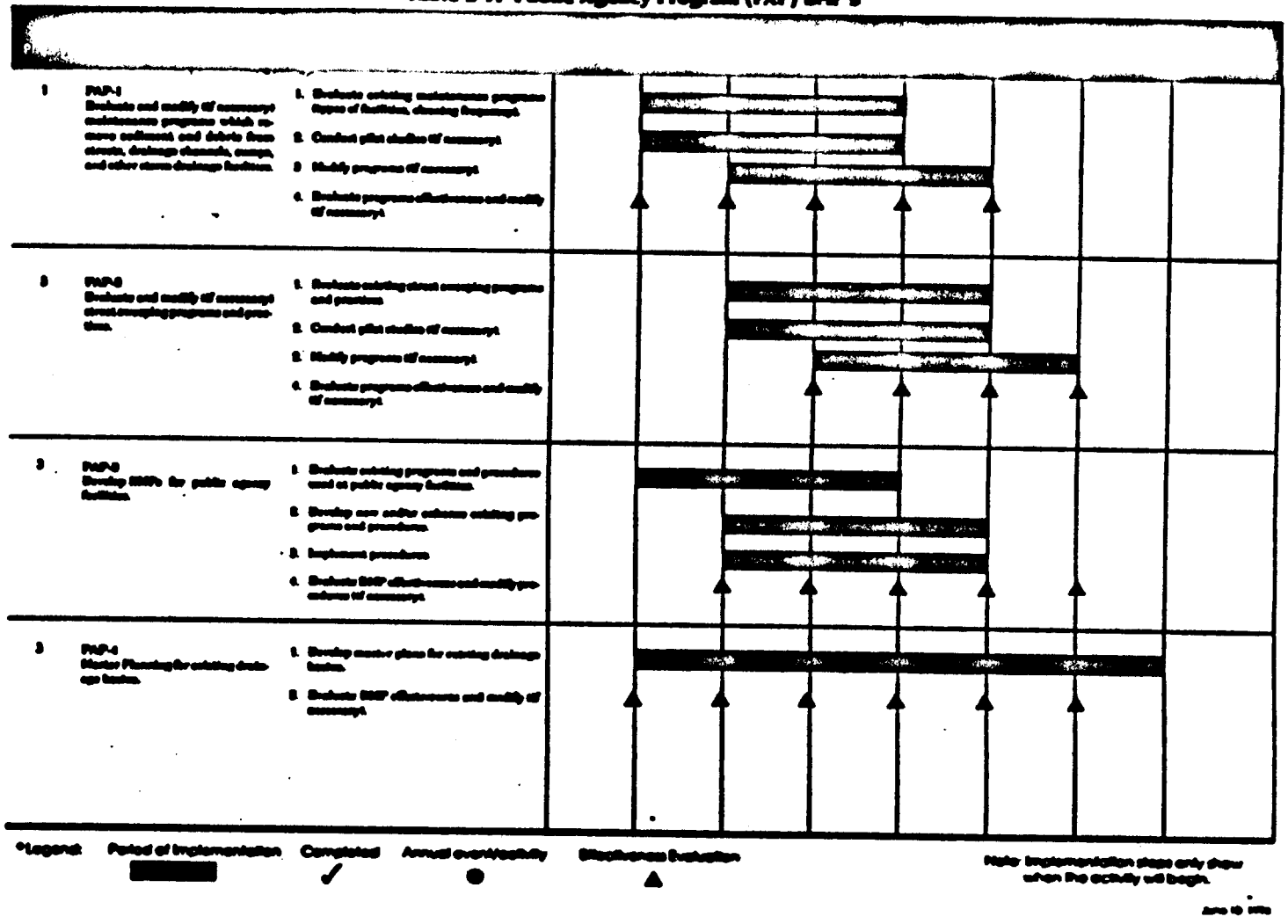
Table 2-7. Public Agency Program (PAP) BMP's



| | | | |
|---|---|---|---|
| 1 | PAP-1<br>Evaluate and modify (if necessary) maintenance programs which remove sediment and debris from streets, drainage channels, sumps, and other storm drainage facilities. | 1. Evaluate existing maintenance programs (types of facilities, cleaning frequency).<br>2. Conduct pilot studies (if necessary).<br>3. Modify programs (if necessary).<br>4. Evaluate programs effectiveness and modify (if necessary). | |
| 2 | PAP-2<br>Evaluate and modify (if necessary) street sweeping programs and practices. | 1. Evaluate existing street sweeping programs and practices.<br>2. Conduct pilot studies (if necessary).<br>3. Modify programs (if necessary).<br>4. Evaluate programs effectiveness and modify (if necessary). | |
| 3 | PAP-3<br>Develop BMPs for public agency facilities. | 1. Evaluate existing programs and procedures used at public agency facilities.<br>2. Develop new and/or enhance existing programs and procedures.<br>3. Implement procedures.<br>4. Evaluate BMP effectiveness and modify procedures (if necessary). | |
| 3 | PAP-4<br>Master Planning for existing drainage basins. | 1. Develop master plans for existing drainage basins.<br>2. Evaluate BMP effectiveness and modify (if necessary). | |

*Legend: Period of Implementation ▬ Completed ✓ Annual event/activity ● Effectiveness Evaluation ▲

Note: Implementation steps only show when the activity will begin.



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WASTE DISCHARGE REQUIREMENTS
AREA-WIDE STORM WATER DISCHARGES FROM
MUNICIPAL SEPARATE STORM SEWER SYSTEMS
COUNTY OF SACRAMENTO,
CITIES OF SACRAMENTO, FOLSOM, AND GALT

## INFORMATION SHEET

The 1972 Amendments to the Federal Clean Water Act (CWA) prohibited the discharge of any pollutants from a point source into waters of the U.S. unless permitted under the National Pollutant Discharge Elimination System (NPDES). Storm water and urban runoff discharges that occur through discreet conveyance systems are considered point sources subject to NPDES requirements. The 1987 amendments to the CWA mandated the USEPA to publish regulations establishing permit requirements for storm water discharges associated with industrial activities, and large and medium municipal storm sewer systems that service an urbanized area with a population greater than 100,000. On 16 November 1990, USEPA published these Regulations which were codified in the Federal Code of Regulations (40CFR) within Part 122.

Appendices to Part 122 of the Regulations, provide a listing of the cities and counties throughout the United States that meet threshold urbanized population criteria that requires a municipality to obtain a NPDES storm water permit. Appendix H of the Regulations lists Sacramento County (County) as a county with an unincorporated urbanized area population greater than 250,000, and Appendix F lists the City of Sacramento with an incorporated urbanized population greater than 250,000. In listing the County, and the City of Sacramento, the Regulations have identified them as large municipalities that are required to obtain a municipal NPDES storm water permit.

The Regulations allow the Board to designate owners or operators of municipal separate storm sewers, not meeting the population threshold established in the Regulations, and that are in the boundaries of a municipality that is required by the Regulations, as a medium or large municipal separate storm sewer system. This has resulted in many cities throughout California, with populations less than 100,000, or government entities, such as flood control districts or transportation districts, being required to obtain storm water permits.

There are four incorporated cities in the County of Sacramento, the Cities of Sacramento, Folsom, Galt, and Isleton. The Cities of Folsom, Galt, and Isleton have populations less than 100,000. The Cities of Folsom, and Galt are designated as urbanized areas that are subject to the storm water regulations. Designation is based on the location of each city's storm water discharges relative to storm water discharges for the County and City of Sacramento, and the nature of development and urbanization of the cities.

The City of Isleton has a population less than 1000, and is situated such that its developed area is not a contiguous, integral part of the urbanized area of the County and its incorporated cities. Therefore, it is not required to obtain a storm water permit at this time.



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WASTE DISCHARGE REQUIREMENTS
AREA-WIDE STORM WATER DISCHARGES FROM
MUNICIPAL SEPARATE STORM SEWER SYSTEMS
COUNTY OF SACRAMENTO,
CITIES OF SACRAMENTO, FOLSOM, AND GALT

The Regulations allow for the issuance of area-wide municipal NPDES storm water permits. Under the area-wide approach, various municipalities and entities can be named as permittees to one NPDES permit. The Regulations recognize the differences between the permittees in regards to its responsibilities for discharges from its municipal storm sewer system, and allows permittees to develop site-specific storm water programs.

The County, and the Cities of Sacramento, Folsom, and Galt together applied for an NPDES area-wide municipal storm water permit in February 1990. Order No. 90-158 (NPDES No. CA 0082597) was subsequently adopted by the Regional Board on 22 June 1990. Order No. 90-158 expired on 1 June 1995. However, due to no fault by the Dischargers, the Regional Board did not issue a new permit prior to that date resulting in the conditions of Order No. 90-158 continuing in full force until the new order is adopted.

On 3 March 1995, the Dischargers submitted the final segment of their renewal application. The application package included U.S. EPA General Information, Form 1, the State of California Form 200, a Comprehensive Stormwater Management Program (CSMP), and an Effectiveness Evaluation Report (EER). The CSMP and EER provide the Dischargers' management plan to evaluate and reduce the discharge of pollutants in storm water discharges from the urbanized areas covered by this Order.

The CSMP is a comprehensive document that describes the framework for management of storm water discharges during the term of this Order. It defines the priorities in development and implementation of best management practices (BMPs), and provides an implementation program which summarizes the major activities to be accomplished over and beyond the five-year term of this Order. Annually the Dischargers will submit a work plan, with a schedule, that provides the specific activities to be conducted by the Dischargers.

The EER reports the Dischargers' evaluation of the effectiveness of the CSMP during the current Order, and provides methodologies the Dischargers intend to implement to determine BMP, and overall CSMP effectiveness over the term of the new order. The proposed methodologies are detailed in the Effectiveness Evaluation Plan (EEP). The primary methods provided in the EEP for evaluation of program performance and estimated water quality improvements will be special studies for structural and non-structural BMPs, sub-watershed pilot studies for COC reduction programs, and statistical methods and water quality models for predicting the effectiveness of the CSMP.

This Order requires the permittees to implement various technologies to control the discharge of pollutants in storm water discharges from municipal separate storm sewer systems to the Maximum Extent Practicable (MEP), and to control the discharge of pollutants through implementation of Best Available Technologies Economically Achievable (BAT), and Best Conventional Control Technologies (BCT) non-storm water discharges from facilities that are owned or operated by the Dischargers. In accordance with the storm water Regulations, implementation of structural and non-structural BMPs are



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acceptable control technologies to meet MEP, BAT, and BCT standards. Timely and adequate implementation of BMPs and other program elements outlined in the CSMP and EEP will constitute compliance with MEP, BAT, and BCT standards.

Annually, the Dischargers are required to submit an Annual Report. The Annual Report is a tool for the Dischargers to establish that, through implementing their CSMP, they have reduced the discharge of pollutants in storm water discharges from storm sewer systems, and non-storm water discharges from facilities owned or operated by the Dischargers, and have effectively prohibited the discharge of non-storm water discharges to storm sewer systems from various land uses under the jurisdiction of the Dischargers. The report is to be formatted such that it provides both the Dischargers and Regional Board staff an opportunity to adequately evaluate: 1) implementation progress of the CSMP; 2) monitoring program analytical results, and how these results relate to the CSMP's priorities and direction; 3) dischargers' fiscal and manpower resources, and legal authority to implement an effective CSMP; and, 4) evaluate overall effectiveness of the CSMP and its control measures both qualitatively and quantitatively.



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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

**ORDER 95-180**
**NPDES PERMIT NO. CAS029718**

**REISSUING WASTE DISCHARGE REQUIREMENTS FOR:**

SANTA CLARA VALLEY WATER DISTRICT, COUNTY OF SANTA CLARA, CITY OF CAMPBELL, CITY OF CUPERTINO, CITY OF LOS ALTOS, TOWN OF LOS ALTOS HILLS, TOWN OF LOS GATOS, CITY OF MILPITAS, CITY OF MONTE SERENO, CITY OF MOUNTAIN VIEW, CITY OF PALO ALTO, CITY OF SAN JOSE, CITY OF SANTA CLARA, CITY OF SARATOGA, AND CITY OF SUNNYVALE, which have joined together to form the SANTA CLARA VALLEY NONPOINT SOURCE POLLUTION CONTROL PROGRAM

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter referred to as the Regional Board) finds that:

1. The Santa Clara Valley Water District (hereinafter District), County of Santa Clara, City of Campbell, City of Cupertino, City of Los Altos, Town of Los Altos Hills, Town of Los Gatos, City of Milpitas, City of Monte Sereno, City of Mountain View, City of Palo Alto, City of San Jose, City of Santa Clara, City of Saratoga, and City of Sunnyvale (hereinafter referred to as the Dischargers) have joined together to form the Santa Clara Valley Nonpoint Source Pollution Control Program (hereinafter referred to as the Program) and have submitted a permit application (Report of Waste Discharge), dated December 20, 1994, and revised June 30, 1995, for re-issuance of waste discharge requirements under the National Pollutant Discharge Elimination System (NPDES) to discharge storm water runoff from storm drains and watercourses within the Dischargers' jurisdictions.

2. The Dischargers are currently subject to NPDES Permit No.CA0029718 issued by Order No. 90-094 on June 20, 1990, and amended by Order No. 92-021 on February 19, 1992.

3. The Dischargers each have jurisdiction over and/or maintenance responsibility for their respective municipal separate storm drain systems and/or watercourses in the Santa Clara Valley basin. (See attached location and political jurisdiction map.) The basin can be divided into eleven subbasins or watersheds including the Coyote Creek watershed on the east side of the valley, the Guadalupe River watershed which drains the south-central portion of the valley, and a series of small, relatively urbanized watersheds that drain the west side of the valley. (See attached basin watersheds map.) Discharge consists of the surface runoff generated from various land uses in all the hydrologic subbasins in the basin which discharge into watercourses which in turn flow into South San Francisco Bay. The quality and quantity of these discharges varies considerably and is affected by hydrologic, geologic, land use, season, and sequence and duration of hydrologic event. Pollutants of concern in these discharges are certain heavy metals, sediment from erosion due to anthropogenic activities, petroleum hydrocarbons from sources such as used motor oil, microbial pathogens of domestic sewage origin from illicit discharges, certain pesticides associated with in stream acute toxicity, and other pollutants which may cause aquatic toxicity in the receiving waters.

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4. Section 402(p) of the federal Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires NPDES permits for storm water discharges from separate municipal storm drain systems, storm water discharges associated with industrial activity (including construction activities), and designated storm water discharges which are considered significant contributors of pollutants to waters of the United States. On November 16, 1990, the United States Environmental Protection Agency (hereinafter US EPA) published regulations (40 CFR Part 122) which prescribe permit application requirements for municipal separate storm drain systems pursuant to Section 402(p) of the CWA. On April 7, 1995, USEPA published regulations announcing its intent to develop permit application requirements for municipal separate storm drain systems that have previously been permitted under the CWA.

   The application requirements that the Regional Board has determined to be applicable to the Dischargers include submittal of a proposed storm water management plan to reduce the discharge of pollutants in storm water to the maximum extent practicable and to effectively prohibit non-storm water discharges into municipal storm drain systems and watercourses within the Dischargers' jurisdictions.

5. The permit application submitted by the Dischargers includes the Program's Storm Water Management Plan, which describes a framework for management of storm water discharges during the term of this permit. The title page and table of contents of the Storm Water Management Plan are attached to this Order. The Storm Water Management Plan describes the Program's Goals and Objectives, Legal Authorities, Institutional Arrangements and Funding, the Annual Reporting and Program Evaluation Process, Monitoring Strategy, an Implementation Plan which summarizes major activities to be accomplished during the five-year term of this permit, and detailed Workplans of activities to be implemented by the Program and each of the Dischargers during Fiscal Year 1995-1996. Workplans for subsequent fiscal years will be prepared by the Program and each of the Dischargers and submitted to the Regional Board by the Program as part of the Annual Reporting and Program Evaluation Process.

   The Implementation Plan chapter of the Storm Water Management Plan consists of the following elements:

   - Program Management
   - Annual Reporting and Evaluation
   - Monitoring
   - Public Agency Activities
   - Public Information and Participation
   - Metals Control Measures
   - Watershed Management Measures
   - Illicit Connection / Illegal Dumping Elimination
   - Industrial and Commercial Discharges
   - New Development and Construction

   The Program's Storm Water Management Plan fulfills the Regional Board's permit application requirements subject to the condition that it will be improved and revised in

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accordance with the provisions of this Order to resolve deficiencies in it in terms of scope and detail of proposed actions and time frame for implementation.

6. The Storm Water Management Plan (Plan) and modifications or revisions to the Plan that are approved in accordance with Provision C.3 of this Order, and future fiscal year Workplans to be submitted in accordance with the Plan and Provision C.3 of this Order are incorporated into this Order by reference and are an integral and enforceable component of this Order.

7. The Program is organized, coordinated, and implemented based upon a Memorandum of Agreement signed by the Dischargers, which defines roles and responsibilities of the Dischargers. The roles and responsibilities of the Dischargers are, in part, as follows:

   a. The Management Committee, which includes representatives from all of the Dischargers, is the decision making body of the Program. It operates within the budget and policies established by the Dischargers' governing boards and councils to decide matters of budget and policy necessary to implement the Storm Water Management Plan, and provides direction to the Program Manager and staff. The Management Committee has established subcommittees to assist in planning and implementation of the Storm Water Management Plan, and may add, modify, or delete subcommittees as deemed necessary.

   b. The District's representative serves as the Chair of the Management Committee and is responsible for implementation of the Program's self-monitoring activities and preparation and submittal of Program components of the Annual Report and Workplans. In acting as the Program's NPDES Permit coordinator, the District does not assume responsibility for the obligations assigned to other Dischargers by this Order.

   c. Each of the Dischargers is individually responsible for adoption and enforcement of ordinances, implementation of assigned control measures needed to prevent or reduce pollutants in storm water, and providing funds for the capital, operation, and maintenance expenditures necessary to implement such control measures within their jurisdiction. Enforcement actions concerning this Order will, wherever possible, be pursued only against the individual Discharger(s) responsible for specific violations of this Order.

8. The Regional Board amended its Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region on September 16, 1992 and June 21, 1995. The State Water Resources Control Board (hereinafter the State Board) approved the Basin Plan amendments on April 27, 1993 and July 20, 1995 respectively. The provisions of this permit are consistent with the amended Basin Plan.

9. The beneficial uses of South San Francisco Bay, its tributary streams and contiguous water bodies, and other water bodies within the drainage basin are listed in the Basin Plan.

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10. The Regional Board considers storm water discharges from the urban and developing areas in the San Francisco Bay Region, such as the Santa Clara Valley basin, to be significant sources of pollutants in waters of the Region that may be causing or threatening to cause or contribute to water quality impairment.

11. The San Francisco Estuary Project, established pursuant to CWA Section 320, culminated in June of 1993 with completion of its Comprehensive Conservation and Management Plan (CCMP) for the preservation, restoration, and enhancement of the San Francisco Bay-Delta Estuary. The CCMP includes recommended actions in the areas of aquatic resources, wildlife, wetlands, water use, pollution prevention and reduction, dredging and waterway modification, land use, public involvement and education, and research and monitoring. Recommended actions which may, in part, be addressed through implementation of the Dischargers' Storm Water Management Plan include, but are not limited to, the following:

    a. Action PO-2.1: Pursue a mass emissions strategy to reduce pollutant discharges into the Estuary from point and nonpoint sources and to address the accumulation of pollutants in estuarine organisms and sediments.

    b. Action PO-2.4: Improve the management and control of urban runoff from public and private sources.

    c. Action PO-2.5: Develop control measures to reduce pollutant loadings from energy and transportation systems.

    d. Action LU-1.1: Local General Plans should incorporate watershed protection plans to protect wetlands and stream environments and reduce pollutants in runoff.

    e. Action LU-3.1: Prepare and implement Watershed Management Plans that include the following complementary elements: 1) wetlands protection; 2) stream environment protection; and 3) reduction of pollutants in runoff.

    f. Action LU-3.2: Develop and implement guidelines for site planning and Best Management Practices.

12. On February 1, 1989, pursuant to Section 304(l) of the Clean Water Act, as amended by the Water Quality Act of 1987, the State Water Resources Control Board included South San Francisco Bay, below the Dumbarton Bridge (South Bay), on the 304(l)(1)(B) list of impaired waters for the pollutants cadmium, chromium, copper, lead, mercury, nickel, silver, selenium, and zinc (304(l) metals) and included the Dischargers on the 304(l)(1)(C) list of point sources discharging the listed pollutants. Order No. 90-094 served as an Individual Control Strategy required by Section 304(l) for point sources on the 304(l)(1)(C) list. The Individual Control Strategy was designed to produce a reduction in the discharge of toxic pollutants from storm water discharges sufficient, in combination with controls on point and nonpoint sources of pollutants, to achieve applicable water quality standards no later than three years after the date of the establishment of the Individual Control Strategy.

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The Regional Board reviewed reports submitted by the Dischargers between June of 1990 and September of 1993 and Regional Monitoring Program data and found that the Dischargers made considerable progress in reducing the discharge of pollutants, including 304(l) metals, but that the South Bay remained impaired and applicable water quality objectives had not been achieved. Consequently, on December 15, 1993, the Regional Board adopted Cease and Desist Order No. 93-164 which required the Dischargers to submit a plan identifying measures for further control of the 304(l) metals and assigning responsibilities and time schedules for implementation of such control measures. The Dischargers' Storm Water Management Plan includes an implementation plan for Metals Control Measures. This Order requires implementation of the Storm Water Management Plan and the Metals Control Measures and their annual evaluation and update and serves as a continuation of the Individual Control Strategy.

13. It is the Regional Board's intent that this Order shall ensure attainment of applicable water quality objectives and protection of the beneficial uses of receiving waters. This Order therefore includes standard requirements to the effect that discharges shall not cause violations of water quality objectives nor shall they cause certain conditions to occur which create a condition of nuisance or water quality impairment in receiving waters. Accordingly, the Regional Board is requiring that these standard requirements be addressed through the implementation of technically and economically feasible control measures to reduce pollutants in storm water discharges to the maximum extent practicable as provided in Provisions C.1 through C.9 of this Order. Compliance with Provisions C.1 through C.9 is deemed compliance with the requirements of this Order. If these measures, in combination with controls on other point and nonpoint sources of pollutants, do not result in attainment of applicable water quality objectives, the Regional Board will reopen this permit pursuant to Provisions C.1, C.9, and C.10 of this Order to impose additional conditions which require implementation of additional control measures.

14. The Regional Board considers the Program's Storm Water Management Plan (Plan) an essential component of an urban watershed management plan for the Santa Clara Valley basin and its eleven subbasins or watersheds. The Plan is intended to provide a framework for protection and restoration of the Santa Clara Valley watersheds and the South Bay in part through effective and efficient implementation of appropriate control measures for the most important sources of pollutants within the watersheds.

15. The Regional Board has issued a NPDES general permit for the regulation of storm water discharges associated with industrial activities in the Santa Clara Valley basin, and the State Board has issued a NPDES general permit for the regulation of storm water discharges associated with construction activities throughout the entire state. To effectively implement the Industrial and Commercial Dischargers and New Development and Construction elements of the Plan, the Dischargers will conduct investigations and local regulatory activities at industries or construction sites covered by these general permits. However, under the CWA, the Regional Board cannot delegate to the Dischargers its own authority to enforce these general permits. Therefore, Regional Board staff intend to work cooperatively with the Dischargers to ensure that industries and construction sites within the Discharger's jurisdiction are in compliance with applicable

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general permit requirements and are not subject to uncoordinated storm water regulatory activities.

16. Federal, state, or regional entities within the Dischargers' boundaries, not currently named in this Order, operate storm drain facilities and/or discharge storm water to the storm drains and watercourses covered by this Order. The Dischargers may lack legal jurisdiction over these entities under the state and federal constitutions. Consequently, the Regional Board recognizes that the Dischargers should not be held responsible for such facilities and/or discharges. The California Department of Transportation (Caltrans) is a state agency that is currently, among others, such an entity. The Regional Board issued a separate storm water permit (NPDES Permit No. CAS029998), to Caltrans in August of 1994, and will consider issuing separate NPDES permits for storm water discharges to other federal, state, or regional entities within the Dischargers' boundaries.

17. The action to adopt a NPDES permit is exempt from the provisions of the California Environmental Quality Act; Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code in accordance with Section 13389 of the California Water Code.

18. The Regional Board will notify interested agencies and interested persons of the availability of reports, plans, and schedules, including Annual Reports, Work Plans, Performance Standards, and proposed Storm Water Management Plan revisions, submitted in response to requirements of this Order and will provide them with an opportunity for a public hearing and/or an opportunity to submit their written views and recommendations. The Regional Board will consider all comments and may modify the reports, plans, or schedules or may modify this Order in accordance with the NPDES permit regulations. All submittals required by this Order conditioned with acceptance by the Executive Officer will be subject to these notification, comment, and public hearing procedures.

19. The Regional Board has notified the Dischargers and interested agencies and interested persons of its intent to prescribe waste discharge requirements and an NPDES permit for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

20. The Regional Board, at a properly noticed public meeting, heard and considered all comments pertaining to the discharge.

21. It is the intention of the Regional Board that this Order supersedes Order Nos. 90-094, 92-021, and 93-164.

22. This Order serves as a NPDES permit, pursuant to CWA Section 402, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator, US EPA, Region IX, has no objections.

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**IT IS HEREBY ORDERED that the Dischargers, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder and the provisions of the Clean Water Act as amended and regulations and guidelines adopted thereunder, shall comply with the following:**

## A. DISCHARGE PROHIBITION

1. The Dischargers shall, within their respective jurisdictions, effectively prohibit the discharge of non-storm water (materials other than storm water) into their storm drain systems and watercourses. NPDES permitted discharges are exempt from this prohibition. Compliance with this prohibition shall be demonstrated in accordance with Provisions C.1 and C.5 of this Order.

2. The discharge of stormwater from a facility or activity that causes or contributes to the violation of Receiving Water Limitations is prohibited.

## B. RECEIVING WATER LIMITATIONS

1. The discharge shall not cause the following conditions to create a condition of nuisance or to adversely affect beneficial uses of waters of the State:
   a. Floating, suspended, or deposited macroscopic particulate matter, or foam;
   b. Bottom deposits or aquatic growths;
   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;
   d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and/or
   e. Toxic or deleterious substances present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge shall not cause a violation of any applicable water quality objective for receiving waters. If applicable water quality objectives are adopted and approved by the State Board after the date of the adoption of this Order, the Regional Board may revise and modify this Order as appropriate.

## C. PROVISIONS

1. The Dischargers shall comply with Discharge Prohibition A.1 and A.2 and Receiving Water Limitations B.1 and B.2 through the timely implementation of control measures and other actions to reduce pollutants in the discharge in accordance with Provisions C.2 through C.9 and their Storm Water Management Plan (Plan) and any of its modifications, revisions, or amendments developed pursuant to this Order. If adverse impacts to beneficial uses of receiving waters persist following implementation of Provisions C.2 through C.9 and the Plan, this Order will be reopened to require the Dischargers to identify, assign, and implement additional control measures and revise the Plan, forthwith,

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to ensure compliance with Discharge Prohibitions A.1 and A.2 and Receiving Water Limitations B.1 and B.2.

2. **Storm Water Management Plan and Performance Standards**

   a. The Dischargers shall implement control measures and best management practices to reduce pollutants in storm water discharges to the maximum extent practicable. The Program's Storm Water Management Plan shall serve as the framework for identification, assignment, and implementation of such control measures. The Dischargers shall begin implementing forthwith the Program's Storm Water Management Plan as submitted on December 20, 1994 and revised on June 30, 1995, and shall subsequently demonstrate its effectiveness and provide for necessary and appropriate revisions, modifications, and improvements to reduce pollutants in storm water discharges to the maximum extent practicable and as required by Provisions C.1 through C.9 of this Order.

   b. The Storm Water Management Plan shall be revised to adopt and incorporate Performance Standards developed by the Dischargers. Performance Standards are defined as the level of implementation necessary to demonstrate the control of pollutants in storm water to the maximum extent practicable. Performance Standards shall be established for implementing control measures and best management practices contained in the Implementation Plan chapter of the Storm Water Management Plan. Performance Standards shall be developed through a process which includes opportunities for public participation and include appropriate criteria for the applicability, economic feasibility, design, operation, and maintenance or otherwise implementation of a control measure or best management practice so as to achieve pollutant reduction or pollution prevention benefits to the maximum extent practicable. Performance Standards may be based upon special studies or other activities conducted by the Dischargers, literature review, or special studies conducted by other programs or dischargers. Performance Standards shall include the baseline components to be accomplished and the method to be used to verify that the Performance Standard has been achieved. Following the addition of a Performance Standard, acceptable to the Executive Officer, to the Storm Water Management Plan, all Dischargers for which the Performance Standard is applicable shall adhere to its implementation.

      i. The following Performance Standards shall be the highest priority and shall be developed during Fiscal Year 1995-1996 or otherwise in accordance with the stated schedule:

         a) Industrial/Commercial Discharger Inspection Program -

            A Performance Standard for conducting the Industrial/Commercial Inspection Program shall be developed and submitted to the Executive Officer by January 1, 1996. The Performance Standard shall include the baseline activities and items of an inspection check list.

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b) Municipal Separate Storm Drain System Operations and Maintenance -

A Performance Standard for conducting routine operations and maintenance of the Dischargers' municipal storm drain systems to reduce pollutants in discharges, including inlet and line maintenance, solid waste management, and opportunities for structural retrofit shall be developed and submitted to the Executive Officer by March 1, 1996.

c) Water Utility Operations and Maintenance -

A Performance Standard for discharges associated with water utility operations, including management of chlorine, biocides, and algaecides and prevention of erosion and sedimentation, shall be developed and submitted to the Executive Officer by July 1, 1996.

Discharges associated with water utility operations owned or operated by the Dischargers are authorized and permitted by this Order, to the extent they are in accordance with the conditions of this provision and Provision C.5 of this Order and the Dischargers' Storm Water Management Plan.

d) New Development and Construction -

Performance Standards for planning procedures and construction inspections shall be developed and submitted to the Executive Officer by September 1, 1996.

e) Public Streets, Roads, and Highways

Performance Standards for control measures and practices for operating and maintaining public streets, roads, and highways identified in the Storm Water Management Plan for reducing pollutants in discharges from municipal storm drain systems shall be developed and submitted to the Executive Officer by December 1, 1996.

f) Public Information and Participation

A Public Information and Participation strategy and plan, addressing general outreach, targeted outreach, education programs, and citizens participation, including Performance Standards for their implementation, shall be developed and submitted to the Executive Officer by March 1, 1996.

g) Illicit Connection and Illegal Dumping Identification and Elimination Activities

Performance Standards for implementing Illicit Connection and Illegal Dumping Identification and Elimination Activities, including residential illegal discharge elimination, illegal discharge elimination for commercial and light industrial facilities, and illegal discharge elimination for older businesses and

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heavy industrial areas shall be developed and submitted to the Executive Officer by January 1, 1996.

ii. Beginning in September of 1996, the Dischargers shall incorporate newly developed or updated Performance Standards, acceptable to the Executive Officer, in each annual revision to the Storm Water Management Plan. The draft Annual Workplan required in Provision C.3 shall identify those Performance Standards which will be developed for the upcoming fiscal year. Performance Standards shall be established for all appropriate control measures or best management practices identified in the Storm Water Management Plan by September 1, 1997, or otherwise, a proposed schedule for completing or omitting the establishment of Performance Standards with justification acceptable to the Executive Officer must be submitted by September 1, 1997. Such time schedules shall not extend beyond the term of this permit.

c. The Dischargers shall revise the Storm Water Management Plan (Plan) by September 1, 1997 for approval by the Regional Board. This approval shall be done in accordance with the NPDES permit regulations.

i. The revised Storm Water Management Plan shall be developed through a process which includes opportunities for public participation, and shall provide clear and concise identification, assignment, and time schedule for implementation of appropriate control measures and best management practices, including performance standards for their implementation, sufficient to demonstrate the reduction of pollutants in storm water discharges to the maximum extent practicable.

ii. The revised Storm Water Management Plan shall include a summary or checklist of all actions, activities, and tasks and time schedules pertinent to implementation of control measures and best management practices, which shall be presented in a concise format suitable for incorporation or attachment to this permit.

iii. The revised Storm Water Management Plan shall include consideration of comments received from the Executive Officer, and other interested parties, on the current Plan submitted on December 20, 1994 and revised on June 30, 1995 and any subsequent revisions to the Plan in the interim.

iv. The submittal of annual workplans on March 1, 1996 and March 1, 1997 and an annual report on September 1, 1996, and any interim revisions to the Storm Water Management Plan, as required and described by Provisions C.3 or C.9 of this Order, shall be considered demonstrations of progress towards compliance with this provision, and may be used in fulfillment of this Provision.

v. The Regional Board will consider amendment of this permit subsequent to submittal of the revised Storm Water Management Plan on September 1, 1997 to include specific requirements for implementation of control measures and best management practices and further revisions to the Storm Water Management Plan

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necessary to ensure reduction of pollutants in storm water discharges to the maximum extent practicable.

3. **Annual Reports and Work Plans**

a. The Dischargers shall submit an Annual Report, by September 1 of each year, beginning in 1996, documenting the status of the Program's and the Dischargers' activities, including the results of a qualitative field level assessment of activities implemented by the Dischargers, and the performance of tasks contained in the Storm Water Management Plan.

The Annual Report shall include a compilation of deliverables and milestones completed as described in the Storm Water Management Plan. As part of the Annual Report process, each of the Dischargers shall conduct an overall evaluation of the effectiveness of its applicable activities described in the Storm Water Management Plan. Direct and indirect measures of effectiveness may include, but are not limited to, conformance with established Performance Standards, quantitative monitoring to assess the effectiveness of control measures, measurements or estimates of pollutant load reductions, detailed accounting of Program accomplishments, funds expended, or staff hours utilized. Methods to improve effectiveness in the implementation of tasks and activities including development of new, or modification of existing, Performance Standards, shall be identified where appropriate.

In each Annual Report, the Dischargers shall propose pertinent updates, improvements, or revisions to the Storm Water Management Plan, which shall be deemed to be incorporated into this Order unless disapproved of by the Executive Officer or acted on in accordance with Provision C.9.

b. The Dischargers shall submit draft Workplans by March 1 of the year following the submission of each Annual Report which describes the proposed implementation of the Storm Water Management Plan for the next fiscal year.

The Workplans shall consider the status of implementation of current year activities and actions of the Dischargers, problems encountered, and proposed solutions, and shall address any comments received from the Executive Officer on their previous year Annual Report. The Workplans shall include clearly defined tasks, responsibilities, and schedules for implementation of Program and Discharger actions for the next fiscal year. The Workplans shall also include a proposal for development of new, or modification of existing, Performance Standards in accordance with Provision C.2.b and alternative monitoring activities as required in Provision C.4.

The Workplans shall be deemed to be final and incorporated into the Storm Water Management Plan and this Order as of July 1 unless determined to be unacceptable by the Executive Officer. The Dischargers shall address any comments or conditions of acceptability received from the Executive Officer on their draft Workplans prior to the submission of their Annual Report on September 1, at which time the Workplans shall

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be deemed to be incorporated into the Storm Water Management Plan and this Order unless disapproved of by the Executive Officer.

4. **Monitoring Program**

The Dischargers shall submit by September 1 of each year, an Annual Monitoring Program Plan acceptable to the Executive Officer, that supports the development and implementation and assesses the effectiveness of the Storm Water Management Plan. The Monitoring Program Plan shall be designed to achieve the following objectives and objectives presented in the Storm Water Management Plan:

- Characterization of representative drainage areas and storm water discharges, including land use characteristics, pollutant concentrations, and mass loadings;
- Assessment of existing or potential adverse impacts on beneficial uses caused by pollutants of concern in storm water discharges, including an evaluation of representative receiving waters;
- Identification of potential sources of pollutants of concern found in storm water discharges; and
- Evaluation of effectiveness of representative storm water pollution prevention or control measures.

The Monitoring Program shall include the following:

a. Provisions for conducting and reporting the results of special studies conducted by the Program or Dischargers which are designed to determine effectiveness of best management practice or control measures, define a Performance Standard in accordance with Provision C.2, or assess the adverse impact of a pollutant or pollutants on beneficial uses.

b. Provisions for conducting watershed monitoring activities including; identification of major sources of pollutants of concern; evaluation of the effectiveness of control measures and best management practices; and use of physical, chemical, and biological parameters and indicators as appropriate; and

c Identification and justification of representative sampling locations, frequencies and methods, suite of pollutants to be analyzed, analytical methods, and quality assurance procedures. Alternative monitoring methods in place of these (special projects, financial participation in regional, state, or national special projects or research, literature review, visual observations, use of indicator parameters, recognition and reliance on special studies conducted by other programs, etc.) may be proposed with justification. Such proposed alternative monitoring methods shall be included as a component of the Program draft Workplan as required in Provision C.3.

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5. **Non-Storm Water Discharges**

a. Exempted Discharges

In carrying out Discharge Prohibition A.1 of this Order, the following non-storm water discharges need not be prohibited unless they are identified by the Dischargers or the Executive Officer as sources of pollutants to receiving waters:

i. flows from riparian habitats or wetlands;
ii. diverted stream flows;
iii. springs;
iv. rising ground waters; and
v. uncontaminated groundwater infiltration.

If the any of the above categories of discharges, or sources of such discharges, are identified as sources of pollutants to receiving waters, then such categories or sources shall be addressed as conditionally exempted discharges in accordance with Provision C.5.b.

b. Conditionally Exempted Discharges

The following non-storm water discharges need not be prohibited if are either identified by the Dischargers or the Executive Officer as not being sources of pollutants to receiving waters or if appropriate control measures to minimize the adverse impacts of such sources are developed and implemented under the Storm Water Management Plan in accordance with Provision C.5.c.:

i. uncontaminated pumped groundwater;
ii. foundation drains;
iii. water from crawl space pumps;
iv. footing drains;
v. air conditioning condensate;
vi. irrigation water;
vii. landscape irrigation;
viii. lawn or garden watering;
ix. planned and unplanned discharges from potable water sources;
x. water line and hydrant flushing;
xi. individual residential car washing; and
xii. discharges or flows from emergency fire fighting activities.

c. The Dischargers shall identify and describe the categories of discharges b.i through b.xii which they wish to exempt from Prohibition A.1 in periodic submissions to the Executive Officer. For each such category, the Dischargers shall identify and describe as necessary and appropriate to the category either documentation that the discharges are not sources of pollutants to receiving waters or circumstances in which they are not found to be sources of pollutants to receiving waters. Otherwise, the Dischargers shall describe control measures to reduce pollutants to the maximum extent practicable

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and minimize the adverse impacts of such sources, procedures and Performance Standards for their implementation, procedures for notifying the Regional Board of these discharges, and procedures for monitoring and record management. Such submissions shall be deemed to be incorporated into the Storm Water Mangement Plan unless disapproved by the Executive Officer or acted on in accordance with Provision C.9 and the NPDES permit regulations.

d. Permit Authorization for Exempted Discharges

i. Discharges of non-storm water from sources owned or operated by the Dischargers are authorized and permitted by this Order, if they are in accordance with the conditions of this provision and the Dischargers' Storm Water Management Plan.

ii. The Regional Board may require dischargers of non-storm water other than the Dischargers to apply for and obtain coverage under a NPDES permit and comply with the control measures developed by the Dischargers pursuant to this Provision. Non-storm water discharges that are in compliance with such control measures may be accepted by the Dischargers and are not subject to Prohibition A.

iii. The Dischargers may propose, as part of their annual updates to the Storm Water Management Plan under Provision C.3 of this Order, additional categories of non-storm water discharges to be included in the exemption to Discharge Prohibition A. Such proposals are subject to approval by the Regional Board in accordance with the NPDES permit regulations.

**6. Metals Control Measures**

The Discharges shall submit a workplan on March 1, 1996 and a revised Metals Control Measures Plan to the Regional Board by September 1, 1996 acceptable to the Executive Officer which assigns responsibilities and establishes time schedules to define and implement short term and long term copper reduction measures and control measures for the other 304(l) metals. The Metals Control Measures Plan shall provide for implementation of control measures beginning in fiscal year 1996-97 and include provisions for conducting an annual evaluation of progress towards implementing control measures and an evaluation of their effectiveness. Upon approval by the Executive Officer the revised Metals Control Measures Plan shall be incorporated into the in accordance with Provision C.9.

In lieu of a revised Metals Control Measures Plan for certain 304(l) metals, the Dischargers may submit a report by September 1, 1996 that provides evidence that a 304(l) metal has no controllable sources associated with storm water discharges or does not result in adverse impacts to beneficial uses and justifies its removal from the Metals Control Measures Plan. The Dischargers shall notify the Executive Officer by June 1, 1996 of their intent to submit such a report including identification of the specific 304(l) metals which will be included in the report.

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7. **Watershed Management Measures**

The Dischargers shall submit to the Regional Board, as part of their revision of their Storm Water Management Plan pursuant to Provision C.2.c a revised Watershed Management Measures element acceptable to the Executive Officer. Watershed Management Measures embrace many of the programmatic areas of activity within the Storm Water Management Plan, such as Metals Control Measures and New Development and Construction, and are designed to coordinate and integrate the goals and tasks of these activities in a way that recognizes that there may be unique values, problems, goals, and strategies specific to individual watersheds. Watershed Management Measures also seek to develop and implement the most cost effective approaches to solving identified problems and to coordinate these activities with other related programs.

The revised Watershed Management Measures element shall include provisions for development of an area-wide watershed management strategy in fiscal year 1996-97 and implementation of the strategy beginning in fiscal year 1997-98. The scope of the Watershed Management Measures may be limited to procedures for identifying appropriate watershed characteristics, identification of control measures and other actions in the Storm Water Management Plan that are appropriately implemented on a watershed basis, and procedures for implementation of such control measures and other actions on a watershed basis. Upon approval by the Executive Officer the revised Watershed Management Measures element shall be incorporated into the Storm Water Management Plan in accordance with Provisions C.9 and C.2.c.v.

8. **Storm Water Discharges Associated With Construction Activity**

Pursuant to Provisions C.2 and C.3 of this Order, the Dischargers may submit to the Executive Officer, proposed amendments to the Storm Water Management Plan which define Best Management Practices and Performance Standards and procedures for notifying the Regional Board for Construction Activities conducted by the Dischargers. Following incorporation into the Storm Water Management Plan, the applicable Dischargers shall implement such Construction Best Management Practices in accordance with established Performance Standards pursuant to site specific Storm Water Pollution Prevention Plans to be developed pursuant to and accordance with Appendix B of this Order for all construction sites involving the disturbance of five or more acres of total land area.

Discharges of storm water from construction sites owned or operated by the Dischargers are authorized and permitted by this Order, if they are in accordance with the conditions of this provision and the Dischargers' Storm Water Management Plan.

9. It is anticipated that the Storm Water Management Plan may need to be modified, revised, or amended from time to time to respond to changed conditions and to incorporate more effective approaches to pollutant control. Requests for changes may be initiated by the Executive Officer or by the Dischargers. Minor changes may be made with the Executive Officer's approval and will be brought to the Regional Board as information items and the Dischargers and interested parties will be notified accordingly. If proposed changes imply

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a major revision of the Program, the Executive Officer shall bring such changes before the Regional Board as permit amendments and notify the Dischargers and interested parties accordingly.

10. This Order may be modified, or alternatively, revoked or reissued, prior to the expiration date as follows:

    a. to address significant changed conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this Order;

    b. to incorporate applicable requirements of statewide water quality control plans adopted by the State Board or amendments to the Basin Plan approved by the State Board; or

    c. to comply with any applicable requirements, guidelines, or regulations issued or approved under Section 402(p) of the CWA, if the requirement, guideline, or regulation so issued or approved contains different conditions or additional requirements not provided for in this Order. The Order as modified or reissued under this paragraph shall also contain any other requirements of the CWA then applicable.

11. Each of the Dischargers shall comply with all parts of the Standard Provisions contained in Appendix A of this Order.

12. This Order expires on June 21, 2000. The Dischargers must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of such date as application for reissuance of waste discharge requirements.

13. Order Nos. 90-094, 92-021, and 93-164 are hereby rescinded.

I, Stephen I. Morse, Acting Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on August 23, 1995.

Stephen I. Morse
Acting Executive Officer

APPENDIX A - STANDARD PROVISIONS

APPENDIX B - CONSTRUCTION PROJECT STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

ATTACHMENTS - Location and Political Jurisdiction Map
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 South Higuera St. Suite 200
San Luis Obispo, California 93401-5427

# ORDER NO. 94-99
# NPDES NO. CAS049883

## WASTE DISCHARGE REQUIREMENTS FOR CITY OF SANTA CRUZ, NEARY LAGOON STORM WATER DISCHARGE AND LAGOON MANAGEMENT, SANTA CRUZ COUNTY

The California Regional Water Quality Control Board, Central Coast Region (hereafter the Board), finds:

1. Neary Lagoon (hereafter the Lagoon) is located in the City of Santa Cruz less than one mile from the downtown area as shown on Attachment "A" of this Order. The Lagoon detains storm water and urban runoff from about 850 acres within the City limits prior to discharge to the Pacific Ocean.

2. The City of Santa Cruz (hereafter the Discharger) controls and manages Neary Lagoon and controls associated pump testing discharge from the Lagoon to the Pacific Ocean. The Discharge during gravity flow and pump testing occurs at the Cowell's Beach storm water conveyance outlet.

3. On June 10, 1994, the Discharger submitted an application for the issuance of waste discharge requirements under the National Pollutant Discharge Elimination System (NPDES). The permit application included a study conducted to determine existing Lagoon water quality. Sampling conducted by the Discharger indicates high coliform concentrations in Lagoon surface water. There were no other pollutants in the Lagoon that exceed water quality objectives for the Lagoon or the Ocean.

4. The Board has not previously regulated the discharge of storm water and urban runoff to the Lagoon, nor testing of the flood control pumps which discharge to the Ocean.

5. Areas subject to these permit requirements include all areas within the boundaries of the Neary Lagoon and storm water discharges to the Pacific Ocean.

6. In December 1991, the City completed installation of three flood control pumps (each rated at 33,600 gallon per minute) at the Lagoon. The pumps were installed to prevent flooding of urban areas adjacent to the Lagoon during intense storm events. These pumps can be operated either automatically or manually and are equipped with a standby generator to ensure operation during power outages. Winter storm water flows normally drain into the 66" gravity line that discharges to Cowell Beach. If winter storm water flows cannot be handled by the gravity drain line, as indicated by rising Lagoon water level above a specified point, the pumps are activated.

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7. On August 4, 1992, the City conducted the first manual testing of the pumps. About 250,000 gallons were discharged to Cowell Beach. Adequate measures to mitigate impacts of the discharge were not implemented by the City and as a result, Cowell Beach was posted for three days (August 4, 5, & 6) due to nuisance conditions. Fecal coliform water-contact standards were exceeded.

8. Additional pump tests were conducted by the City on September 15, and October 14, 1992. During these tests, the City implemented conditions recommended by Board staff. Results of bacterial sampling for the September 15 and October 14, 1992, discharges showed compliance with fecal coliform standards and did not create a condition of nuisance.

9. On December 15, 1993, the City conducted another pump testing. Receiving water bacterial sampling exceeded fecal coliform standards and resulted in a nuisance condition. However, fecal coliform standards were met on the day following the test. Staff believes fecal coliform standards were exceeded primarily due to stagnant water within the storm water conveyance pipe.

10. The federal Clean Water Act Section 402 (p)(2)(E) allows the Regional Board, as an authorized state water pollution control agency, to require a permit upon determination that a storm water discharge contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

11. On at least two occasions, discharges from the test pumping have caused fecal coliform levels in ocean waters to exceed safe limits for contact recreation. The high coliform level, odor and color of the discharge also caused a condition of nuisance. The fact that the beach had to be closed on these occasions further demonstrates that these discharges impaired beneficial uses of the ocean. Given the high coliform levels in the Lagoon, it is also possible that discharges from the gravity drain have also caused a violation of the fecal coliform water quality standard for ocean waters. These discharges will continue, on an intermittent basis, for the foreseeable future. Therefore, it is necessary to regulate these discharges pursuant to Clean Water Act Section 402(p)(2)(E) and California Water Code Section 13377.

12. The major source of odor and discoloration in the pump discharge is stagnant water that accumulates in the storm water conveyance pipe between the pumps and the ocean outlet. There is a potential for high fecal coliform levels in the Lagoon. However, the two pump discharges of Lagoon water, occurring after previous discharges had flushed out stagnant water, did not cause a condition of nuisance. No evidence exists to indicate future discharges without stagnant water will not cause impairment of body contact beneficial use of the receiving water.

13. The degree to which storm water flows and urban runoff from the storm drains contribute to elevated coliform levels within the Lagoon is unknown at this time. The sources of coliform entering storm drains and sources of coliform in the Lagoon must be investigated.

14. The Ocean Plan designates coliform water quality objectives for the contact recreation beneficial use in ocean waters. The Ocean Plan requires that:

    a. Samples of water from each sampling station must have a density of total coliform organisms less than 1,000 per 100 ml (10 per ml); provided that not more than 20 percent of the samples at any sampling station, in any 30-day period may exceed 1,000 per 100 ml (10 per ml), and provided further that no single sample, when

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verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml (100 per ml).

b. The fecal coliform density based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 200 per 100 ml nor shall more than 10 percent of the total samples during any 60-day period exceed 400 per 100 ml.

15. The Basin Plan has established water quality objectives for contact recreation use in inland surface waters, including Neary Lagoon. The Basin Plan provides:

> Fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period shall not exceed a log mean of 200 per 100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400 per 100 ml.

16. The Clean Water Act authorizes a state to impose more stringent water quality protection than federal law requires. A Regional Water Quality Control Board may apply more stringent receiving water limitations than those required to implement the Ocean Plan if they are necessary to protect beneficial uses of the ocean. Reference the case of Southern California Edison v. State Water Resources Control Board (1981) 116 Cal.App.3d 751,172 Cal. Rptr. 306. In that case, the Ocean Plan objectives were based on repeated sampling over periods from 30 to 60 days. These sampling requirements made sense for a discharge that continues daily and occurs from an outfall located away from the shoreline. With the Neary Lagoon case, pump test discharge occurs for only one day on an intermittent basis; the discharge is very large, approximately one million gallons; and it flows directly across the beach and into shoreline waters in direct contact with people who are using the water for recreation. Therefore, the pump-test discharge impairs beneficial use whenever it causes receiving waters to exceed safe levels for contact recreation. Under the specific circumstances of this case, the Pacific Ocean's beneficial use of contact recreation will be protected if each Ocean Water shore station sample, taken in accordance with MRP No. 94-99, does not exceed a median density for total coliform of 1,000 per 100 ml and does not exceed a median density for fecal coliform of 200 per 100 ml. Receiving water limitations apply immediately after discharge commences, if the pump test discharge commences during daylight hours. If the pump test commences after dark, the limitations will apply 12 hours after the discharge or one hour before sunrise, whichever time occurs first.

17. The initial zone of dilution is at the shoreline where pump test discharge meets ocean water. The dilution ratio is considered 1:1.

18. Summer inflows to the Lagoon are primarily attributed to domestic activities within the Watershed such as, lawn watering, washing cars and from natural seeps and springs. During dry weather flows, the City diverts gravity flows to the sanitary sewage treatment facility adjacent to the Lagoon. However, winter flows during some storm events are estimated to be in excess of present treatment facility capacity.

19. Storm water discharges consist of surface runoff generated from various land uses in the hydrologic drainage basin which discharges to waters of the State. Storm water discharge quality can vary and is affected by hydrology, geology, land use, season, and sequence and duration of hydrologic events. National urban run-off data indicates pollutants of concern in storm water discharges include, but are not limited to, total suspended solids (TSS), total dissolved solids (TDS), chemical oxygen demand (COD), biochemical oxygen demand (BOD), oil and grease, total and fecal

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coliform and enterococci bacteria, heavy metals, nutrients, sediments, petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), pesticides, and herbicides. To date, pollutants of primary concern in Neary Lagoon have been limited to bacteria.

20. California Water Code Section 13263(a) specifies that waste discharge requirements issued by the Regional Board include provisions to implement water quality based objectives. Numeric effluent limitations and receiving water limitations are not provided for storm water discharge to the Lagoon or for discharges from the Lagoon to the Pacific Ocean during storm events because of the enormous variability in storm water quality and quantity and the complexity of urban runoff. The requirements in this Order are designed to provide the data, which may make it possible to set some numeric effluent limitations and receiving water limitations, and concurrently achieve reductions in pollutant loads to surface waters from storm water runoff.

Coliform receiving water limitations for pump test discharges are provided because past pump test discharges have caused impairment of contact recreation beneficial uses of the Pacific Ocean and because planning and preparation is possible before pump test occurs. No numeric effluent limitations for pump test discharges are provided because of the variability in conditions in Neary Lagoon, which is itself a water of the United States.

21. The objective of Lagoon Storm Water Pollution Prevention Plan, per C.1. and C.2. contained in this Order, is to minimize pollutants in storm water discharges to surface waters, including Neary Lagoon and the Pacific Ocean, and to implement regulatory requirements prescribed in the Basin Plan; Section 402(p) of the federal Clean Water Act; and 40 CFR, parts 122, 123, and 124.

22. This permit is intended to: a) regulate future flood control pump testing; and b) develop, achieve, and implement a timely, comprehensive, and cost-effective Lagoon water pollution control program to minimize pollutants in discharges to waters of the United States.

23. The Water Quality Control Plan, Central Coastal Basin (Basin Plan), was adopted by the Board on November 17, 1989, and approved by the State Water Resources Control Board on August 16, 1990. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State waters. The Water Quality Control Plan, Ocean Waters Of California (Ocean Plan), was adopted by the State Water Resources Control Board on March 22, 1990. The Ocean Plan contains water quality objectives and other requirements governing discharge to the Pacific Ocean.

24. Present and anticipated beneficial uses of Neary Lagoon include:

a. Ground water recharge;
b. Non-contact water recreation, including aesthetic enjoyment;
c. Water contact recreation;
d. Wildlife habitat;
e. Warm water habitat;
f. Fish spawning; and,
g. Rare and endangered species habitat.

25. Existing beneficial uses of the Pacific Ocean include:

a. Non-contact water recreation, including aesthetic enjoyment;
b. Water contact recreation;
c. Industrial service supply;
d. Navigation;
e. Mariculture; and,
f. Commercial and Open Sport Fishing.

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26. Monterey Bay was officially designated as a National Marine Sanctuary on September 15, 1992. The National Marine Sanctuaries Program is mandated by Title III of the Marine Protection, Research, and Sanctuaries Act of 1972. The Program protects areas of the marine environment which possess conservation, recreational, ecological, historical, research, educational, or aesthetic qualities of special national significance. The first priority of the Program is the long term protection of resources within a sanctuary.

27. The Environmental Protection Agency and the Board classify the pump test discharge as a minor discharge.

28. These waste discharge requirements are exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21100, et seq.) pursuant to Section 13389 of the California Water Code.

29. This permit does not authorize discharges of fill or dredged material regulated by the U.S. Army Corps of Engineers under the Clean Water Act and does not constitute water quality certification under Clean Water Act Section 401.

30. Discharge of waste is a privilege, not a right, and authorization to discharge is conditional upon the discharge complying with provisions of Division 7 of the California Water Code and any more stringent effluent limitations necessary to implement water quality control plans, to protect beneficial uses, and to prevent nuisance. Compliance with this Order should assure this and mitigate any potential adverse changes in water quality due to the discharge.

31. On August 19, 1994, the Board notified the City and interested agencies and persons of its intent to issue these waste discharge requirements and has provided them with a copy of the proposed Order and an opportunity to submit written views and comments.

32. After considering all comments pertaining to this discharge during a public hearing on October 14, 1994, this Order was found consistent with the above findings.

**IT IS HEREBY ORDERED**, pursuant to authority in Sections 13263 and 13377 of the California Water Code, the City of Santa Cruz, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and regulations and guidelines adopted thereunder, shall comply with the following requirements.

(Note: Throughout these requirements footnotes are listed to indicate the source of requirements specified. Requirement footnotes are as follows:

A = Basin Plan
B = Ocean Plan
C = Code of Federal Regulations Title 40 Section 122

Requirements not referenced are based on staff's professional judgement.)

## A. LIMITATIONS FOR SURFACE WATER DISCHARGES TO THE PACIFIC OCEAN

1. All dry weather surface water discharge from Neary Lagoon to the Pacific Ocean is prohibited, except for pump test discharge, conducted in accordance with Section B of this permit. "Dry weather" is generally defined as April 1 through October 31. When and if adequate capacity exists at the Santa Cruz wastewater treatment plant, discharges from Neary Lagoon to the Pacific Ocean during any other time are also prohibited. "Adequate capacity" means both hydraulic and organic loading. Diversion to the wastewater treatment plant should cease if plant staff believe it may cause a treatment plant permit violation.

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## B. PUMP TEST DISCHARGE LIMITATIONS

1. All pump test discharges from the Lagoon to the Pacific Ocean are prohibited unless stagnant water within Lagoon storm water conveyance pipes has been eliminated from the discharge or adequately treated and discharged in accordance with applicable waste discharge requirements and/or an NPDES permit. This permit may be re-opened to establish effluent limitations and receiving water limitations for the discharge of treated stagnant water or other treated water discharged from Neary Lagoon to the Ocean or other surface water body. Stagnant water is defined as water and/or other material, that remains within the storm water conveyance pipe long enough to cause nuisance conditions when discharged (i.e., odor, turbidity problems and dissolved oxygen levels below 2.0 mg/l).

2. Pump test discharge may occur only after the following conditions have been met:

   i. Thirty days prior to the proposed test pumping the Discharger shall advise in writing the Regional Water Quality Control Board, Monterey Bay National Marine Sanctuary, Coastal Commission, and County Environmental Health of the testing procedure, discharge plan, and condition of any stagnant water or treatment/evacuation of any stagnant water from the conveyance pipe.

   ii. The Discharger shall submit verification of public notice in a local newspaper. The notice shall be printed at least three days prior to the proposed discharge.

   iii. The Discharger shall ensure adequate and conspicuous beach posting notifying the public in the area of the discharge and the potential health hazard associated with it. Sign posting shall be subject to the approval of the Santa Cruz County Department of Health Services.

   iv. The discharge shall be scheduled to coincide with the outgoing tide.

   v. The Discharger shall prepare the beach in front of the outfall structure to form a channel leading to the beach.

3. The Discharger shall collect and analyze water samples in accordance with Monitoring and Reporting Program No. 94-99.

4. The Discharger shall develop and implement a plan to prepare the pump pipeline conveyance system and ensure stagnant water removal prior to pump test and potential wet weather discharges, and ensure that all personnel whose decisions or activities could affect storm water, non-storm water, or pump test discharges are familiar with the contents of this Order. The plan should also include a procedure to prevent the collection of stagnant water in the pump system during the wet weather season (this plan need not be implemented if the plan documents that it is not feasible). Discharger shall submit a report to Executive Officer outlining compliance with this provision by December 15, 1994.

## C. LAGOON STORM WATER POLLUTION PREVENTION PLAN

1. The Discharger shall develop and implement an effective Lagoon Storm Water Pollution Prevention Plan (PLAN). The PLAN shall identify and describe the Best Management Practices (BMPs) used to control and reduce pollutants within the Lagoon and pollutants discharged from the Lagoon to the Pacific Ocean to the maximum extent practicable. The Discharger shall submit a proposed development and implementation schedule for the PLAN by November 18, 1994.

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2. A final PLAN shall be submitted by July 15, 1995.

D. PUMP TEST DISCHARGE RECEIVING WATER LIMITATIONS

The pump test discharge shall not cause:

1. The following bacteriological limits to be exceeded at sampling stations A, B, B', C, C', D, D', (as listed in MRP No. 94-99):[B]

| Parameter Applicable At Each Station | 24 hr. Median Total Coliform Organisms per 100 ml | 24 hr. Median Fecal Coliform Organisms per 100 ml |
|---|---|---|
| | 1000 | 200 |

Note: These receiving water limitations apply immediately after discharge commences, if the pump test discharge commences during daylight hours. If the pump test commences after dark (at least one hour after sunset) the limitations apply 12 hours after the discharge or one hour before sunrise, whichever time occurs first.

2. Floating particulates and grease and oil to be visible on the ocean surface.[B]

3. Aesthetically undesirable discoloration of the ocean surface.[B]

4. Significant reduction of transmittance of natural light in ocean waters outside the "zone of initial dilution."[B]

5. Change in the rate of deposition of inert solids and the characteristics of inert solids in ocean sediments such that benthic communities are degraded.[B]

6. The pH outside the "zone of initial dilution" to be depressed below 7.0, raised above 8.3, or changed more than 0.2 units from that which occurs naturally.[B]

7. Objectionable aquatic growth or degradation of indigenous biota.[B]

8. Concentrations of organic materials in marine sediments to increase to a level which would degrade marine life.[B]

9. Degradation of marine communities, including vertebrate, invertebrate, and plant species.[B]

10. Alteration in natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption.[B]

11. Concentrations of organic materials in fish, shellfish or other marine resources used for human consumption to bioaccumulate to levels that are harmful to human health.[B]

12. Degradation of marine life due to radioactive waste.[A,B]

E. PROVISIONS

1. Pump Test Discharge shall not create a nuisance or pollution, as defined by Section 13050 of the California water Code.

2. Disposal during pump testing shall be in a manner that precludes public contact with storm water.

3. The Regional Board staff and the Environmental Protection Agency shall be allowed:

   a. entry upon premises where an effluent source is located or where records must be kept under the conditions of this permit;

   b. access to copy any records that must be kept under the conditions of this permit;

   c. to inspect any facility, equipment (including monitoring control equipment), practices, or operations

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regulated or required under this permit; and,

d. to photograph, sample, and monitor for the purpose of showing permit compliance.

4. After notice and opportunity for a hearing, this permit may be terminated for cause, including, but not limited to:

a. violation of any term or condition contained in this permit;

b. obtaining this permit by misrepresentation, or by failure to disclose fully all relevant facts;

c. a change in any condition or endangerment to human health or environment that requires a temporary or permanent reduction or elimination of the authorized discharge; and,

d. a substantial change in character, location, or volume of the discharge.

5. This permit does not authorize commission of any act causing injury to the property of another, does not convey any property rights of any sort, does not remove liability under Federal, State, or local laws, and does not guarantee a capacity right in receiving waters.

6. The discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adverse impact on human health or the environment.

7. Provisions of this permit are severable. If any provision of the permit is found invalid, the remainder of the permit shall not be affected.

8. After notice and opportunity for hearing, this permit may be modified or revoked and reissued for cause, including:

a. Promulgation of a new or revised effluent standard or limitation;

b. A material change in character, location, or volume of the discharge;

c. Access to new information that affects the terms of the permit, including applicable schedules;

d. Correction of technical mistakes or mistaken interpretations of law; and,

e. Other causes set forth under Subpart D of 40 CFR Part 122.

9. The discharger shall furnish, within a reasonable time, any information the Regional Board may request to determine compliance with this permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit.

10. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Permit in accordance with such more stringent standards.

11. Monitoring location, minimum sampling frequency, and sampling method for each parameter shall comply with the Monitoring and Reporting Program of this permit. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, entitled "Guidelines Establishing Test Procedures for Analysis of Pollutants," unless other test procedures have been specified in this permit.

12. Water quality analyses performed in order to monitor compliance with this permit shall be by a laboratory certified by the State

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Department of Health Services for the constituent(s) being analyzed. Bioassay(s) performed in order to monitor compliance with this permit shall be in accord with guidelines approved by the State Water Resources Control Board and the State Department of Fish and Game. If the laboratory used or proposed for use by the discharger is not certified by the California Department of Health Services or, where appropriate, the Department of Fish and Game due to restrictions in the State's laboratory certification program, the discharger shall be considered in compliance with this provision provided:

a. Data results remain consistent with results of samples analyzed by the Regional Board;

b. A quality assurance program is used at the laboratory, including a manual containing steps followed in this program that is available for inspections by the staff of the Regional Board; and,

c. Certification is pursued in good faith and obtained as soon as possible after the program is reinstated.

13. If any pollutant is monitored at locations specified in the permit more frequently than required by the permit, and using approved test procedures, the results shall be included in calculations and reports.

14. The "permittee" shall maintain records of all monitoring information, including all calibration and maintenance records; the date, exact place, and time of sampling; the individual who performed the sampling; the date analysis was performed; the laboratory and individual who performed the analysis; the analytical techniques used; and results. Records shall be maintained for a minimum of five years. This period may be extended during the course of any unresolved litigation or when requested by the Board.

15. Monitoring results shall be reported at intervals and in a manner specified in the Monitoring and Reporting Program of this permit.

16. Monitoring reports shall be submitted on form either specified or approved by the Executive Officer.

17. Reports of marine monitoring surveys conducted to meet receiving water monitoring requirements of the Monitoring and Reporting Program shall include at least the following information:

a. A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.).

b. A description of sampling stations, including differences unique to each station (e.g., station location, grain size, rocks, shell litter, calcarious worm tubes, evident life, etc.).

c. A description of the sampling procedures and preservation sequence used in the survey.

d. A description of the exact method used for laboratory analysis. In general, analysis shall be conducted according to paragraph B.1. However, variations in procedure are acceptable to accommodate the special requirements of sediment analysis. All such variations must be reported with the test results.

e. A brief discussion of the results of the survey. The discussion shall compare data from the control station with data from the outfall stations. All tabulations and computations shall be explained.

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18. Any noncompliance that may endanger health or the environment shall be reported orally within 24 hours from the time the discharger becomes aware of the circumstances (telephone: 805-549-3147). Unless waived by the Executive Officer of the Regional Board, a written report shall be submitted within five (5) days of awareness and shall contain a description of the noncompliance and its cause; the period of noncompliance (including exact dates, times) or anticipated duration; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. This provision includes, but is not limited to violation of a discharge prohibition.

19. Reports shall be submitted in advance of any planned physical changes in the activity that may result in noncompliance with permit requirements or significantly change the nature or increase the quantity of pollutants not controlled by effluent limitations.

20. The discharger shall submit reports to the:

California Regional Water Quality Control Board, Central Coast Region
81 Higuera Street, Suite 200
San Luis Obispo, California 93401

21. Except for data determined to be confidential under Section 308 of the Clean Water Act (excludes effluent data and permit applications), all reports prepared in accordance with this permit shall be available for public inspection at the office of the Regional Board or Regional Administrator of EPA.

22. Should the discharger discover that it failed to submit any relevant facts or that it submitted incorrect information in a report, it shall promptly submit the missing or correct information.

23. All reports shall be signed by either a principle executive officer or ranking elected official or their "duly authorized representative."

24. Any person signing a report makes the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

25. The "permittee" must comply with all conditions of this permit. Permit noncompliance violates state and federal law and is grounds for enforcement action, for permit revocation, reissuance, or modification, or for denial of a permit renewal application.

26. Any person failing to file a report of waste discharge or other report as required by this permit shall be subject to a civil penalty not to exceed $5,000 per day.

27. Any person who knowingly makes any false statement, representation, or certification of any record or other document submitted or required to be maintained under this permit may, including monitoring reports or reports of compliance or noncompliance, may, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or both. Any person causing violation of this permit shall be subject to a civil penalty not to exceed $15,000 per day of violation. Any person who willfully or negligently causes violation of this permit is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, and by imprisonment for not more than one year.

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28. "Hazardous substance" shall be defined as meaning any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

29. "Median" shall be defined as meaning the value below which half the samples (ranked progressively by increasing value) fall. It may be considered the middle value, or the average of two middle values.

30. "Zone of Initial Dilution" shall be defined as meaning the region surrounding or adjacent to the end of an outlet pipe whose boundaries are defined by the area where beneficial uses or body contact with surface waters could occur.

31. The Discharger shall comply with "Monitoring and Reporting Program No. 94-99", as specified by the Executive Officer.

32. Upon adoption, the Discharger shall comply with all conditions and limitations of this Order. Any non-compliance with this Order constitutes a violation of the federal Clean Water Act and the California Water Code and is grounds for enforcement action, Order termination, or denial of permit renewal.

33. This Order expires October 14, 1999. The Discharger shall file a complete report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than April 14, 1999, if the discharge is to continue.

34. This Board Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the federal Clean Water Act, as amended, and shall become effective at the end of ten (10) days from the date of the hearing at which time this Order was adopted by the Regional Water Board, provided the Regional Administrator, U.S. Environmental Protection Agency, has no objections.

I, ROGER W. BRIGGS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on October 14, 1994.

Paul Rogge
for EXECUTIVE OFFICER

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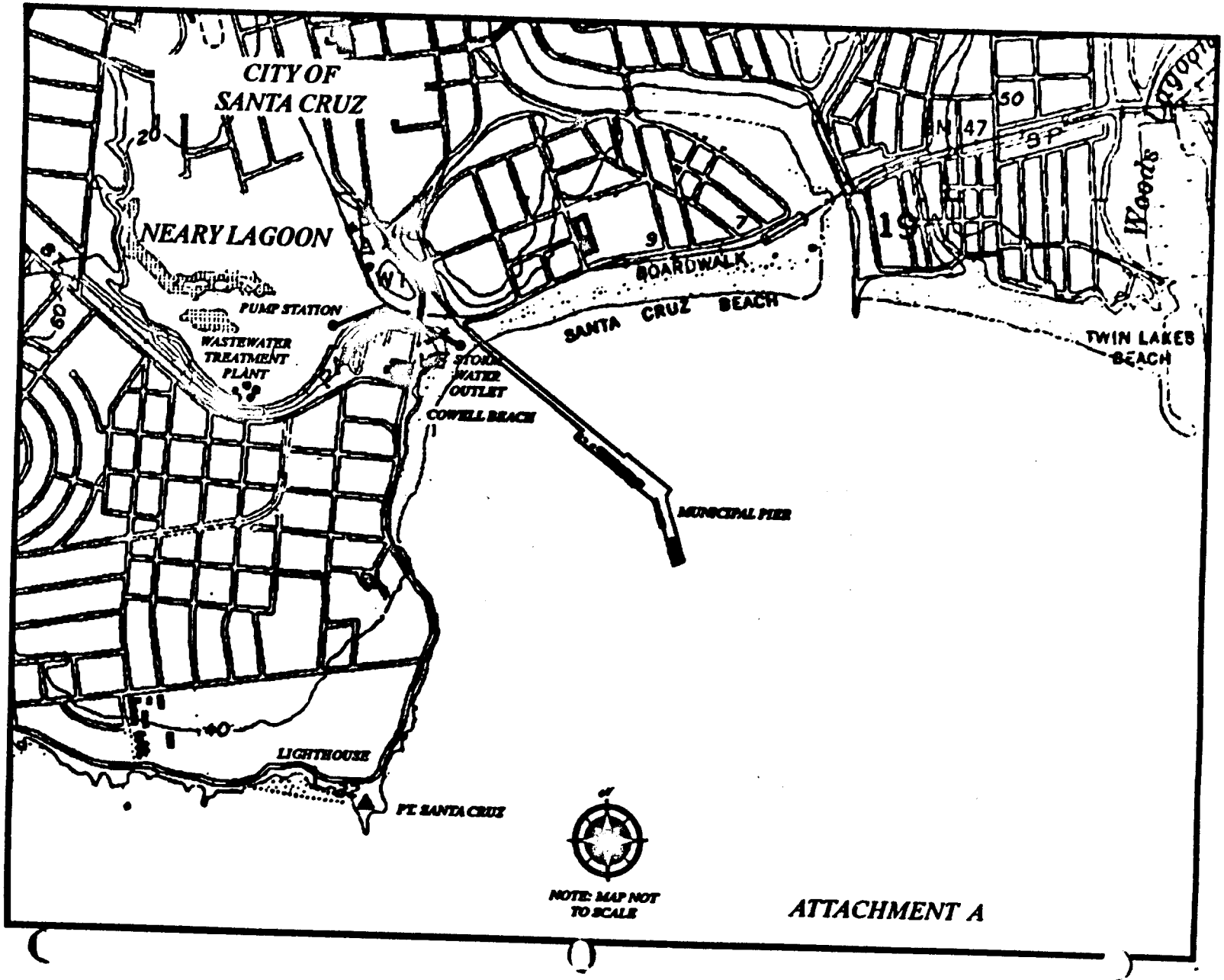


ATTACHMENT A

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# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
# CENTRAL COAST REGION

## MONITORING AND REPORTING PROGRAM NO. 94-99
## FOR
## CITY OF SANTA CRUZ
## NEARY LAGOON STORM WATER DISCHARGE,
## AND
## LAGOON MANAGEMENT,
## SANTA CRUZ COUNTY

### LAGOON STORM WATER POLLUTION PREVENTION PLAN REPORTING

1. The discharger shall submit by January 15, 1995 a progress report regarding implementation of a Lagoon Storm Water Pollution Prevention Plan (PLAN) for the Executive Officer's review and comment, and subject to revision by the City.

2. The Discharger shall conduct an investigation within the Watershed identifying non-storm water discharges from the storm drains to the Lagoon which are contributing to violations of water quality standards and conditions of nuisance. Results from the investigation, and proposed measures for source reduction and elimination shall be submitted to the Executive Officer by July 15, 1995.

### PUMP TEST DISCHARGE RECEIVING WATER MONITORING

The City shall establish, prior to pump test discharge, shoreline monitoring stations as described below.

| Shore Stations | Location |
|---|---|
| A | Within 10 feet of the discharge point |
| B | 100 feet from the discharge point in a direction towards Lighthouse Point |
| B' | 100 feet from the discharge point in a direction towards the Santa Cruz Harbor |
| C | 500 feet from the discharge point in a direction towards Lighthouse Point |
| C' | 500 feet from the discharge point in a direction towards the Santa Cruz Harbor |
| D | 1000 feet from the discharge point in a direction towards Lighthouse Point |
| D' | 1000 feet from the discharge point in a direction towards the Santa Cruz Harbor |

A minimum of three water samples shall be collected from each of the shore stations and analyzed according to Table 1, as follows.

Table 1

| Constituents | Units | Shore Stations | Sampling Frequency |
|---|---|---|---|
| Total coliform bacteria and fecal coliform (seperate samples tested via membrane filter method) | PER 100 ml | All | Within an hour before discharge, immediately after discharge, and at 6 a.m., 12 noon and 6 p.m. until bacterial water-contact standards are met. |
| Enterococci | PER 100 ml | All | " |
| pH | Units | All | " |

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## DISCHARGE REPORTING

1. The City must submit a report at least one month prior to any proposed pump testing. The report must discuss steps taken by the City to insure compliance with requirements of this Order.

2. The City shall submit a report within 20 days after the pump testing discharge. The report shall contain results of receiving water monitoring required by this Order.

3. The City shall submit an annual report by May 15 of each year, specifying all wet season discharges from Neary lagoon storm water conveyance pipes to the Pacific Ocean which require pump operation or gravity flow diversion from the treatment plant. The report must contain the following information regarding the physical conditions prior to and during the discharge to provide justification for why discharges to the Pacific Ocean occurred:

   a. Pump or gravity flow discharge, or both,
   b. Estimated amount of total discharge,
   c. Estimated duration of the discharge,
   d. Time of day or night,
   e. Treatment plant influent flow rate,
   f. Weather (actual or forecasted), and,
   g. Information indicating a potential flood condition in the Lagoon area.

4. All applications, reports, or other information submitted to the Regional Board shall signed and certified pursuant to 40 CFR 122.41 (k).

5. A summary of key reporting dates and their reference within the Order is provided below:

| Date | Report/Submittal |
|---|---|
| December 15, 1994 | Proposed Pollution Prevention Plan development and implementation schedule (Paragraph C.1.). |
| December 15, 1994 | Stagnant water management plan (Paragraph B.4.). |
| January 15, 1995 | Pollution Prevention Plan progress report (M&RP paragraph 1.). |
| July 15, 1995 | Non-storm water discharge investigation results (M&RP paragraph 2.). |
| July 15, 1995 | Final Pollution Prevention Plan (Paragraph C.2.). |

ORDERED BY Paul Jagger
for EXECUTIVE OFFICER

October 14, 1994
Date

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PERMIT NO. FLS000004
Major MS4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV

## AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. 1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

**Sarasota County - Municipal Separate Storm Sewer System Permittees:**

Sarasota County
Engineering Department
Sarasota, Florida

Town of Longboat Key
Department of Public Works
Longboat Key, Florida

City of North Port
Roads and Drainage Department
North Port, Florida

City of Sarasota
Department of Public Works
Sarasota, Florida

City of Venice
Department of Public Works
Venice, Florida

Florida Department of Transportion
District One
Bartow, Florida

are authorized to discharge, in accordance with the approved Storm Water Management Program(s), effluent limitations, monitoring requirements, and other provisions as set forth in Parts I, II, III, IV, V, VI, VII, and VIII herein, from all portions of the

**Municipal Separate Storm Sewer System owned or operated by any Permittee listed above,**

**to waters of the United States and all tributaries thereto.**

This permit shall become effective on January 1, 1995.

This permit and the authorization to discharge under the National Pollutant Discharge Elimination System shall expire at midnight, on December 31, 1999.

DEC 0 1 1994
Date Issued

Robert F. McGhee, Acting Director
Water Management Division

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SARASOTA COUNTY PERMITTEES
NPDES PERMIT FOR
MUNICIPAL SEPARATE STORM SEWER SYSTEMS

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SARASOTA COUNTY PERMITTEES
NPDES PERMIT FOR
MUNICIPAL SEPARATE STORM SEWER SYSTEMS

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## PART I.

## DISCHARGES AUTHORIZED UNDER THIS PERMIT

A. Permit Area. This permit covers all areas located within the political boundary of Sarasota County and the portion of the Town of Longboat Key within Manatee County served by municipal separate storm sewer systems owned or operated by the permittees identified in Part I.C.

B. Authorized Discharges. Except for discharges prohibited under Part I.D., this permit authorizes all existing or new storm water point source discharges to waters of the United States from those portions of the Municipal Separate Storm Sewer System (MS4) owned or operated by the permittees.

C. Permittees.

The following entities are permittees subject to the conditions of this permit:

- Sarasota County
- Town of Longboat Key*
- City of North Port
- City of Sarasota
- City of Venice
- Florida Department of Transportation, District One

* *Permit coverage includes the entire Town of Longboat Key which is located in both Sarasota and Manatee Counties*

References to "permittee" in this permit includes each of the entities above.

1. Each permittee is individually responsible for:

   a. Compliance with permit conditions relating to discharges from portions of the MS4 where they are the operator;

   b. Storm water management program implementation on portions of the MS4 where they are the operator;

   c. Where permit conditions are established for specific portions of the MS4, the permittee need only comply with the permit conditions relating to those portions of the MS4 for which they are the operator; and

   d. A plan of action to assume responsibility for implementation of storm water management and monitoring programs on their portions of the MS4 should inter-jurisdictional agreements allocating responsibility between permittees be dissolved or in default. (See Part II.G.3., page 20 of this permit also.)



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2. Each permittee is jointly responsible for:

   a. Submission of annual reporting requirements as specified in Part V.C. (ANNUAL REPORT), page 49;

   b. Collection of monitoring data as required by Part V.B., page 47, according to such agreements as may be established between permittees;

   c. Insuring implementation of system-wide management program elements, including any system-wide public education efforts.

3. Specific permittees are jointly liable for permit compliance on portions of the MS4:

   a. Where operational or storm water management program implementation authority over portions of the MS4 has been transferred from one permittee to another in accordance with legally binding interagency or inter-jurisdictional agreements, both the owner and operator are jointly responsible for permit compliance on those portions of the MS4, unless specific responsibility provisions have been otherwise outlined in said agreements.

D. Limitations on Coverage. Section 402(p)(3)(B)(ii) of the Clean Water Act specifically requires EPA to include within this permit an effective prohibition on non-storm water entering the MS4. The following discharges are not authorized by this permit:

1. *Non-storm Water:* discharges of non-storm water, except where such discharges are:

   a. in compliance with a separate NPDES permit (or the discharger has applied for such permit); or

   b. identified by and in compliance with Part II.A.7.a., page 9 of this permit.

2. *Spills:* discharges of material resulting from a spill, except where such discharges are:

   a. the result of an Act of God where reasonable and prudent measures have been taken to minimize the impact of the discharge; or

   b. an emergency discharge required to prevent imminent threat to human health or prevent severe property damage, provided reasonable and prudent measures have been taken to minimize the impact of the discharge.



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## PART II.

## STORM WATER POLLUTION PREVENTION & MANAGEMENT PROGRAMS

Each permittee covered by this permit shall contribute to the development, revision, and implementation of a comprehensive Storm Water Management Program (SWMP) including pollution prevention measures, treatment or removal techniques, storm water monitoring, use of legal authority, and other appropriate means to control the quality of storm water discharged from the Municipal Separate Storm Sewer System (MS4). The SWMP shall be implemented in accordance with Section 402(p)(3)(B) of the Clean Water Act and 40 CFR Part 122.26.

Controls and activities in the SWMP shall identify areas of permittee jurisdiction, applicability, or specific area basis. The SWMP shall include controls necessary to effectively prohibit the discharge of non-storm water into municipal separate storm sewers and reduce the discharge of pollutants from the MS4 to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream. Compliance with this SWMP shall be reported annually in the ANNUAL REPORT discussed in Part V.C. on page 49 of this permit.

The SWMP shall cover the term of the permit and shall be updated as necessary, or as required by the Director, to ensure compliance with this statutory requirement of Clean Water Act Section 402(p)(3)(B). Modifications to the SWMP shall be made in accordance with Part II.G. of this permit. Compliance with the SWMP and the compliance schedules in Part III shall be deemed in compliance with Parts II.A. and II.B. of the permit. The Storm Water Management Program submitted by the permittees in the July 23, 1993, Part 2 Application, and all approved updates, are hereby incorporated into this permit by reference and thus are conditions of this permit. FDOT's *Statewide Storm Water Management Program for Part 2 EPA NPDES-MS4 Permit Application* dated June 1993 and all approved updates, are hereby incorporated into this permit by reference and thus are conditions of this permit. Specific components from these Storm Water Management Programs are identified in Parts II and III to serve as measurable enforcement permit conditions. Compliance dates specified in Part III of the permit shall take precedence over compliance dates which may have been proposed in Part 1 or Part 2 of the municipal applications from the permittees.

Implementation of the SWMP may be achieved through participation with other permittees, public agencies, or private entities in cooperative efforts to satisfy the requirements of Part II and Part III of the permit in lieu of creating duplicate program elements for each individual permittee. The SWMP, taken as a whole, shall achieve the "effective prohibition" and "MEP" standards from Section 402(p)(3)(B) of the Clean Water Act, and shall not cause or contribute to violations of State water quality standards of the receiving stream pursuant to the Florida Administrative Code (FAC)§62-40.420(1)-(4).



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A. Storm Water Management Program (SWMP) Requirements.

1. *Structural Controls and Storm Water Collection System Operation:* The MS4 and any storm water structural control shall be operated in a manner to reduce the discharge of pollutants to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream.

   a. The permittees listed in Table II.A.1.a. on pages 4 and 5 own and/or operate the structural controls identified. The maintenance activities identified for the structural controls in Table II.A.1.b. on page 6 of this permit represent suggested maintenance practices that can be implemented on an as needed basis. In addition, each shall maintain an internal record keeping system to track inspections and maintenance activities performed during the permit term. If these activities are performed by others under a contractual agreement, then the permittee shall retain copies of the contractual agreement which specifies the maintenance activities to be performed and the schedule of frequency. Inspection and maintenance records shall be retained by the permittees in accordance with Part V.G. on page 58 of this permit. Annual evaluations shall be made to assess the appropriateness of the inspection and maintenance schedule and to ensure the optimization of equipment use. A summary of the annual evaluation shall be included within each ANNUAL REPORT required under Part V.C. on page 49 of this permit.

| PERMITTEE / LABOR SOURCE(S) | STRUCTURAL CONTROL | TOTAL NO. MAINTAINED |
|---|---|---|
| SARASOTA COUNTY / Prison Labor and Contract Staff | Wet Retention Areas (Maintained Lakes) | 85 |
| | Storm Water Treatment Ponds | 62 |
| | Channel Control Structures | 51 |
| | Channels | 500 miles |
| CITY OF SARASOTA / Interlocal agreement with Sarasota County | Wet Retention Areas (Maintained Lakes) | 4 |
| | Storm Water Treatment Ponds | 11 |
| | Channels | 30 miles |



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| TABLE II.A.1.a. | | |
|---|---|---|
| PERMITTED / [illegible] SOURCE(S) | [illegible] CONTROL | [illegible] |
| CITY OF VENICE / City of Venice Parks Dept. and Maintenance Dept. | Storm Water Treatment Ponds | 7 |
| | Channels | 5 miles |
| CITY OF NORTH PORT / Maintenance Dept. | Wet Retention Areas (Maintained Lakes) | 1 |
| | Storm Water Treatment Ponds | 190 |
| | Channel Control Structures | 10 |
| | Channels | 76 miles |
| FDOT / Maintenance Management System | Storm Water Treatment Ponds | 2 |

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**TABLE II.A.1.b.**
**MAINTENANCE SCHEDULE FOR STRUCTURAL CONTROLS**

| STRUCTURAL CONTROL | FREQUENCY OF INSPECTION | FREQUENCY OF MAINTENANCE | [illegible] ACTIVITY |
|---|---|---|---|
| Dry Retention Areas | Semi-Annually | As Needed | •Mowing and invasive plant species removal<br>•Sediment and grass clippings removal, including proper sediment disposal<br>•Aeration of bottom (dry/infiltration-type ponds)<br>•Stabilization of eroded bank areas<br>•Litter and debris removal<br>•Back flush underdrains (where applicable) |
| Wet Retention Areas (Mantained Lakes)<br>~~Treatment Ponds~~ | Semi-Annually | As Needed | •Mowing and invasive plant species removal<br>•Stabilization of eroded bank areas<br>•Litter and debris removal |
| | | As necessary to ensure that the depth of sediments does not exceed 1/3 of the design storage volume | •Sediment and grass clippings removal, including proper sediment disposal<br>•Monitor sediment accumulations and remove when 1/3 of the storage volume is filled |
| | Every 18 Months | As Needed | •Back flush underdrains (where applicable) |
| Channel Control Structures | Quarterly | As Needed | •Litter and debris removal<br>•Sediment removal with proper sediment disposal |
| Channels | Annually - to determine priority | As Needed | •Litter and debris removal<br>•Mowing and invasive plant species removal<br>•Stabilization of eroded bank areas |
| | | 5 Year Revolving Schedule | •Sediment removal with proper sediment disposal provided the original cross-section is not exceeded |



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1. *Structural Controls and Storm Water Collection System Operation:* (continued)

   b. Additionally, to satisfy the requirements of this section, the permittees shall develop and implement the Storm Water Management Programs identified in Part III.A.1. on pages 21 and 22 of this permit.

2. *Areas of New Development and Significant Redevelopment:* A comprehensive master planning process (or equivalent) shall be implemented to reduce, to the MEP, the discharge of pollutants from MS4s, which receive discharges from areas of new development and significant redevelopment, after construction is completed. The master planning process shall limit the increases in the discharge of pollutants in storm water as a result of new development, and shall reduce the discharge of pollutants in storm water from redeveloped areas, and shall not cause or contribute to violations of State water quality standards of the receiving stream.

   a. To satisfy the requirements of this section, the permittees shall implement the Storm Water Management Programs identified in Part III.A.2. on page 23 of this permit.

3. *Roadways:* Public streets, roads, and highways shall be operated and maintained in a manner to reduce to the MEP the discharge of pollutants and shall not cause or contribute to violations of State water quality standards of the receiving stream.

   a. As per the schedule identified in Part III.A.3. on page 24 of this permit, the permittees shall develop and implement standard road repair practices to reduce the pollutants in storm water runoff from areas associated with road repair and maintenance. The program developed shall include practices such as limiting the amount of soil disturbance to the immediate area under repair and scheduling potential pollutant-causing routine repair work during dry seasons, when possible. The program shall establish procedures that address spill prevention, material management practices, and good housekeeping measures at all municipal equipment yards & maintenance shops that support road maintenance activities.

   b. Additionally, to satisfy the requirements of this section, the permittees shall implement the Storm Water Management Programs identified in Part III.A.3. on pages 24 and 25 of this permit.



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4. *Flood Control Projects:* Water quality impacts on receiving water shall be assessed for all flood management projects identified in the basin master planning process (or comparable planning process). The feasibility of retrofitting existing structural flood control devices to provide additional pollutant removal from storm water shall be evaluated.

   a. To satisfy the requirements of this section, the permittees shall implement the Storm Water Management Programs identified in Part III.A.4. on page 26 of this permit.

5. *Municipal waste treatment, storage, or disposal facilities not covered by an NPDES storm water permit:* The permittees shall implement a program to identify measures to monitor and reduce pollutants in storm water discharges from facilities that handle municipal waste, including sewage sludge.

   a. To satisfy the requirements of this section, the permittees shall develop and implement a program to reduce pollutants in the storm water discharges from municipally-operated solid waste transfer stations, maintenance and storage yards for waste transportation fleets and equipment, publicly owned treatment works (POTWs), and sludge application and/or disposal sites which are not covered by NPDES storm water permits. This program shall be developed and implemented in accordance with the schedule identified in Part III.A.5. on page 27 of this permit. The initial phase of the program developed shall contain procedures to evaluate, inspect, and monitor these sites. Based upon the evaluations, inspections and monitoring performed, priorities and procedures for implementing control measures for pollutant reduction at these sites shall be developed. Monitoring methodology used during the initial investigative period may be relaxed from standard protocol and may be based on experience gained during actual field activities. The goal of this investigative portion is to actively identify areas within these sites with poorer quality discharges during storm events, so that those areas will be given priority when implementing control measures.

6. *Pesticide, Herbicide, and Fertilizer Application:* Each permittee shall implement controls to reduce, to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream, the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied, by employees or contractors, to public right of ways, parks, and other municipal property. Permittees with jurisdiction over lands shall implement programs to encourage the reduction of the discharge of pollutants related to application and distribution of pesticides, herbicides, and fertilizers.

   a. To satisfy the requirements of this section, the permittees shall implement the Storm Water Management Programs identified in Part III.A.6. on pages 28 and 29 of this permit.



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7. *Illicit Discharges and Improper Disposal:* The permittees shall implement an ongoing program to detect and eliminate (or require the discharger to the MS4 to eliminate) illicit discharges and improper disposal into the storm sewer system.

a. *Inspection, Ordinances, and Enforcement Measures:* Non-storm water discharges to the MS4 shall be effectively prohibited by the permittees through the use of inspections, ordinances, and enforcement. The permittees, however, may allow the following non-storm water discharges to the MS4 where they are not identified as a source of pollutants to waters of the United States:

- water line flushing;
- landscape irrigation;
- diverted stream flows;
- rising ground waters;
- uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers;
- uncontaminated pumped ground water;
- discharges from potable water sources;
- foundation drains;
- air conditioning condensate;
- irrigation water;
- springs;
- water from crawl space pumps;
- footing drains;
- lawn watering;
- individual residential car washing;
- flows from riparian habitats and wetlands;
- dechlorinated swimming pool discharges;
- street wash waters; and
- discharges or flows from emergency fire fighting activities.

To satisfy the requirements of this section, the permittee(s) identified in Part III.A.7.a. on pages 30 and 31 of the permit shall:

(1) Identify those of the non-storm water discharges listed under Part II.A.7.a. (above), as well as any other non-storm water discharges, which will be allowed to be discharged to the MS4. Describe any conditions to be placed on these allowable discharges.



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(2) Enforce ordinances which prohibit illicit connections and illegal dumping into the MS4. As per the schedule in Part III.A.7.a. on page 30 of this permit (page 31 for FDOT), the permittees shall develop a random inspection program to uncover illicit connections. The program shall include a schedule for inspections and an allocation of staff and resources. A description of the enforcement procedures shall be detailed within the program developed. Because the potential for illicit discharges and improper disposal is generally higher for areas of older development, areas with many automobile-related industries, and areas with significant numbers of heavy industrial facilities, the permittees shall consider the specific land use and age of development when determining inspection priorities and inspection schedules for this program component. Facility inspections may be carried out in conjunction with other municipal programs (e.g. pretreatment inspections of industrial users, health inspections, fire inspections, etc.). The permittees shall maintain an internal log documenting the inspections performed.

(3) Provide in the first ANNUAL REPORT, a photocopy of the signed adopted ordinance(s) identified in Table II.A.7.a.(3) below.

**Table II.A.7.a.(3)**

| PERMITTEE | ORDINANCE |
|---|---|
| Sarasota County | 93-038 |
| Town of Longboat Key | Chapters 33, 52, and 158.102 of the Ordinances of the Town of Longboat Key |
| City of Sarasota | 93-3699 and Section 2-314 of the City of Sarasota Code |

(4) As per the schedule in Part III.A.7.a. on page 31 of this permit, the permittees in Table II.A.7.a.(4) shall amend the identified ordinances to change the citation for the definition of *"industrial activity,"* contained within these ordinances, to 40 CFR 122.26(b)(14) from the incorrect citation of 40 CFR 122.26(a)(14).



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| Table II.A.7.a.(4) | |
|---|---|
| [illegible] | [illegible] |
| City of Sarasota | 93-3699 |
| City of North Port | 93-15, Section 180-21 |
| City of Venice | 93-14, Section 9-74 |

b. *Dry Weather Field Screening Program:* The permittees shall continue ongoing efforts to detect the presence of illicit connections and improper discharges to the MS4.

(1) To satisfy the requirements of this section, the permittees shall implement a dry weather field screening program to locate and eliminate illicit discharges and improper disposal into the MS4 in accordance with the schedule provided in Part III.A.7.b. on page 32 of this permit. This program shall include the dry weather screening activities identified in Table II.A.7.b. The minimum level of effort for the field screening program shall be based upon a 0.50-mile grid system, with each grid area containing at least one field screening location. In industrial and heavy commercial areas, the minimum level of effort shall be based upon a 0.25-mile grid system, with each grid area containing at least one field screening location. Under this program, all grid areas of the MS4 must be screened once during the permit term. Some grid areas may require more than one field screening location or a more frequent inspection schedule. In lieu of the grid system, the permittees may choose to field screen at all outfalls. Follow-up activities to eliminate illicit discharges and improper disposal may be prioritized on the basis of magnitude and nature of the suspected discharge; sensitivity of the receiving water; and/or other relevant factors. Screening methodology may be modified based on experience gained during actual field screening activities. While performing field screening activities, the permittees shall collect information on outfalls and portions of the MS4 which are not mapped, and this updated information shall be entered into the database system on an ongoing basis. An internal log documenting the results of all field screening performed shall be maintained.

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| Table II.A.7.b. | |
|---|---|
| GRID MAP COVERING AREA SERVED BY MS4 or ALL OUTFALLS | FREQUENCY OF FIELD SCREENING |
| Industrial Land Use | 0.25-mile Grid or All Outfalls<br><br>Once / 3 years |
| Heavy Commercial Land Use | 0.25-mile Grid or All Outfalls<br><br>Once / 3 years |
| All Other Land Uses | 0.50-mile Grid or All Outfalls<br><br>Once / 5 years |
| Entire MS4 System | ⅓ of the Outfalls or ⅓ of the Grid Areas Screened During Permit Years Three, Four, & Five with the Entire MS4 Screened Once / 5 years |

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c. *Investigation of Suspected Illicits and/or Improper Disposal:* The permittees shall develop and implement standard procedures to be followed to investigate portions of the MS4 that, based on the results of the field screen or other appropriate information, indicate a reasonable potential of containing illicit discharges or other sources of non-storm water. Notification to EPA of any illicit connection shall be an element of the investigative standard procedures.

(1) To satisfy the requirements of this section, the permittees identified in Part III.A.7.c. on page 32 shall develop and implement standard investigative procedures to identify and terminate the source of the illicit connection or discharge in accordance with the schedule provided. The procedures developed shall require proper training for the field personnel involved in identifying conditions that may indicate the presence of illicit discharges. Upon the verification of responsible parties, the standard procedures developed shall require the immediate cessation of improper disposal practices and the elimination of the illicit connection as expeditiously as possible. Where the elimination of an illicit connection or the submittal of an NPDES application to EPA is not possible within a specified time frame determined by the permittee, the standard procedures developed shall require that the responsible parties submit for approval a written compliance schedule for the removal of the discharge. In the interim, the permittees shall require the operator of the illicit discharge to take all reasonable and prudent measures to minimize the discharge of pollutants to the MS4.

(2) To satisfy the requirements of this section, FDOT shall develop and implement standard investigative procedures to identify the source of the illicit connection or discharge to the FDOT MS4, in accordance with the schedule provided in Part III.A.7.c. on page 33 of this permit. Upon the identification of responsible parties, the standard procedures developed shall require the timely reporting of water quality violations to Florida Department of Environmental Protection (FDEP) and EPA. Until such time that the illicit connection has been eliminated or the responsible parties have submitted an NPDES application for the discharge to EPA, FDOT shall require the operator of the illicit discharge to take all reasonable and prudent measures to minimize the discharge of pollutants to the MS4. Where measures to minimize the discharge are not taken, the developed procedures shall consider the termination of the connecting entity's FDOT drainage connection permit.



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d. *Spill Prevention and Response:* The permittees shall implement procedures to prevent, contain, and respond to spills that may discharge into the MS4.

(1) To satisfy the requirements of this section, the permittees shall adopt Sarasota County's *Hazardous Materials Emergency Plan*, FDOT's *Emergency Operations Procedures*, or a comparable plan and procedures which effectively mitigate potential pollutant discharges to surface waters. These documents shall be adopted in accordance with the schedule provided in Part III.A.7.d. on page 33 of this permit.

e. *Public Notification:* The permittees shall develop and implement a program to promote, publicize, and facilitate public reporting of illicit discharges of water quality impacts associated with discharges from the MS4.

(1) To satisfy the requirements of this section, the permittees shall develop and implement programs to facilitate public reporting of illicit discharges and improper disposal of materials into the MS4 in accordance with the schedule provided in Part III.A.7.e. on page 34 of this permit. The program shall inform the public about what to look for and how to report incidents. The program shall also enhance public awareness of the problems associated with illicit discharges and may include programs such as educating school students, using inserts in utility bills, and public service announcements in newspaper, on television, or on radio.

f. *Oils, Toxics, and Household Hazardous Waste Control:* The permittees shall effectively prohibit the discharge or disposal of used motor vehicle fluids, household hazardous wastes, grass clippings, leaf litter, and animal wastes into the MS4.

(1) To satisfy the requirements of this section, the permittees shall implement the Storm Water Management Programs identified in Part III.A.7.f. on page 35 of this permit.



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7. *Limitation of Sanitary Sewer Seepage:* The permittees shall prevent (or require the operator of the sanitary sewer to eliminate) unpermitted discharges of dry and wet weather overflows from sanitary sewers into the MS4. Each permittee shall eliminate the infiltration of seepage from sanitary sewers into the MS4.

(1) To satisfy the requirements of this section, the permittees shall implement the Storm Water Management Programs identified in Part III.A.7.g. on page 36 of this permit.

8. *Industrial and High Risk Runoff:* The permittees shall develop and implement a program to identify and control pollutants, to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream, in storm water discharges to the MS4 from the municipal landfill(s); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge in which the permittees determine is contributing a substantial pollutant loading to the MS4.

To satisfy the two (2) requirements of this section, the permittees shall:

a. *Identify priorities and procedures for inspections:* Identify all targeted facilities and determine priority sites in accordance with the schedule provided in Part III.A.8.a. on pages 37 and 38 of this permit. Inspection schedules and procedures for the identified facilities shall be developed and implemented. Also, the permittees shall provide a listing in each ANNUAL REPORT of additionally identified industrial facilities which discharge storm water into the MS4 which have not been previously reported. The industrial storm water discharges that must be included in this inventory fall into the eleven (11) classes of industrial activities as defined in the November 1990 regulations under 40 CFR 122.26(b)(14).

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b. *Monitoring for High Risk Industries:* Develop and implement a monitoring (or self monitoring) program for facilities identified under this section in accordance with the schedule provided in Part III.A.8.b. on page 38 of this permit. The monitoring program shall include the collection of quantitative data on the following constituents:

- any pollutants limited in an existing NPDES permit for an identified facility;
- oil and grease;
- chemical oxygen demand (COD);
- pH;
- biochemical oxygen demand, five-day ($BOD_5$);
- total suspended solids (TSS);
- total phosphorous;
- total Kjeldahl nitrogen (TKN);
- nitrate plus nitrite nitrogen; and
- any information on discharges required under 40 CFR 122.21(g)(7)(iii) and (iv).

Data collected by the industrial facility to satisfy the monitoring requirements of an NPDES or State discharge permit may be used to satisfy this requirement. Permittees may require the industrial facility to conduct self-monitoring to satisfy this requirement.

9. *Construction Site Runoff:* The permittees shall develop and implement a program to reduce the discharge of pollutants from construction sites to the MEP, and to shall not cause or contribute to violations of State water quality standards of the receiving stream.

a. *Site Planning and Non-structural & Structural Best Management Practices:* The permittees shall require the use and maintenance of appropriate structural and non-structural best management practices to reduce pollutants discharged to the MS4 during the time of construction.

(1) To satisfy the requirements of this section, the permittees shall implement the Storm Water Management Programs identified in Part III.A.9.a. on page 39 of this permit.

b. *Inspection and Enforcement:* The permittees shall develop and implement a program for inspecting construction sites and for enforcing the requirement for control measures.

(1) To satisfy the requirements of this section, the permittees shall implement the Storm Water Management Programs identified in Part III.A.9.b. on pages 40 and 41 of this permit.



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c. *Site Operator Training:* The permittees shall conduct appropriate education and training measures for construction site operators and those associated with the implementation of proper sediment & erosion control measures at construction sites.

(1) To satisfy the requirements of this section, the permittees shall implement the Storm Water Management Program(s) identified in Part III.A.9.c. on pages 41 and 42 of this permit.

B. Area-specific Storm Water Management Program Requirements.

**Reserved pending additional requirements which may be included as a result of State Certification of the permit. (See Section 401 of the CWA.)**

C. Deadlines for Program Compliance. Except as provided in Part III, compliance with the storm water management program shall be required 90 days from the effective date of the permit.

D. Roles and Responsibilities of Permittees. The Storm Water Management Program, together with any attached interagency agreements or interagency agreements developed subsequent to the effective date of the permit, shall clearly identify the roles and responsibilities of each permittee. Following the effective date of the permit, interagency agreements developed and implemented must be included in the ANNUAL REPORT covering the permit year in which the agreement became effective.

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E. Legal Authority. To the extent allowed by law, each permittee shall ensure legal authority to control discharges to and from those portions the MS4 over which it has jurisdiction. This legal authority may be a combination of statute, ordinance, permit, contract, order or inter-jurisdictional agreements between permittees with adequate existing legal authority to accomplish Items 1 - 6 below. This legal authority for FDOT may be a combination of State statutes administered and enforced by sister agencies within the State of Florida government system which have adequate existing legal authority to accomplish Items 1 - 6 below.

1. Control the contribution of pollutants to the MS4 by Storm Water Discharges Associated with Industrial Activity and the quality of storm water discharged from sites of industrial activity;

2. Prohibit illicit discharges to the MS4;

3. Control the discharge of spills and the dumping or disposal of materials other than storm water (e.g. industrial and commercial wastes, trash, used motor vehicle fluids, leaf litter, grass clippings, animal wastes, etc.) into the MS4;

4. Control through interagency or inter-jurisdictional agreements among permittees the contribution of pollutants from one portion of the MS4 to another;

5. Require compliance with conditions in ordinances, permits, contracts or orders; and

6. Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with permit conditions.

F. Storm Water Management Program Resources. Each permittee shall provide adequate finances to implement their activities under the Storm Water Management Program. Each permittee shall also have a source of funding for implementing all other requirements included within this NPDES storm water permit.

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G. Storm Water Management Program Review and Modification.

1. *Program Review:* Each permittee shall participate in an annual review of the current Storm Water Management Program (SWMP) in conjunction with preparation of the ANNUAL REPORT required under Part V.C. of the permit.

2. *Program Modification:* The permittee(s) may modify the SWMP during the life of the permit in accordance with the following procedures:

   a. Modifications adding (but not subtracting nor replacing) components, controls, or requirements to the approved SWMP may be made by the permittee(s) at any time. A description of the modification shall be included within the subsequent ANNUAL REPORT.

   b. Modifications replacing an ineffective or unfeasible BMP specifically identified in the SWMP with an alternate BMP may be made by the permittee(s) at any time. A description of the replacement BMP shall be included in the subsequent ANNUAL REPORT along with the following information:

      (1) an analysis of why the former BMP was ineffective or infeasible (including cost prohibitive);

      (2) expectations on the effectiveness of the replacement BMP; and

      (3) an analysis of why the replacement BMP is expected to achieve the goals of the BMP which was replaced.

   c. Modifications to adjust the schedule for maintenance activities or the frequency of inspections or monitoring identified in the SWMP may be made by the permittee(s) on an annual basis. The permittees must include in the subsequent ANNUAL REPORT a description of the schedule adjustment along with the following information:

      (1) an analysis of why the former schedule was ineffective or infeasible;

      (2) expectations on the effectiveness of the replacement schedule; and

      (3) an analysis, if applicable, of why the replacement schedule will ensure the optimization of equipment use.



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d. Modifications subtracting components, controls, or requirements of the SWMP may not be made by the permittee(s) UNLESS it can be clearly demonstrated that with the elimination of this component, the SWMP will continue to achieve a reduction in pollutants to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream. In the case where this type of modification is appropriate, the permittee(s) may make the required modification and shall include in the subsequent ANNUAL REPORT a description of the component which has been eliminated along with the following information:

(1) an analysis of why the component was ineffective or infeasible, and

(2) a detailed explanation of why, with the elimination of this component, the SWMP will continue to achieve a reduction in pollutants to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream.

e. Modifications included within the ANNUAL REPORT shall be signed in accordance with Part VI.H. by all directly affected permittees, and shall include a certification that all affected permittees were given an opportunity to comment on proposed changes.

3. *Transfer of Ownership, Operational Authority, or Responsibility for Storm Water Management Program Implementation:* The permittee(s) shall implement the SWMP on all new areas added to their portion of the municipal separate storm sewer system (or for which they become responsible for implementation of storm water quality controls) as expeditiously as practicable. Implementation of the program in any new area shall consider the plans in the SWMP of the previous MS4 ownership.

Prior to land annexation, the permittee shall include a schedule for extending the SWMP to the annexed areas. At least 30 days prior to transfer of operational authority or responsibility for SWMP implementation, all parties shall prepare a schedule for transfer of responsibility for SWMP implementation on the affected portions of the MS4. This schedule shall be included in the ANNUAL REPORT.

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## PART III. SCHEDULES FOR IMPLEMENTATION AND COMPLIANCE

The permittee(s) shall comply with the following schedules for Storm Water Management Program implementation and augmentation, and for permit compliance.

### A. IMPLEMENTATION AND AUGMENTATION OF STORM WATER MANAGEMENT PROGRAMS

| STORM WATER MANAGEMENT | | | |
|---|---|---|---|
| 1. *Operation and Maintenance of Structural Controls and Storm Water Collection System* | Sarasota County<br>City of Sarasota<br>City of Venice<br>City of North Port<br>FDOT | Perform inspections and maintenance of structural controls. Maintain an internal record keeping system to track inspections and maintenance activities performed during the permit. Conduct an annual assessment of the effectiveness of inspection & maintenance schedule and provide a summary of the assessment in each ANNUAL REPORT. | Annual Requirement |
| | ALL | Identify and inventory each privately-owned and maintained storm water management facility which discharges into the MS4. | Within 12 Months of the Effective Date of the Permit |
| | | Develop a revolving inspection program for privately-owned and maintained storm water treatment systems which discharge into the MS4 to determine compliance with local permit conditions and/or local ordinances. Program developed shall include a description of the enforcement provisions for non-compliance.<br><br>Following development, include a summary of the inspection program & schedule in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 12 Months of the Effective Date of the Permit |
| | | Implement revolving inspection program for privately-owned and maintained storm water treatment systems which discharge into the MS4. | Within 24 Months of the Effective Date of the Permit. |



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| 1. *Operation and Maintenance of Structural Controls and Storm Water Collection System* (continued) | Sarasota County | Complete Florida Water & Pollution Control Operators Association (FW&PCOA) course or equivalent. | 5 employees / year |
| | ALL OTHERS except for FDOT | | 1 employee / permit |



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| 2. *Control of Discharges from Areas of New Development and Significant Redevelopment* | ALL except for City of North Port and FDOT | Adopt as local ordinances storm water quality treatment criteria consistent, but not necessarily similar to the State of Florida Storm Water Treatment Regulations (F.A.C. 40D-4, 40D-40, 62-25). | Prior to the end of the Permit Term |
| | FDOT | Employ new FDOT Drainage Connection Permit requirements which include a "certification of water quality" to be provided by the connecting entity. | Effective Date of Permit |
| | ALL except for FDOT | Continue on the current schedule to perform master basin studies on the major watersheds identified in Table 1 on page 4A-34 of Appendix A. Develop a course of action for each as they are completed.<br><br>Include in each ANNUAL REPORT a brief summary of each basin study completed during the permit year and the resulting course of action. | Effective Date of the Permit |
| | ALL except for City of North Port and FDOT | Evaluate land development practices to reduce the amount of impervious surfaces in future development.<br><br>After completing the evaluation, include a summary of the resulting course of action in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 36 Months of the Effective Date of Permit |
| | | Implement appropriate land development practices & incentives for the reduction of impervious surfaces. | As Determined by the Evaluation - Prior to the end of the Permit Term |



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| STORM WATER MANAGEMENT PROGRAM | | | DATE DUE / [illegible] |
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| 3. *Operation and Maintenance of Public Streets, Roads, and Highways* | Sarasota County<br>City of Sarasota<br>City of Venice | Provide a description of the municipally-operated Litter Control Program(s) for highways and streets within jurisdictional area for incorporation into the permit. | Provide in First ANNUAL REPORT |
| | ALL except for City of North Port and FDOT | Implement Litter Control Program(s) for highways and streets within jurisdictional area and properly dispose of collected material. | Effective Date of the Permit |
| | FDOT | Implement Litter Control Program for highways and streets within jurisdictional area and properly dispose of collected material. Report in each ANNUAL REPORT the approximate frequency of litter collection services performed under contractual agreements during the permit year. | Effective Date of the Permit |
| | ALL except for North Port WCD City of North Port & FDOT | Implement street sweeping program within jurisdictional area and properly dispose of collected material. | Effective Date of the Permit |
| | FDOT | Implement street sweeping program within jurisdictional area and properly dispose of collected material. Report in each ANNUAL REPORT the approximate frequency of street sweeping services performed under contractual agreements during the permit year. | |
| | Sarasota County | Provide the maintenance schedule for storm water structures (i.e., catch basins) and roadside ditches. | Provide in First ANNUAL REPORT |



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| 3. *Operation and Maintenance of Public Streets, Roads, and Highways*<br><br>(continued) | ALL | Perform scheduled maintenance on catch basins, grates, and other storm water structures and roadside ditches and properly dispose of accumulated sediments.<br><br>Maintain an internal log documenting maintenance activities. | Effective Date of the Permit |
| | ALL except for City of North Port | As described in Part II.3.a. on page 7 of the permit, develop practices to reduce to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream regarding the pollutants from road repair and from all municipal equipment yards & maintenance shops.<br><br>After development, include a summary of the practices in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 12 months of the Effective Date of the Permit |
| | | Implement developed practices to reduce to the MEP pollutants from road repair and municipal yards. | Within 24 months of the Effective Date of the Permit |
| | FDOT | Coordinate the "Adopt A Highway" program for local organizations to be identified with specific highway cleanup and beautification projects. | Within 24 months of the Effective Date of the Permit |
| | | Conduct annual routine inspections of each FDOT maintenance facility to ensure that BMPs are operational. The FDOT NPDES Coordinator or his/her representative shall perform this activity. | |



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| 4. *Ensure Flood Control Projects Comply With State Storm Water Quality Requirements* | ALL except for FDOT | Develop a priority list and construction schedule for the retrofit projects recommended by the master basin studies completed to date. | Within 12 Months of the Effective Date of the Permit |
| | | Include a copy of the prioritized project list and construction schedule in the ANNUAL REPORT for incorporation into the permit. Provide updates to this list in future ANNUAL REPORTS as additional master basin studies are completed. | |
| | FDOT | Present a retrofitting program to the local Metropolitan Planning Organizations (MPO) for consideration which focuses on water quality improvement. | Within 12 Months of the Effective Date of the Permit |
| | | Submit within the ANNUAL REPORT the list of approved retrofit projects in the MPO's work program for District One. Also provide the construction schedule for these approved projects. Provide updates to this list in future ANNUAL REPORTS as additional projects are approved. | Within 24 Months of the Effective Date of the Permit |
| | | Begin retrofit priority projects as per the construction schedule in the approved work program for District One. | |



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| 5. *Identification, Monitoring, and Control of Discharges from Municipal Waste Treatment, Storage, or Disposal Facilities not covered by an NPDES Storm Water Permit* | Sarasota County<br>City of Sarasota<br>City of North Port | Develop program to evaluate, through inspections and monitoring, the municipally-operated solid waste transfer station(s), maintenance and storage yards for waste transportation fleets, POTWs, and sludge application and/or disposal sites. The goals of the evaluation program shall be to identify these facilities, determine the necessary control measures & procedures to be employed at each, and administer an appropriate implementation schedule.<br><br>After developing the evaluation program, submit a program summary in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | | Implement developed program to reduce pollutants in storm water discharges to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream from these facilities. | Within 36 Months of the Effective Date of the Permit |



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| 6. ***Control of Pollutants Related to Application of Pesticides, Herbicides, and Fertilizers*** | **ALL** | Provide the details, for incorporation into the permit, of the specific public education program(s) designed to encourage the public to reduce their use of pesticides, herbicides and fertilizers. | Provide in First ANNUAL REPORT |
| | | Implement public education program(s). | Effective Date of the Permit |
| | **ALL except for FDOT** | Evaluate current training requirements & certification procedures for employees who handle pesticides, herbicides and fertilizers.<br><br>After completing the evaluation, include a summary of the results in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Implement any revised procedures for the training & certification of these employees. | As Necessary - Within 36 Months of the Effective Date of the Permit |
| | **ALL** | Require evidence of proper certification and licensing for all applicators contracted to apply pesticides, herbicides, and fertilizers on municipal and FDOT property. | Effective Date of the Permit |



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| 6. *Control of Pollutants Related to Application of Pesticides, Herbicides, and Fertilizers*<br><br>(continued) | ALL except for FDOT | Develop a program with procedures to minimize the use of pesticides, herbicides, and fertilizers and to properly store and mix these products. The program developed should also consider including components such as providing xeriscape planning assistance and promoting voluntary use of native Florida plantings and slow-release fertilizers.<br><br>After development, include a summary of the procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | ALL except for FDOT | Employ program procedures to minimize the use of pesticides, herbicides, and fertilizers and to properly store and mix these products. | Within 36 Months of the Effective Date of the Permit |
| | FDOT | | Effective Date of the Permit |



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| **7.** | ***Illicit Discharges and Improper Disposal*** | | |
| ***a.)*** ***Inspections, ordinances, and enforcement measures*** | **ALL except for City of North Port and FDOT** | Complete the assessment of non-storm water discharges allowed to be discharged to the MS4 as detailed on page 9 of the permit.<br><br>After completing the assessment, include a summary of the results in the subsequent ANNUAL REPORT for incorporation into the permit. | **Within 18 Months of the Effective Date of the Permit** |
| | **ALL except for City of North Port and FDOT** | Develop an inspection program to enforce ordinances which prohibit illicit connections and illegal dumping into the MS4.<br><br>After development, include a summary of the inspection program in the subsequent ANNUAL REPORT for incorporation into the permit. | **Within 30 Months of the Effective Date of the Permit** |
| | **Sarasota County** | Implement inspection program to enforce ordinances which prohibit illicit connections and illegal dumping into the MS4. Maintain an internal log documenting inspections and enforcement actions performed and provide a summary of these reports in each ANNUAL REPORT. | **Within 36 Months of the Effective Date of the Permit** |
| | **ALL OTHERS except for City of North Port and FDOT** | | **Within 36 Months of the Effective Date of the Permit** |

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| **7. *Illicit Discharges and Improper Disposal*** | | | |
| ***a.) Inspections, ordinances, and enforcement measures*** **(continued)** | **FDOT** | Develop a program to inspect drainage connections after project completion to ensure continued compliance with drainage connection permit requirements and to ensure that no illicit or non-permitted connections have been made. In cases where another regulatory agency requires a periodic certification of compliance, the program developed may allow FDOT to accept this certification of compliance in lieu of further inspections by FDOT.<br><br>After development, include a summary of the inspection program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 21 Months of the Effective Date of the Permit |
| | | Implement developed program to inspect drainage connections after project completion. Maintain an internal log documenting inspections and enforcement actions performed and provide a summary of these records in each ANNUAL REPORT. | Within 30 Months of the Effective Date of the Permit |
| | Sarasota County<br>Longboat Key<br>City of Sarasota | Provide photocopies of signed adopted storm water ordinances as identified in Table II.A.7.a.(3) on page 10 of the permit. | Provide in First ANNUAL REPORT |
| | City of North Port<br>City of Sarasota<br>City of Venice | Amend ordinances as identified in Table II.A.7.a.(4) on page 11 of the permit to reflect correct citation for *"industrial activity"* {40 CFR 122.26(b)(14)}<br><br>Include a copy of the amended ordinances in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 12 Months of the Effective Date of the Permit |



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| 7. *Illicit Discharges and Improper Disposal* (continued) | | | |
|---|---|---|---|
| *b.) Field Screening* | ALL | Conduct field screening of the MS4 for illicit discharges and improper disposal as shown in Table II.A.7.b. on page 12 of this permit.<br><br>Collect inventory information on outfalls and on portions of MS4 not mapped and update database system on an ongoing basis.<br><br>Maintain an internal log documenting the results of all field screening performed. | At least ⅓ of Grid Areas Screened in Permit Years Three, Four and Five with Entire MS4 Screened Once / 5 years |
| *c.) Investigation of Suspected Illicits and/or Improper Disposal* | ALL except for FDOT | Develop standard investigative procedures to identify and terminate the source(s) of illicit connections or discharges to the MS4.<br><br>After development, include a summary of the investigative procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Implement standard investigative procedures to identify and terminate the source(s) of illicit connections or discharges to the MS4. | Within 30 Months of the Effective Date of the Permit |



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| **7.** | ***Illicit Discharges and Improper Disposal*** **(continued)** | | | |
| | **c.)** ***Investigation of Suspected Illicits and/or Improper Disposal*** **(continued)** | **FDOT** | Develop standard investigative procedures to identify and report the source(s) of illicit connections or discharges. These procedures shall include notification to FDEP and EPA of illicit connections.<br><br>After development, include a summary of the investigative procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | **Within 24 Months of the Effective Date of the Permit** |
| | | | Implement standard investigative procedures to identify the sources(s) of illicit connections or discharges to the MS4. | **Within 30 Months of the Effective Date of the Permit** |
| | **d.)** ***Spill Prevention and Response*** | **Sarasota County**<br><br>**FDOT** | Provide a copy of the applicable portions of Sarasota County's *Hazardous Materials Emergency Plan* and FDOT's *Emergency Operations Procedures* which effectively mitigate potential pollutant discharges to surface waters. | **Provide in First Annual Report** |
| | | **ALL except for Sarasota County and FDOT** | Adopt Sarasota County's *Hazardous Materials Emergency Plan*, FDOT's *Emergency Operations Procedures*, or a comparable plan and procedures which effectively mitigate potential pollutant discharges to surface waters. | **Within 12 Months of the Effective Date of the Permit** |

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| **7. *Illicit Discharges and Improper Disposal* (continued)** | | | |
| ***e.) Public Notification*** | **ALL** | Develop a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges and improper disposal of materials into the MS4.<br><br>After development, include a summary of the public program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | | Implement public reporting program. | Within 36 Months of the Effective Date of the Permit |
| | | Maintain a citizen complaint log documenting all reports of illicit discharges and what actions were taken to investigate and resolve the problem. Include a summary of this log in each ANNUAL REPORT. | Within 36 Months of the Effective Date of the Permit |
| | **FDOT** | Establish a direct dial local telephone number at the District Office to be used for the reporting of illicit connections, accidental spills, illegal dumping, or other water quality violations and action as needed. This requirement may be satisfied through cooperative efforts with other permittees. | Within 36 Months of the Effective Date of the Permit |



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| **7.** | ***Illicit Discharges and Improper Disposal*** **(continued)** | | | |
| | ***f.)*** ***Oils, Toxics, and Household Hazardous Waste Control*** | **ALL except for FDOT** | **Support and promote on a regular basis the six (6) oil recycling site locations within Sarasota County and the two (2) permanent collection centers for household hazardous waste materials.**<br><br>**Continue Amnesty Days program.**<br><br>**Document the total annual amount of household hazardous waste materials collected.** | **Effective date of Permit** |
| | | | **Actively promote and support a voluntary stenciling program for all storm sewer inlets which discharge directly or indirectly into surface waters.** | **Within 12 Months of the Effective Date of the Permit** |
| | | **FDOT** | **With each FDOT Drainage Connection Permit, include information on used oil recycling, proper hazardous waste disposal, storm water regulations, and spill reporting.** | **Within 12 Months of the Effective Date of the Permit** |



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| 7. *Illicit Discharges and Improper Disposal* (continued) | | | |
| g.) *Limitation of Sanitary Sewer Seepage* | ALL except for City of North Port and FDOT | Develop procedures to limit the infiltration of sanitary seepage into the MS4, in areas where wastewater infiltration is suspected.<br><br>After development, include a summary of the procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | | Implement developed procedures to limit the infiltration of sanitary seepage into the MS4. | Within 36 Months of the Effective Date of the Permit |
| | ALL | Advise appropriate utility owner of violation if constituents common to wastewater contamination are discovered in the MS4 during dry weather field screening. | Effective Date of the Permit |
| | | Identify areas served by septic tanks. Advise appropriate State Agency of violation if constituents common to wastewater contamination due to malfunctioning septic tank systems are discovered in the MS4 during dry weather field screening. | Within 12 Months of the Effective Date of the Permit |



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| STORM MANAGEM | | | DATE DUE |
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| **8. *Industrial and High Risk Runoff*** | | | |
| ***a.) Identification of Priorities and Procedures for Inspections*** | **ALL** | Develop an inventory of all existing high risk facilities discharging into the MS4. This inventory shall identify the outfall and surface waterbody into which each high risk facility drains. | Within 24 Months of the Effective Date of the Permit |
| | | Based upon historical information and available monitoring & screening data, prioritize the identified high risk facilities. | Within 24 Months of the Effective Date of the Permit |
| | **ALL except for FDOT** | Develop procedures for inspecting high risk facilities and establish an inspection schedule.<br><br>After development, include a summary of the procedures & inspection schedule in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | **FDOT** | Develop procedures for the inspection of high risk facilities which hold FDOT drainage connection permits to ensure compliance with permit requirements. In cases where another regulatory agency requires a periodic certification of compliance, the program developed may allow FDOT to accept this certification of compliance in lieu of further inspections by FDOT.<br><br>After development, include a summary of the procedures & inspection schedule in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | **ALL** | Begin inspections of identified high risk facilities. Maintain an internal log documenting the results of the inspections performed. | Within 36 Months of the Effective Date of the Permit |



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| 8. *Industrial and High Risk Runoff* (continued) | | | |
| a.) *Identification of Priorities and Procedures for Inspections* (continued) | ALL | Maintain a list of all industrial storm water sources discharging to MS4 & update in ANNUAL REPORTS. | Effective Date of the Permit |
| b.) *Monitoring for High Risk Industries* | ALL except for FDOT | Develop a monitoring (or self monitoring) program for high risk industrial facilities. Include a description of the specific enforcement steps to be taken to require compliance with local storm water ordinances if violations are identified.<br><br>After development, include a summary of the monitoring program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | FDOT | Develop a monitoring (or self monitoring) program for high risk industrial facilities which hold FDOT drainage connection permits. Include a description of the specific enforcement steps to be taken to require compliance with permit conditions if violations are identified.<br><br>After development, include a summary of the monitoring program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | ALL | Implement the monitoring program for high risk industrial facilities. | Within 36 Months of the Effective Date of the Permit |



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| STORM MANAGEMENT | | | |
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| **9.** | ***Construction Site Runoff*** | | |
| ***a.)*** | ***Site Planning & Structural and Non-structural Controls*** | **ALL except for City of North Port and FDOT** | Review erosion and sediment control requirements to determine modifications necessary to correlate with SWFWMD's requirements and EPA's NPDES Construction Activity General Permit.<br><br>Summarize the necessary modifications in the subsequent ANNUAL REPORT for incorporation into the permit. | **Within 12 Months of the Effective Date of the Permit** |
| | | | Incorporate necessary modifications to the erosion and sediment control requirements. | **Within 36 Months of the Effective Date of the Permit** |
| | | | In land development regulations, incorporate guidelines and recommendations for reducing the amount of sediment leaving construction sites. | **Within 36 Months of the Effective Date of the Permit** |
| | | | Track construction projects required to install erosion and sediment controls. Document the installation, maintenance, and effectiveness of the controls. Integrate these records with the education program for training the site contractors. | **Within 18 Months of the Effective Date of the Permit** |
| | | **FDOT** | Employ new FDOT Drainage Connection Permit requirements which direct connecting entities subject to the NPDES storm water regulations to submit a copy of their NPDES Storm Water Pollution Prevention Plan to FDOT. | **Effective Date of the Permit** |

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9. *Construction Site Runoff* (continued)

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| *b.) Inspection and Enforcement* | ALL except for City of North Port and FDOT | Review existing inspection policies and code enforcement programs to first identify all agencies conducting site inspections and then to determine which agency is responsible for issuing enforcement actions for which code violations.<br><br>Summarize results and include in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Train inspectors (regardless of specialty) who are likely to be on-site during earth moving activities in erosion control techniques. | 1 Inspector / Year |
| | | Implement the use of an erosion & sediment control checklist for all inspectors. Include verification that construction sites subject to the NPDES Storm Water Regulations have NPDES permit coverage and a Storm Water Pollution Prevention Plan on site.<br><br>Include developed checklist in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | ALL except for City of North Port | Develop a program to inspect construction projects for compliance with local storm water ordinances and/or local permits. | Within 24 Months of the Effective Date of the Permit |
| | ALL except for City of North Port and FDOT | Implement program developed to inspect construction projects for compliance with local storm water ordinances and/or local permits. | Within 36 Months of the Effective Date of the Permit |



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| 9. *Construction Site Runoff* (continued) | | | |
| b.) *Inspection and Enforcement* (continued) | FDOT | Implement program developed to inspect construction projects that propose to directly discharge storm water to the FDOT MS4 and have been granted an FDOT drainage connection permit for compliance with FDOT permit conditions. Require connection entities, who are found or suspected of discharging storm water of unacceptable quality during or following construction, to sample and test the discharge to prove compliance with FDOT permit conditions. | Within 36 Months of the Effective Date of the Permit |
| c.) *Site Operator Training* | ALL except for City of North Port and FDOT | Implement an annual NPDES workshop for design professionals, land developers, inspectors and contractors, including earth moving contractors. Topics to include are measures to reduce pollutants from sites, awareness of the NPDES program requirements for construction activities, and solutions to erosion and sediment problems commonly found by the inspectors during construction. | Within 24 Months of the Effective Date of the Permit |
| | | Evaluate the feasibility of an erosion & sediment control certification program for construction site operators (contractors and developers), plan reviewers, and inspectors that work on sites that discharge to the MS4.<br><br>Upon conclusion of the evaluation, include a summary of the findings in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | | If certification program is deemed feasible, implement program for construction site operators, plan reviewers, and inspectors. | If Deemed Feasible - Within 36 Months of the Effective Date of the Permit |



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| c.) *Site Operator Training* (continued) | ALL except for City of North Port and FDOT | Develop a procedure to notify building permit applicants in developments which, because of the amount of land area disturbed, are subject to the NPDES storm water regulations of their application responsibilities under the NPDES permitting program for construction site runoff.<br><br>After development, include a summary of procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Implement developed procedures to notify building permit applicants in developments which, because of amount of land area disturbed, are subject to the NPDES storm water regulations of their application responsibilities under the NPDES permitting program for construction site runoff. | Within 30 Months of the Effective Date of the Permit |
| | | Conduct presentations to local professional organizations which are associated with the construction industry to discuss proper construction site management for water quality. | Ongoing |

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B. COMPLIANCE WITH EFFLUENT LIMITATIONS.

NONE

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## PART IV. NUMERIC EFFLUENT LIMITATIONS

**NONE**

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## PART V. MONITORING AND REPORTING REQUIREMENTS

### A. Seasonal Loadings and Event Mean Concentrations.

1. As per 40 CFR 122.26(d)(2)(iii)(C), the permittees shall provide estimates of the seasonal pollutant load and of the event mean concentration of a representative storm for the parameters listed in Table V.A.1. for each "major outfall" within the MS4. These constituents were detected in the sampling data reported in the Part 2 application. The location of all known major outfalls shall be inventoried in the ANNUAL REPORT for Year One of the permit, with updates describing any additionally identified major outfalls in each sequent ANNUAL REPORT. The seasonal pollutant load and event mean concentration for each major outfall may be estimated from the representative monitoring locations, from regional NURP or State data, or from pooling results from other nearby Florida MS4 monitoring activities and shall take into consideration land uses and drainage areas for the outfall. The estimates of seasonal loadings and event mean concentrations shall be included in the ANNUAL REPORT for Year Four of the permit. For the purposes of this permit, a "major outfall"is defined as follows:

   - a pipe (or closed conveyance) system with a cross-sectional area equal to or greater than 7.07 square feet (e.g., if a single circular pipe system, an inside diameter of 36 inches or greater);
   - a single conveyance other than a pipe, such as an open channel ditch, which is associated with a drainage area of more than 50 acres;
   - a pipe (or closed conveyance) system, draining *"industrial land use,"* with a cross-sectional area equal to or greater than 0.79 square feet (e.g., if a single circular pipe system, an inside diameter of 12 inches or greater); or
   - a single conveyance other than a pipe, such as an open channel ditch, which is associated with an *"industrial land use"* drainage area of more than 2 acres;

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| TABLE V.A.1. | |
|---|---|
| PARAMETERS | |
| Biochemical Oxygen Demand ($BOD_5$) (mg/l) | Oil & Grease (mg/l) |
| Chemical Oxygen Demand (COD) (mg/l) | Total Recoverable Cadmium (mg/l) |
| Total Suspended Solids (TSS) (mg/l) | Total Recoverable Chromium (mg/l) |
| Total Dissolved Solids (TDS) (mg/l) | Total Recoverable Copper (mg/l) |
| Total Kjeldahl Nitrogen (as N) (mg/l) | Total Recoverable Lead (mg/l) |
| Nitrate plus Nitrite (as N) (mg/l) | Total Recoverable Zinc (mg/l) |
| Total Phosphorus (mg/l) | Dissolved Phosphorus (mg/l) |

2. The permittees listed in Table V.A.2. below shall conduct an investigation of the identified drainage basins to determine the sources of the following organic pollutants detected in the Part 2 application sampling data. A report summarizing the conclusions of this investigation shall be included in the ANNUAL REPORT for Year Three of the permit.

| TABLE V.A.2. | | |
|---|---|---|
| PARAMETERS | BASIN | PERMITTEE(S) |
| Benezo(a)anthracene | Indian Ave. - Site #5 | City of Venice |
| Benezo(k)fluoranthene | Indian Ave. - Site #5 | City of Venice |
| 3,4-Benzofluoranthene | East Ave. - Site #2 | City of Sarasota |
| | Indian Ave. - Site #5 | City of Venice |
| Bis(2-ethylhexyl)phthalate | Longboat Key - Site #1 | Longboat Key |
| | East Ave. - Site #2 | City of Sarasota |
| | Indian Ave. - Site #5 | City of Venice |
| | Richardson Rd. - Site #3 | Sarasota County |
| Chrysene | East Ave. - Site #2 | City of Sarasota |
| | Indian Ave. - Site #5 | City of Venice |
| 4,4'-DDE | East Ave. - Site #2 | City of Sarasota |
| | Indian Ave. - Site #5 | City of Venice |

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B. Monitoring Data Collection. According to the agreements established between permittees, the following monitoring program shall be developed and implemented:

1. *Monitoring:* Establish local monitoring stations in conjunction with the State of Florida's *Surface Water Ambient Monitoring Program.* (See definition of the *Surface Water Ambient Monitoring Program* in Part VIII for description of program goals and monitoring strategies.) The selection of the monitoring stations shall be the result of a cooperative effort between the permittees, EPA, and the Bureau of Surface Water Management, Florida Department of Environmental Protection (FDEP). Acceptance of the monitoring program components proposed by the permittees in the July 23, 1993, Part 2 application submittal shall be explored before any alternative monitoring programs are introduced. The number of monitoring stations as well as the type of sampling performed shall be established in accordance with the following:

   a.) The costs associated with the monitoring program developed shall not exceed the projected costs for the monitoring program proposed by the permittees in the July 23, 1993, Part 2 application submittal.

   b.) The monitoring program developed shall assist in determining the impact of storm water discharges on receiving waters located in the geographical area covered by this permit.

   c.) The monitoring program developed shall assist in determining the effectiveness of the storm water management programs being implemented under this permit and shall assist in identifying and prioritizing portions of the MS4 requiring additional controls.

   d.) The monitoring program developed shall be designed to help identify local sources and impacts of specific pollutants considered a problem in the geographic area covered by this permit. Once the source and the impacts are identified, these pollutants may be more effectively reduced or eliminated.

   e.) The selection of the monitoring stations and sampling program schedule shall be agreed upon by the permittees and the Bureau of Surface Water Management, FDEP and EPA. The monitoring program developed shall be implemented by the permittees within 24 months of the effective date of this permit or within 12 months of the date of program development, whichever is later. The details of the monitoring program shall be submitted to EPA in the subsequent ANNUAL REPORT; status reports shall be given in any Annual Reports prior to this one.



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It is the intent of EPA to use the monitoring information collected to evaluate any trends in the reduction in pollutant loads discharged to waters of the U.S during the term of the permit. The pollutant loading trends will be used to evaluate the effectiveness of the permittees' Storm Water Management Program to reduce the discharge of pollutants to the MEP and to shall not cause or contribute to violations of State water quality standards of the receiving stream.

2. *Monitoring Data:* For Part V.B.1., records shall be maintained of all analytical results. Additionally, for the monitoring program developed under Part V.B.1. which involves storm event sampling, the records maintained shall include: the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches or centimeters) of the storm event which generated the sampled runoff; the duration (in hours) between the storm event sampled and the end of the previous measurable (greater than 0.1 inch or 0.25 centimeter rainfall) storm event; and an estimate of the total volume (in gallons or liters) of the discharge sampled.

3. *Sample Analysis:* All samples collected for Part V.B.1. shall be analyzed in accordance with the methods specified at 40 CFR Part 136.

4. *Sampling Waiver.* When a discharger is unable to collect samples required by Part V.B.1. due to adverse climatic conditions, the discharger must submit in lieu of sampling data, a description of why samples could not be collected, including available documentation of the event. Adverse climatic conditions which may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, etc.).

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C. Annual Report. Each permittee shall contribute to the preparation of an annual system-wide report to be submitted by no later than six months following the period covered by the report. The ANNUAL REPORT shall cover the 12 month period beginning on the effective date of this permit and annually thereafter.

The preparation and submittal of a system-wide ANNUAL REPORT shall be coordinated by a *"committee."* The *"committee"* shall include a member or designated representative from each municipal entity covered by this permit. Each permittee shall be individually responsible for providing information on the portions of the MS4 for which they are the operator and for providing information for the system-wide report in a timely manner. Joint responsibility for the ANNUAL REPORT submission shall be limited to the following: (1) participation in preparation of the overview for the entire system; and (2) inclusion of the identity of any permittee who failed to provide input to the report. Each permittee shall sign and certify the ANNUAL REPORT in accordance with Part VI.H. & VI.I. of this permit, and shall include a statement or resolution that the permittee's governing body or agency (or delegated representative) has reviewed or has been appraised of the content of the ANNUAL REPORT.

The ANNUAL REPORT shall include the following sections:

- Contacts List
- SWMP Evaluation
- Summary Table
- Narrative Report
- Monitoring Section
- Summary of SWMP and Monitoring Modifications
- Fiscal Analysis
- FDOT District Report
- Appendices

The following items describe in more detail the specific requirements for the ANNUAL REPORT.

1. Provide a list of contacts and responsible parties (e.g.: agency, name, phone number) who had input to and are responsible for the preparation of the ANNUAL REPORT.

2. Provide an overall evaluation of the Storm Water Management Program including: Objective of Program; Major Findings (e.g.: water quality improvements or degradation); Major Accomplishments; Overall Program Strengths / Weaknesses; and Future Direction of Program.



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3. Provide a Summary Table of Storm Water Management Program Elements.

a. A Summary Table of appropriate SWMP annual activities for each permittee shall be provided. The purpose of the Summary Table is to document in a concise form the program activities and permittees' compliance status with quantifiable permit requirements. Program elements that are administrative (e.g.: planning procedures, program development and pilot studies) are inappropriate for the summary table and shall be discussed in the narrative section of the ANNUAL REPORT. The following are examples of SWMP activities to be included in the Summary Table:

(1) Structural Controls - maintenance and/or inspection activities of existing structural controls

(2) Roadway Maintenance - street sweeping, litter control activities, and maintenance on storm water structures & roadside ditches

(3) Municipal Waste TSD Facilities - inspections, monitoring, and implementation of control measures

(4) Pesticide, Herbicide, and Fertilizer Application - certification training and public education

(5) Illicits - facility inspections, investigations, enforcement actions, illicit (dry weather) screening, illicit public reporting, oil/household hazardous waste collection, and storm sewer inlet stencilling

(6) High Risk Industrial Facilities - inspection activities and monitoring

(7) Construction - training of inspectors, certification of construction site operators, inspections, and enforcement actions

(8) Storm Water Treatment Projects - description of municipal storm water treatment projects that have been completed, including a brief description of the affected drainage basin

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b. The Summary Table shall indicate each permittee's SWMP activities and accomplishments. The format for this information shall adhere to the example shown in Table V.C.1. on page 55. Items to be reported include:

(1) Activity description;

(2) Number of activities (with frequency) that were scheduled for implementation and/or accomplishment in program element discussion (i.e., once/6 months, 100%/5 years, 6 sites monitored once/year, all sites inspected/permit term). Enter "Not Applicable" (N/A) if no specific schedule was specified;

(3) Status of schedule for year ("yes" for schedule was adhered to, or "no" for schedule was not adhered to);

(4) Number of activities which were accomplished; and

(5) The availability of documentation (i.e., inspection reports) for those activities which were accomplished and comments describing the reason(s) for any non-compliance.

4. The ANNUAL REPORT shall contain a Narrative Report to succinctly discuss the SWMP Elements which were not included within the SWMP Summary Table. Those SWMP Elements required to be developed under Parts II and III of the permit shall be discussed within this section of the ANNUAL REPORT following development.

a. The permittees shall include a brief discussion of the following applicable SWMP Elements:

(1) Structural Controls Maintenance
(2) Development Planning Procedures
(3) Roadway Maintenance
(4) Flood Management
(5) Municipal Facilities
(6) Pesticides, Herbicides, and Fertilizers
(7) Illicits Inspection/Investigation/Enforcement
(8) Field Screening
(9) Spill Response

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(10) Public Reporting of Illicit Discharges
(11) Oil and Household Hazardous Waste
(12) Sanitary Sewer Seepage
(13) High Risk Industrial Facility Inspection
(14) Construction Planing Procedures
(15) Construction Inspections
(14) Education Activities
(15) Monitoring Activities
(16) Any additional elements of Storm Water Management Program

b. The format for the Narrative Report section of the ANNUAL REPORT shall be a brief discussion of the SWMP Element. The aspects of each permittee's activities concerning a SWMP Element shall be succinctly discussed in the section of the Narrative Report dedicated to that Element. The discussion shall include the following:

(1) Objective of SWMP Element,

(2) SWMP Element activities completed and those in progress,

(3) General discussion of Element. Explanation of all Element activity deficiencies (e.g.: activities described in the program that have not been fully implemented or completed). Results of activities shall be summarized and discussed (e.g.: maintenance caused by inspection, pollutants detected by monitoring, investigations as a result of dry and wet weather screening, number and nature of enforcement items, education activities participation),

(4) Status of SWMP Element with compliance, implementation, and augmentation schedules in Part III of the permit,

(5) SWMP Element strengths and weaknesses,

(6) Assessment of controls, and

(7) Discussion of Element revisions that are summarized elsewhere in the ANNUAL REPORT.

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5. The ANNUAL REPORT shall contain a Monitoring Section which discusses the progress and results of the monitoring programs required under Part V of the permit.

a. The Monitoring Section of the ANNUAL REPORT shall include a summary of the monitoring program developed and implemented under Part V.B.1. of the permit. The details to be discussed include:

(1) Brief summary statement of the objective of each monitoring project included under the program,

(2) Summary chart of the data from the monitoring completed,

(3) Discussion of any results or conclusions derived from the monitoring completed,

(4) Status of monitoring with respect to the compliance schedule in Part V.B.1. of the permit, and

(5) Discussion of monitoring program revisions that are summarized elsewhere in the ANNUAL REPORT.

b. The Monitoring Section of the ANNUAL REPORT shall include the following information as required in Part V.A. of the permit:

(1) The ANNUAL REPORT for Year One of the permit shall contain an inventory of all known major outfalls, with updates describing additionally identified major outfall in each sequent ANNUAL REPORT.

(2) The ANNUAL REPORT for Year Three of the permit shall include the investigation of the sources of the organic pollutants detected in the Part 2 application sampling data as required in Part V.A.2. of the permit.

(3) The ANNUAL REPORT for Year Four of the permit shall include estimates of seasonal pollutant loadings and event mean concentrations (EMC) for each major outfall required by Part V.A.1.

6. Provide a summary of SWMP and Monitoring Modifications made during the permit year.



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7. Provide a complete fiscal analysis for each permittee's program implementation, both for the past calendar year and the next. The analysis shall indicate budgets and funding sources.

8. FDOT shall report on the status of the FDOT statewide Storm Water Management Program elements as shown in Table V.C.8.a. on page 56 and shall indicate whether the resulting program modifications have been implemented at the District Office. In addition, FDOT shall also indicate the number of District employees included in the training courses described in Table V.C.8.b. on page 57.

9. The following information shall be included as Appendices within the ANNUAL REPORT for Year Five of the permit:

   a. Analytical data collected from the monitoring program.

   b. Results of illicit connections screening or dry weather screening.

   c. Any other data specifically requested by EPA to substantiate statements and conclusions reached in the ANNUAL REPORTS.

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Table V.C.1. - EXAMPLE Summary Table for Storm Water Management Program Element Status/Compliance (EXAMPLE ONLY)

| PROGRAM ELEMENT | PERMITTEE | [illegible] | ACTIVITY SCHEDULE | | | COMMENTS |
|---|---|---|---|---|---|---|
| Structural Controls | Permittee 1 | Major Channels Inspected | 15 Channels, once/6 mos. | YES | 15 Channels, once/6 mos | Copies of Inspection Report Forms - Available Upon Request |
| | | Major Channels Maintained | As needed | N/A | 7 Channels maintained | |
| | | Grate Inlets Inspected | 1500 Inlets, once/year | NO | 1000 Inlets | Ambitious projection. Reducing to 1000 next year due to resources. |
| | Permittee 2 | Detention Ponds Maintained | 1 Pond, once/month | YES | 1 Pond once/month | Sediment removed after spring rains. |
| | | Storm Drain Inlets Inspected | 35 Inlets, once/6 mos. | YES | 35 Inlets once/6 mos. | Copies of Inspection Report Forms - Available Upon Request |
| Monitoring | Permittee 1 | Municipal - Landfills | 2 Facilities, once/6 mos. | YES | 2 Facilities once/6 mos. | Copies of Monitoring Data - Available Upon Request |
| | | POTW | 3 Facilities, once/year | NO | 2 Facilities | Copies of Monitoring Data - Available Upon Request |
| | | Industrial - Hazardous | 5 Facilities, once/6 mos. | YES | 5 Facilities, once/6 mos. | Copies of Monitoring Data - Available Upon Request |
| | | Title III | 3 Facilities, once/6 mos. | YES | 3 Facilities, once/6 mos. | Copies of Monitoring Data - Available Upon Request |
| | | Others | 2 Facilities, once/year | YES | 2 Facilities | Copies of Monitoring Data - Available Upon Request |
| | | Dry Weather Screening | 100% system, once/5 yrs. | YES | 20% system | Copies of Screening Field Reports - Appendix B. |
| | | Floatable Assessment | 100 sections surveyed/yr. | YES | 140 sections surveyed | Copies of Field Survey - Available Upon Request |



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**Table V.C.8.a. - Table for FDOT Statewide Storm Water Management Program Element Status**

| | | DESCRIPTION OF [illegible] MODIFICATIONS | |
|---|---|---|---|
| Evaluate the feasibility of the FDOT drainage connection permit becoming an operating permit requiring long-term storm water facility management by the connecting entity. | YES / NO (If no, list anticipated completion date) | | YES / NO (If no, list reason and/or anticipated implementation date.) |
| Add information specific to storm water runoff protection and reduction of chemical usage to the FDOT's *Turf Management Manual* and *Chemical Weed and Grass Control Manual.* | YES / NO (If no, list anticipated completion date) | | YES / NO (If no, list reason and/or anticipated implementation date.) |
| Evaluate, on an ongoing basis, innovative structural and non-structural BMPs and new technologies as they evolve to determine their efficiency and cost effectiveness in the field. Comment on those which are found suitable & adopted for use in FDOT projects in the District. | ONGOING ACTIVITY | | Describe new BMPs adopted for use in the District. |
| Identify those of the non-storm water discharges listed under Part II.A.7.a. on page 9 of the permit, as well as any other non-storm water discharges, which will be allowed to be discharged into the FDOT MS4. | YES / NO (If no, list anticipated completion date) | | YES / NO (If no, list reason and/or anticipated implementation date.) |



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Table V.C.8.b. - Table for FDOT Statewide Storm Water Management Program Training Status

| FDOT STA[illegible] | TRAINING CO[illegible]UCTED [illegible] | DESCRIPTION OF TRAINING COURSE | NO. OF DISTRICT EMPLOYEES COMPLETING TRAINING COURSE? |
|---|---|---|---|
| Conduct training for FDOT maintenance and construction inspectors in the identification and detection of potential storm water related problems, signs of illegal dumping and illicit connections, proper containment methods, and reporting procedures. | YES / NO (If no, give anticipated schedule.) | | |
| Conduct training for the FDOT Emergency Coordinator assigned to each FDOT maintenance facility. Training shall not only educate the FDOT Emergency Coordinator in the proper containment of spills and spill reporting procedures, but shall include storm water remediation activities, storm water regulations, and storm water retrofitting necessary to eliminate polluted storm water discharges from FDOT maintenance facilities. | YES / NO (If no, give anticipated schedule.) | | |
| Conduct training for all FDOT personnel involved in the chemical weed and grass control program to ensure a safe and effective program. Incorporate into the training of these applicators an emphasis on storm water implications of the use of pesticides, herbicides, and fertilizers. | YES / NO (If no, give anticipated schedule.) | | |
| Conduct training for all FDOT personnel involved in hazardous waste handling. Incorporate into the training a segment on the identification, detection, and reporting of illicit storm water connections and potential storm water related problems such as visible water quality degradation and signs of illegal dumping. | YES / NO (If no, give anticipated schedule.) | | |



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D. Certification and Signature of Reports.

All reports required by the permit and other information requested by the Director shall be signed and certified in accordance with Parts VI.H. & VI.I. of the permit.

E. Reporting: Where and When to Submit.

1. As required by Part V.C., monitoring results obtained during the reporting period running from the 12 month term beginning on the effective date of this permit and annually thereafter shall be submitted on Discharge Monitoring Report Form(s) in the ANNUAL REPORT for Year Five of the permit. A separate Discharge Monitoring Report Form is required for each event monitored.

2. Signed copies of the ANNUAL REPORT required by Part V.C. and all other reports required herein, shall be submitted to:

U.S. EPA, Region IV
Water Management Division
Water Permits and Enforcement Branch (WPEB-7)
345 Courtland Street, N.E.
Atlanta, Georgia 30365

F. Additional Notification.

In addition, the permittees shall provide a copy of each ANNUAL REPORT to:

Florida Department of Environmental Protection
Bureau of Surface Water Management
Storm Water Section
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

G. Retention of Records.

The permittees shall retain the latest version of the Storm Water Management Program developed in accordance with Part II of this permit for at least three years after the expiration date of this permit. The permittees shall retain all records of all monitoring information, copies of all reports required by this permit, and records of all other data required by or used to demonstrate compliance with this permit, until at least three years after the expiration date of this permit. This period may be explicitly modified by alternative provisions of this permit or extended by request of the Director at any time.



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## PART VI. STANDARD PERMIT CONDITIONS

A. Duty to Comply. The permittees must comply with all conditions of this permit insofar as those conditions are applicable to each permittee, either individually or jointly. Any permit noncompliance by a permittee constitutes a violation of the CWA and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application for the non-complying permittee.

B. Penalties for Violations of Permit Conditions.

1. Criminal

a. Negligent Violations The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. Knowing Violations The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Knowing Endangerment The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 year, or both.

d. False Statement The CWA provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309(c)(4) of the Clean Water Act).

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2. Civil Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation.

3. Administrative Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

   a. Class I penalty Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

   b. Class II penalty Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

C. Duty to Reapply. If a permittee(s) wishes to continue an activity regulated by this permit after the permit expiration date, the permittee(s) must apply for and obtain a new permit. The application shall be submitted at least 180 days prior to expiration of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR 122.6 and any subsequent amendments.

D. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate. Each permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information. Each permittee shall furnish to the Director, within a time specified by the Director, any information which the Director may request to determine compliance with this permit. The permittees shall also furnish to the Director upon request copies of records required to be kept by this permit.

G. Other Information. When a permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in any report to the Director, he or she shall promptly submit such facts or information.

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H. Signatory Requirements. All Discharge Monitoring Reports, storm water management programs, reports, certifications or information either submitted to the Director or that this permit requires be maintained by the permittees, shall be signed by:

1. Either a principal executive officer or ranking elected official; or

2. A duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director, and

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new written authorization satisfying the requirements of this paragraph must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

I. Certification. Any person signing documents under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

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J. Penalties for Falsification of Reports. Section 309(c)(4) of the Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or by both.

K. Penalties for Falsification of Monitoring Systems. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the CWA.

L. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittees from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA or section 106 of CERCLA.

M. Property Rights. The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

N. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

O. Requiring an Individual Permit.

1. The Director may require any permittee authorized by this permit to obtain an individual NPDES permit. Any interested person may petition the Director to take action under this paragraph. The Director may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form (as necessary), a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit, coverage under this permit shall automatically terminate. Individual permit applications shall be submitted to the address of the appropriate Regional Office shown in Part V.E.2. of this permit. The Director may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application as required by the Director, then the applicability of this permit to the individual NPDES permittee is automatically terminated at the end of the day specified for application submittal.



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2. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application as specified by 40 CFR 122.26(d) with reasons supporting the request to the Director. Individual permit applications shall be submitted to the address of the appropriate Regional Office shown in Part V.E.2. of this permit. The request may be granted by the issuance of a individual permit if the reasons cited by the owner or operator are adequate to support the request.

P. State/Environmental Laws.

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

Q. Proper Operation and Maintenance. Each permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water management programs. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

R. Monitoring and Records.

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. The permittees shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

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3. Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The initials or name(s) of the individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The time(s) analyses were initiated;

e. The initials or name(s) of the individual(s) who performed the analyses;

f. References and written procedures, when available, for the analytical techniques or methods used; and

g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

S. Monitoring Methods. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

T. Inspection and Entry. The permittee shall allow the Director or an authorized representative of EPA, or the State, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

U. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

V. Additional Monitoring by the Permittee(s). If the permittees monitor more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased monitoring frequency shall also be indicated on the DMR.



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## PART VII. PERMIT MODIFICATION

A. Modification of the Permit: The permit may be reopened and modified during the life of the permit to:

1. Incorporate into the permit the finalized pollutant load reduction goals agreed to by the permittees and the National Estuary Program (NEP) in the National Estuary Program Comprehensive Conservation and Management Plan for the geographical area covered by this NPDES permit;

2. Address impacts on receiving water quality caused, or contributed to, by discharges from the MS4;

3. Address changes in State or Federal statutory or regulatory requirements;

4 Include the addition of a new permittee who is the owner or operator of a portion of the Municipal Separate Storm Sewer System; or

5. Include other modifications deemed necessary by the Director to comply with the goals and requirements of the Clean Water Act.

All modification to the permit will be made in accordance with 40 CFR 122.62, 122.63, and 124.5.

B. Termination of Coverage for a Single Permittee

Permit coverage may be terminated, in accordance with the provisions of 40 CFR 122.64 and 124.5, for a single permittee without terminating coverage for other permittees.

C. Modification of Storm Water Management Program(s)

Only those portions of the Storm Water Management Programs specifically required as permit conditions shall be subject to the modification requirements of 40 CFR 124.5. Replacement of an ineffective or infeasible BMP implementing a required component of the Storm Water Management Program with an alternate BMP expected to achieve the goals of the ineffective or infeasible BMP shall be considered minor modifications to the Storm Water Management Program and not modifications to the permit. (See also Part II.G.)



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D. Changes in Monitored Outfalls

This permit is issued on a system-wide basis in accordance with CWA §402(p)(3)(i) and authorizes discharges from all portions of the Municipal Separate Storm Sewer System. Since all outfalls are authorized, changes in monitoring outfalls, other than those with specific numeric effluent limitations, if any, shall be considered minor modifications to the monitoring program and not modifications to the permit. (See also Part V.B.1. and V.C.6.) Changes in monitoring outfalls with specific numeric effluent limitations shall be considered modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.62.



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## PART VIII. DEFINITIONS

All definitions contained in Section 502 of the CWA shall apply to this permit and are incorporated herein by reference. Unless otherwise specified in this permit, additional definitions of words or phrases used in this permit are as follows:

A. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

B. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility, which is not a designed or established operating mode for the facility.

C. "CWA" means Clean Water Act, also referred to as "the Act" (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq., as amended by the WQA of 1987, P.L. 100-4, the "Act."

D. "Director" means the EPA Regional Administrator or an authorized representative.

E. "Discharge" for the purpose of this permit, unless indicated otherwise, refers to discharges from the Municipal Separate Storm Sewer System (MS4).

F. "Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge at the time of sampling.

G. "Illicit connection" means any man-made conveyance connecting a non-storm water discharge directly to a municipal separate storm sewer system.

H. "Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and other discharges listed in Part II. A.7.a. of this permit.

I. "Industrial Land Use" means land utilized in connection with manufacturing, processing, or raw materials storage at facilities identified under 40 CFR 122.26(b)(14).

J. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.



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K. "Large Municipal Separate Storm Sewer System" means all municipal separate storm sewers that are either:

(i) located in an incorporated place (city) with a population of 250,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or

(ii) located in the counties with unincorporated urbanized populations of 250,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or

(iii) owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the large municipal separate storm sewer system.

L. "Medium Municipal Separate Storm Sewer System" means all municipal separate storm sewers that are either:

(i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or

(ii) located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or

(iii) owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the medium municipal separate storm sewer system.

M. "MEP" is an acronym for "Maximum Extent Practicable," the technology-based discharge standard for Municipal Separate Storm Sewer Systems established by CWA §402(p).

N. "MS4" is an acronym for "municipal separate storm sewer system" and is used to refer to either a Large or Medium Municipal Separate Storm Sewer System (e.g. "the Atlanta MS4").



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O. "Municipal Separate Storm Sewer" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, and storm drains):

(i) owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian Tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) designed or used for collecting or conveying storm water;

(iii) which is not a combined sewer; and

(iv) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

P. "Permittee" means each individual co-applicant for an NPDES permit who is only responsible for permit conditions relating to the discharge that they own or operate. (Also, See 40 CFR 122.2)

Q. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

R. "Severe property damage" means substantial physical damage to property, damage to the treatment facility which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

S. "State Storm Water Quality Standards", is defined at Section 403.0891 of the Florida Statutes, and State Water Policy, Chapter 62-40, Florida Administrative Code.

T. "Storm Sewer", unless otherwise indicated, refers to a municipal separate storm sewer.

U. "Storm Water" means storm water runoff, snow melt runoff, surface runoff and drainage.

V. "Storm Water Discharge Associated with Industrial Activity" is defined at 40 CFR 122.26(b)(14). (Also, See Fact Sheet for this Permit.)



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W. "Storm Water Management Program" refers to a comprehensive program to manage the quality of storm water discharged from the municipal separate storm sewer system. For the purposes of this permit, the Storm Water Management Program is considered a single document, but may actually consist of separate programs (e.g. "chapters") for each permittee.

X. "Surface Water Ambient Monitoring Program" refers to a comprehensive program implemented by the Florida Department of Environmental Protection, Bureau of Surface Water Management, which is designed to accomplish the following goals:

1. Identify and document the existing condition of the surface waters of the State,
2. Document potential problem areas,
3. Establish stream ecoregion reference sites for comparison purposes,
4. Collect biological data at ecoregion reference sites to establish preliminary biological integrity measurements techniques, and
5. Establish a Statewide ambient monitoring network which will eliminate duplication, share data, increase efficiency, and improve assessment and management capabilities.

To date, the monitoring strategies included within the State of Florida's Surface Water Ambient Monitoring Program have been based on:

- Ecoregion Subregionalization and the associated stream Community Bioassessment Protocols (CBA) developed for the nonpoint source program,
- Chemistry Trend Network to fulfill the need to evaluate the State's water quality over time,
- Chemistry Status Network with emphasis on water bodies with fair or poor water quality or areas which have not been recently sampled, and
- Lake Ecoregion and Community Bioassessment Projects.

Y. "SWMP" is an acronym for "Storm Water Management Program."

Z. "Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

AA. "Waters of the United States" is defined at 40 CFR 122.2.



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

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# FACT SHEET

for draft National Pollutant Discharge Elimination System (NPDES) Permit No. FLS000004 to discharge to waters of the United States.

Application No. FLS000004

Public Notice Date: September 1, 1994

Permit Writer: Jeannie McNeill

1. **PERMITTING AUTHORITY.** The National Pollutant Discharge Elimination System (NPDES) permitting authority is:

U.S. Environmental Protection Agency, Region IV
Water Permits and Enforcement Branch
345 Courtland Street, N.E.
Atlanta, Georgia 30365

2. **CO-APPLICANTS.** The Co-applicants are:

Sarasota County
Sarasota County Transportation Department
1301 Cattlemen Road
Sarasota, Florida 34232

City of North Port
Roads and Drainage Department
5650 North Port Boulevard
North Port, Florida 34287

City of Sarasota
Department of Public Works
1565 First Street
Sarasota, Florida 34230-1058

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**City of Venice**
**Department of Public Works**
**401 West Venice Avenue**
**Venice, Florida 34285**

**Town of Longboat Key***
**Department of Public Works**
**501 Bay Isles Road**
**Longboat Key, Florida 34228**

**Florida Department of Transportation (FDOT)**
**District One**
**Post Office Box 1249**
**Bartow, Florida 33830-1249**

* *Permit coverage includes the entire Town of Longboat Key which is located in both Sarasota and Manatee Counties.*

3. **DESCRIPTION OF THE MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4).** As authorized by Section 402(p) of the Act, this permit is being proposed on a system basis. This permit covers all areas within the political boundary of Sarasota County served by, or otherwise contributing to discharges from municipal separate storm sewers owned or operated by the co-applicant(s) listed above. This permit also covers the portion of the Town of Longboat Key located within Manatee County.

4. **DISCHARGES AUTHORIZED BY THIS PERMIT.** This permit authorizes all existing or new storm water point source discharges to waters of the United States from the portions of the MS4 owned or operated by the co-applicants. This permit does authorize the discharge of storm water commingled with flows contributed by process wastewater, non-process wastewater, or storm water associated with industrial activity provided such discharges are authorized under separate NPDES permits.

Section 402(p)(3)(B)(iii) of the CWA requires an effective prohibition on non-storm water discharges to a MS4. In addition, Section 402(p)(3)(A) places a different standard performance, compliance with treatment technology (BAT/BCT) and water quality requirements at CWA Section 301, on discharges of storm water associated with industrial activity. Therefore, process wastewater and industrial storm water discharges cannot be legally authorized by the MS4 permit. Such discharges require a separate NPDES permit. Only the municipal storm water will be authorized by today's permit. The municipal applicants, however, will be responsible for the quality of the combined discharge; therefore, they have a vested interest in locating uncontrolled (i.e. unpermitted) illicit and industrial storm water discharges.

5. **RECEIVING STREAM SEGMENTS AND DISCHARGE LOCATIONS.** The discharges from the MS4 are discharged into the following United States water bodies and tributaries thereto within Sarasota County, Florida:

| | | |
|---|---|---|
| Hudson Bayou | Little Salt Creek | Cow Pen Slough |
| Whitaker Bayou | Matheny Creek | Deer Prairie Slough |
| Alligator Creek | North Creek | Sarasota Bay |
| Ainger Creek | Phillippi Creek | Little Sarasota Bay |
| Catfish Creek | Shakett Creek | Lemon Bay |
| Clower Creek | South Creek | Sona Bay |
| Curry Creek | Woodmere Creek | Roberts Bay |
| Forked Creek | Braden River | Intracoastal Waterway |
| Godfrey Creek | Myakka River | |
| Hatchett Creek | Big Slough | |

The designated uses of the receiving streams include: potable water supplies; shellfish propagation or harvesting; propagation and maintenance of a healthy, well-balanced population of fish and wildlife; and recreation.

6. **EFFECTIVE DATE.** Compliance with permit conditions is required 90 days from the effective of the permit, except as specified in schedules for compliance contained in the permit.

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7. **PUBLIC NOTICE.** Upon publication of the public notice and this fact sheet, a public comment period shall begin and last for 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit, including the proposed storm water management program.

8. **EPA POINT OF CONTACT.** For additional information, contact:

Office of Public Affairs
Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30365

Attention: Ms. Lena Scott, Public Notice Coordinator
(404) 347-3004

9. **PERMIT CONDITIONS.**

a. **Storm Water Pollution Prevention and Management Program.**

The permittees are required to implement comprehensive pollution prevention and management programs. As required by Clean Water Act Section 402(p)(3)(B), the Storm Water Management Program (SWMP) must include controls necessary to reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) to the Maximum Extent Practicable (MEP). Controls implemented under the SWMP consist of a combination of best management practices, control techniques, system design and engineering methods, and such other provisions as the permittees, Administrator or the State determines appropriate. The various components of the SWMP, taken as a whole (rather than individually), are expected to be sufficient to meet this standard. The permittees may be required to update the SWMP periodically to ensure conformance with this statutory requirement of Clean Water Act Section 402(p)(3)(B). The two proposed SWMPs prepared by the permittees, the SWMP submitted by the permittees in the July 23, 1993, Part 2 Application and FDOT's *Statewide SWMP for Part 2 EPA NPDES-MS4 Permit* dated June 1993 will be incorporated into the permit by reference, and are also available for review and public comment. A brief summary of the proposed SWMP is contained in Table 1 on pages 8 through 20.

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**(l) Pollution Prevention Measures.**

One important objective within the SWMP is to reduce pollution at the source; therefore, the permit includes the following Pollution Prevention Measures:

(i) Permittees with jurisdiction over land use will be required to consider water quality impacts of new and significant redevelopment in their comprehensive master planning process. The goal for areas of new development is to limit increases in the discharge of pollutants in storm water as a result of development. The goal for areas undergoing redevelopment is reducing the discharge of pollutants to the MEP and shall not cause or contribute to violations of State water quality standards to the receiving stream.

(ii) Permittees will be required to ensure the implementation of a program to collect used motor vehicle fluids for recycle, reuse, or proper disposal. The program implemented must be readily available to all private residents and publicized and promoted on a regular basis.

(iii) The permittees will be required to ensure the implementation of a program to collect household hazardous waste materials (including paint, solvents, pesticides, herbicides, and other hazardous materials) for recycle, reuse, or proper disposal.

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b. **Monitoring.** Under the Monitoring Requirements in the permit, the permittees must:

(1) Provide estimates of the seasonal pollutant loading and event mean concentration of a representative storm for each major outfall within the MS4 for the constituents detected in the Part 2 application sampling data.

(2) Perform three different types of monitoring: (i) screening at municipal waste facilities and at industrial facilities with high risk runoff; (ii) dry weather screening to locate illicit connections and areas of improper disposal of non-storm water; (iii) monitoring in conjunction with the State of Florida's Surface Water Ambient Monitoring Program. The monitoring under this section shall be performed according to the agreements established between the permittees. It is the intent of EPA Region IV ("the Region") to use the monitoring information collected during the permit term to evaluate trends in reduction in pollutant loads discharged to waters of the U.S. The pollutant loading trends will also be used in evaluating the effectiveness of the permittees' Storm Water Management Programs. The Region is specifically requesting comment on the ability of the proposed monitoring program to detect trends in reduction of pollutant loadings and to evaluate the "success" of the Storm Water Management Program's effectiveness in reducing the discharge of pollutants to the MEP and ensuring that such discharges shall not cause or contribute to violations of State water quality standards to the receiving stream.

(i) The program to "screen" at municipal waste facilities and at industrial facilities with high risk runoff will serve to identify those facilities with poor quality storm water discharges. These identified high risk facilities may then be given priority when implementing control measures. Since this wet weather screening process is intended as a targeting and management tool for the permittee, flexibility in choosing the techniques to be used has been incorporated into the permit.

(ii) The dry weather screening program is a continuation of the efforts started under Part 1 of the permit application to locate and eliminate illicit connections to the MS4. This program is intended to support the permit requirement to effectively prohibit non-storm water discharges to the MS4. The permittees will implement an effective screening program which is best suited to their individual systems, based on the experience gained during the permit application process.

(iii) The monitoring to be performed in conjunction with the State of Florida's Surface Water Ambient Monitoring Program shall be the result of a cooperative effort between the permittees and the Bureau of Surface Water Management, Florida Department of Environmental Protection. The monitoring program established may extend beyond the present scope of the State of Florida's Surface Water Ambient Monitoring Program where necessary to address local areas of concern. The number of monitoring stations as well as the type of sampling performed shall be established to achieve the following: (a) assist in determining the impact of storm water discharges on receiving waters located in the geographical area covered by the permit; (b) assist in determining the effectiveness of the storm water management programs being implemented under the permit and assist in identifying and prioritizing portions of the MS4 requiring additional controls; and (c) help identify local sources and impacts of specific pollutants considered a problem in the geographic area covered by the permit. It is the intent of EPA to use the monitoring information collected to evaluate any trends in the reduction in pollutant loads discharged to waters of the U.S during the term of the permit. The pollutant loading trends will be used to evaluate the effectiveness of the permittees' Storm Water Management Program to reduce the discharge of pollutants to the MEP and shall not cause or contribute to violations of State water quality standards to the receiving stream.

e. **Annual Report.**

Permittees are required to contribute to the preparation of a system-wide ANNUAL REPORT which shall include: the implementation status of the storm water management programs; proposed changes to the storm water management programs; revisions, if necessary, to the assessments of controls and the fiscal analysis reported in the permit application; a summary of the data, including monitoring data, that is accumulated throughout the reporting year; annual expenditures and the budget for the year following each ANNUAL REPORT; a summary describing the number and nature of enforcement actions and inspections; a summary describing public education programs; and the identification of water quality improvements or degradation. Florida Department of Transportation (FDOT) shall include in the ANNUAL REPORT the status of the FDOT Statewide Storm Water Management Program elements and shall indicate whether the resulting program modifications have been implemented at the District Office. The ANNUAL REPORT must be submitted by no later than six months following the period covered by the report. The ANNUAL REPORT shall cover the 12 month period beginning on the effective date of this permit and annually thereafter. Copies of the ANNUAL REPORT will be available to the public.

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**NOTE:** Appendix A contains excerpts from the *Storm Water Management Program* submitted by the permittees in the July 23, 1993, Part 2 Application.

Appendix B contains excerpts from FDOT's *Statewide Storm Water Management Program for Part 2 EPA NPDES-MS4 Permit Application*, dated June 1993.

| PRO | | | |
|---|---|---|---|
| 1. *Operation and Maintenance of Structural Controls* | Sarasota County<br>City of Sarasota<br>City of Venice<br>North Port WCD<br>FDOT | Perform inspection and maintenance of structural controls, maintain an internal log documenting activities, and perform annual assessment of effectiveness of inspection & maintenance schedule. Provide a summary of the assessment in each ANNUAL REPORT and include any changes deemed necessary to the inspection & maintenance schedule. | Pages 4A-2 to 4A-8 of Appendix A<br><br>Pages 4-6 to 4-9 of Appendix B |
| | ALL | Develop and implement a revolving inspection program for privately-owned and maintained storm water treatment systems which discharge into the MS4. | Page 4A-8 of Appendix A<br><br>Permittees shall submit a summary of the developed program to EPA for incorporation into the permit. |
| | ALL except for FDOT | Complete Florida Water & Pollution Control Operators Association (FW&PCOA) course or equivalent. | Pages 4A-8 and 4A-9 of Appendix A |

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| PROG | | | |
|---|---|---|---|
| 2. *Control of Discharges from Areas of New Development and Significant Redevelopment* | ALL except for North Port WCD and FDOT | Adopt as local ordinances storm water quality treatment criteria similar to the State of Florida Storm Water Treatment Regulations (F.A.C. 40D-4, 40D-40, 62-25). | Page 4A-21 of Appendix A |
| | FDOT | Employ new FDOT Drainage Connection Permit requirements which include a "certification of water quality" to be provided by the connecting entity. | Pages 3-21 and 3-22 of Appendix B |
| | ALL except for FDOT | Continue on the current schedule to perform master basin studies on the major watersheds identified in Table 1 on page 4A-34 of Appendix A. Develop a course of action for each as they are completed and include a brief summary in the ANNUAL REPORT. | Pages 4A-33 to 4A-38 of Appendix A |
| | ALL except for North Port WCD and FDOT | Evaluate land development practices to reduce the amount of impervious surfaces in future development.<br><br>Implement appropriate land development practices & incentives for the reduction of impervious surfaces. | Page 4A-50 of Appendix A<br><br>Permittees shall submit a summary of revised development practices and incentives to EPA for incorporation into the permit. |

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| PRO | | | |
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| 3. *Operation and Maintenance of Public Streets, Roads, and Highways* | ALL except for North Port WCD | Implement Litter Control Program(s) for highways and streets within jurisdictional areas. | Page 4A-30 of Appendix A<br><br>Pages 4-6 to 4-9 of Appendix B |
| | ALL except for City of North Port & North Port WCD | Implement Street Sweeping Program(s) within jurisdictional areas and properly dispose of collected material. | Pages 4A-24 to 4A-29 of Appendix A<br><br>Pages 4-6 to 4-9 of Appendix B |
| | ALL | Perform scheduled maintenance on catch basins, grates, and other storm water structures and roadside ditches and properly dispose of accumulated sediments.<br><br>Maintain an internal log documenting maintenance & inspection activities. | Pages 4A-30 to 4A-31 of Appendix A<br><br>Pages 4-6 to 4-9 of Appendix B |
| | ALL except for North Port WCD | Develop and implement practices to minimize pollutants from road repair and from all municipal equipment & maintenance yards. | Permittees shall submit a summary of the practices developed to EPA for incorporation into the permit. |
| | FDOT | Coordinate the "Adopt A Highway" program for local organizations to be identified with specific highway cleanup and beautification projects. | Page 9-1 of Appendix B |
| | | Conduct annual routine inspections of each FDOT maintenance facility to ensure that BMPs are operational. The FDOT NPDES Coordinator or his/her representative shall perform this activity. | Page 3-42 of Appendix B |

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| PRO | | | |
|---|---|---|---|
| 4. *Ensuring Flood Control Projects Consider Water Quality Impacts* | ALL except for FDOT | Develop a priority list and construction schedule of the retrofit projects recommended by the master basin studies completed to date. Begin retrofit priority projects as per the construction schedule. | Pages 4A-33 to 4A-38 of Appendix A |
| | FDOT | Present a retrofitting program to the local Metropolitan Planning Organizations (MPO) for consideration which focuses on water quality improvements. Submit within the ANNUAL REPORT the list of projects approved by the MPO and the associated construction schedule. Begin retrofit projects as per the construction schedule. | Pages 3-45 & 3-46 of Appendix B |
| 5. *Identification, Monitoring, and Control of Discharges from Municipal Waste TSD Facilities* | Sarasota County<br>City of Sarasota<br>City of North Port | Develop and implement an inspection and monitoring program to reduce pollutants in storm water discharges from municipally-operated solid waste transfer stations, maintenance and storage yards for waste transportation fleets, POTWs, and sludge application sites not covered by NPDES storm water permits. | Permittees shall submit a summary of the program developed to EPA for incorporation into the permit. |

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| PRO | | | |
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| 6. *Control of Pollutants Related to Application of Pesticides, Herbicides, and Fertilizers* | ALL | Implement public education program(s) to reduce use of pesticides, herbicides and fertilizers. | Page 4A-49 of Appendix A and Pages 4-3 to 4-5 of Appendix B<br><br>Permittees shall submit a summary of the public education programs to EPA for incorporation into the permit. |
| | ALL except for FDOT | Evaluate and implement improved training requirements & certification procedures for employees who handle pesticides, herbicides and fertilizers. | Page 4A-49 of Appendix A<br><br>Permittees shall submit a summary of the improved training & certification program developed to EPA for incorporation into the permit. |
| | ALL except for FDOT | Develop a program with procedures to minimize the use of pesticides, herbicides, and fertilizers and to properly storm and mix these products. The program developed should also consider including components such as adopting landscape ordinances which encourage xeriscaping and the use of native Florida plants. | Page 4A-49 of Appendix A<br><br>Permittees shall submit a summary of the developed procedures to EPA for incorporation into the permit. |
| | ALL | Employ program procedures to minimize the use of pesticides, herbicides, and fertilizers and to properly store and mix these products. Require evidence of proper certification and licensing for all applicators contracted to apply pesticides, herbicides, and fertilizers on municipal and FDOT property. | Page 4A-49 of Appendix A and Pages 4-3 to 4-5 of Appendix B |

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| PRO | | | |
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| **7.** | ***Illicit Discharges and Improper Disposal*** | | |
| ***a.)*** ***Inspections ordinances and enforcement measures*** | ALL except for North Port WCD and FDOT | Identify the non-storm water discharges which shall be allowed into the MS4. All non-storm water discharges, not specifically identified as allowable, shall be prohibited. | Permittees shall submit a list to EPA of allowable non-storm water discharges to the MS4 for incorporation into the permit. |
| | ALL except for North Port WCD and FDOT | Develop and implement an inspection program to enforce ordinances which prohibit illicit connections and illegal dumping into the MS4. | Pages 4B-2 to 4B-5 of Appendix A<br><br>Permittees shall submit a summary of the developed inspection program to EPA for incorporation into the permit. |
| | FDOT | Develop and implement a program to inspect drainage connection after project completion to ensure continued compliance with drainage connection permit requirements and to ensure that no illicit or non-permitted connections have been made. In cases where another regulatory agency requires a periodic certification of compliance, the program developed may allow FDOT to accept this certification of compliance in lieu of further inspections by FDOT. | Page 3-17 of Appendix B<br><br>Permittee shall submit a summary of the developed inspection program to EPA for incorporation into the permit. |
| ***b.)*** ***Field Screening*** | ALL | Conduct field screening of the MS4 for illicit discharges and improper disposal; collect inventory information on outfalls and on portions of MS4 not mapped; update database system on an ongoing basis; and maintain a log documenting the results of all field screening performed. | Pages 4B-7 to 4B-12 of Appendix A<br><br>Pages 3-9 & 3-10 and 3-18 & 3-19 of Appendix B |

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| 7. | ***Illicit Discharges and Improper Disposal*** (continued) | | |
| c.) ***Investigation of Suspected Illicits and/or Improper Disposal*** | **ALL except for FDOT** | **Develop and implement standard investigative procedures to identify and terminate sources of illicit connections or discharges.** | Pages 4B-14 to 4B-17 of Appendix A<br><br>**Permittees shall submit a summary of the developed investigative procedures to EPA for incorporation into the permit.** |
| | **FDOT** | **Develop and implement standard investigative procedures to identify and report sources of illicit connections or discharges. The procedures developed and implemented shall include notification to FDEP and EPA of illicit connections.** | Pages 3-17 to 3-19 of Appendix B<br><br>**Permittee shall submit a summary of the developed investigative procedures to EPA for incorporation into the permit.** |
| d.) ***Spill Prevention and Response*** | **ALL** | **Implement Sarasota County's *Hazardous Materials Emergency Plan*, FDOT's *Emergency Operations Procedures*, or a comparable plan and procedures to effectively mitigate potential pollutant discharges to surface waters.** | Pages 4B-19 & 4B-20 of Appendix A and Page 3-43 of Appendix B<br><br>**Permittees shall submit a copy of the referenced documents to EPA for incorporation into the permit.** |

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| 7. | ***Illicit Discharges and Improper Disposal*** (continued) | | | |
| *e.)* | ***Public Notification*** | **ALL** | Develop and implement a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges and improper disposal of materials into the MS4. Maintain a citizen complaint log documenting all reports of illicit discharges and what actions were taken to investigate and resolve the problem. | **Permittees shall submit a summary of the developed program to EPA for incorporation into the permit.** |
| | | **FDOT** | Establish a direct dial local telephone number at the District Office to be used specifically for the reporting of illicit connections, accidental spills, illegal dumping, or other water quality violations and action as needed. | **Page 3-42 of Appendix B** |
| *f.)* | ***Oils, Toxics, and Household Hazardous Waste Control*** | **ALL except for FDOT** | Support and promote on a regular basis the six (6) oil recycling site locations within Sarasota County and the two (2) permanent collection centers for household hazardous waste materials; continue Amnesty Days program; and document the total annual amount of household hazardous waste materials collected. | **Pages 4B-25 to 4B-27 Appendix A** |
| | | | Actively promote and support a voluntary stenciling program for all storm sewer inlets which directly or indirectly discharge into surface waters. | **Pages 4B-22 & 4B-23 Appendix A** |
| | | **FDOT** | With each FDOT Drainage Connection Permit, include information on used oil recycling, proper hazardous waste disposal, storm water regulations, and spill reporting. | **Page 9-1 of Appendix B** |

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|---|---|---|---|---|
| 7. | *Illicit Discharges and Improper Disposal* (continued) | | | |
| g.) | *Limitation of Sanitary Sewer Seepage* | ALL except for North Port WCD and FDOT | Develop and implement program to limit the infiltration of sanitary seepage into the MS4, in areas where wastewater infiltration is suspected. | Pages 4B-30 & 4B-31 of Appendix A |
| | | ALL | Advise appropriate utility owner of violation if constituents common to wastewater contamination are discovered in the MS4 during dry weather field screening. | Page 3-44 of Appendix B |

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|---|---|---|---|
| 8. | ***Industrial and High Risk Runoff*** | | |
| a.) | ***Identification of priorities and procedures for inspections*** | **ALL** | Develop an inventory of all existing high risk facilities discharging into the MS4. This inventory shall identify the outfall and surface waterbody into which each high risk facility drains. Prioritize list. | Pages 4C-2 to 4C-7 of Appendix A and Pages 3-9, 3-10, and 3-13 to 3-16 of Appendix B |
| | | **ALL except for FDOT** | Develop procedures for inspecting high risk facilities and establish an inspection schedule. | Pages 4C-2 to 4C-7 of Appendix A |
| | | **FDOT** | Develop procedures for the inspection of high risk facilities which hold FDOT drainage connection permits to ensure compliance with permit requirements. In cases where another regulatory agency requires a periodic certification of compliance, the program developed may allow FDOT to accept this certification of compliance in lieu of further inspections by FDOT. | Pages 3-27 and 3-28 of Appendix B |
| | | **ALL** | Begin inspections of identified high risk facilities | Permittees shall submit a summary of the identified facilities and inspection schedule to EPA for incorporation into the permit. |
| | | **ALL** | Maintain a list of all industrial storm water sources discharging to MS4 & update in ANNUAL REPORTS. | Pages 4C-2 to 4C-7 of Appendix A and Pages 3-9 and 3-10 of Appendix B |

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|---|---|---|---|---|
| 8. | ***Industrial and High Risk Runoff*** **(continued)** | | | |
| **b.)** | ***Monitoring for High Risk Industries*** | **ALL** | **Develop and implement a monitoring (or self monitoring) program for high risk industrial facilities.** | **Pages 4C-9 and 4C-10 Appendix A and Pages 3-27 and 3-28 of Appendix B**<br><br>**Permittees shall submit a summary of the developed program to EPA for incorporation into the permit.** |
| 9. | ***Construction Site Runoff*** | | | |
| **a.)** | ***Site Planning & Structural and Non-structural Controls*** | **ALL except for North Port WCD and FDOT** | **Review erosion and sediment control requirements and modify as necessary to correlate with SWFWMD's requirements and EPA's NPDES Construction Activity General Permit.** | **Page 4D-5 of Appendix A** |
| | | | **In land development regulations, include guidelines and recommendations for reducing the amount of sediment leaving construction sites.** | **Page 4D-5 of Appendix A** |
| | | | **Track construction projects which are required to install erosion and sediment controls, documenting the installation, maintenance, and effectiveness of the controls. Integrate these records with the education program for training the site contractors.** | **Page 4D-11 of Appendix A** |
| | | **FDOT** | **Employ new FDOT Drainage Connection Permit requirements which direct connecting entities subject to the NPDES storm water regulations to submit a copy of their NPDES Storm Water Pollution Prevention Plan to FDOT.** | **Page 3-35 of Appendix B** |

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|---|---|---|---|
| 9. *Construction Site Runoff* (continued) | | | |
| *b.) Inspection and Enforcement* | **ALL except for North Port WCD and FDOT** | Review existing inspection policies and code enforcement programs to first identify all agencies conducting site inspections and then to determine which agency is responsible for issuing enforcement actions for which code violations. | Page 4D-15 of Appendix A |
| | | Train inspectors (regardless of specialty) in erosion control techniques who are likely to be on-site during earth moving activities. | Page 4D-15 of Appendix A |
| | | Implement the use of an erosion & sediment control checklist for all inspectors. Include verification that required construction sites have NPDES permit coverage and a Pollution Prevention Plan on site. | Page 4D-15 of Appendix A<br>**Permittees shall submit a copy of the developed checklist to EPA for incorporation into the permit.** |
| | **ALL except for North Port WCD** | Develop and implement a program to inspect construction projects for compliance with local storm water ordinances and/or permits. | Pages 4D-14 and 4D-15 of Appendix A and Pages 3-39 and 3-40 of Appendix B |

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| PROGRAM | | | |
|---|---|---|---|
| 9. *Construction Site Runoff* (continued) | | | |
| c.) *Site Operator Training* | ALL except for North Port WCD and FDOT | Expand the topics covered in the annual Sarasota County Natural Sciences Division workshop for earth moving contractors. Topics to include are measures to reduce pollutants from sites, awareness of the NPDES program requirements for construction activities, and solutions to erosion and sediment problems commonly found by the inspectors during construction. | Pages 4D-17 and 4D-18 Appendix A |
| | | Evaluate the feasibility of an erosion & sediment control competency certification program for construction site operators (contractors and developers), plan reviewers, and inspectors that work on sites that discharge to the MS4. | Pages 4D-17 and 4D-18 Appendix A |
| | | Develop and implement a procedure to notify building permit applicants in developments which because of their size are subject to the NPDES storm water regulations of their potential responsibilities under the NPDES permitting program for construction site runoff. | Permittees shall submit a copy of the developed procedures to EPA for incorporation into the permit. |
| | | Conduct presentations to local professional organizations which are associated with the construction industry to discuss proper construction site management for water quality. | Page 4D-18 of Appendix A |

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## 10. BASIS FOR PERMIT CONDITIONS

The conditions established by this permit are based on Section 402(p)(3)(B) of the Clean Water Act (33 U.S.C. 1251 *et seq.*, as modified by the Water Quality Act of 1987, P.L. 100-4) which requires the Agency to: a.) effectively prohibit the discharge of non-storm water to the separate storm sewer system and b.) require the permittees to reduce pollutants in discharges from the MS4 to the MEP. As authorized by 40 CFR 122.44(k), the permit will be utilizing Best Management Practices, in the form of required Pollution Prevention Measures and a comprehensive Storm Water Management Program (SWMP), as the mechanism to implement the statutory requirements. While Section 402(p)(3)(B)(iii) of the CWA clearly includes structural controls as a component of MEP, the Region encourages municipalities to first explore opportunities for pollution prevention measures, reserving more costly structural controls for higher-priority watersheds or where source controls are unfeasible or ineffective. In addition, Section 403.0891 of the Florida Statutes, and State Water Policy, Chapter 62-40, Florida Administrative Code, mandates local governments to implement comprehensive storm water management programs designed to minimize adverse effects of storm water on land and water resources. Programs are to be implemented in a manner that will improve and restore the quality of waters that do not meet State water quality standards and to maintain the water quality of those waters which meet or exceed state water quality standards.

In Section 2(b) of the Pollution Prevention Act of 1990, Congress established a national policy that "[P]ollution should be prevented or reduced at the source wherever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should employed only as a last resort and should be conducted in an environmentally safe manner." In the Pollution Prevention Act, Congress specifically tied source reduction efforts to preventing pollution on a multi-media (water, air, and land) basis.

The storm water management program requirements of this permit will be implemented through the approved SWMP, as modified by applicable compliance schedules contained in the permit. Permit compliance with regard to the storm water management program requirement will be judged by the permittees' implementation of, and compliance with, the approved SWMP which is incorporated by reference. The permittees are required to conduct annual evaluations on the effectiveness of the SWMP, and institute or propose modifications necessary to meet the overall permit standard of reducing the discharge of pollutants to the MEP. The Director, however, may also require modifications to the SWMP to address impacts on receiving water quality caused, or contributed to, by discharges from the MS4; include more stringent requirements necessary to comply with new State or Federal statutory or regulatory requirements; or include such other conditions deemed necessary by the Director to comply with the goals and requirements of the Clean Water Act.

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Implementation of the Pollution Prevention Measures and the SWMP are expected to result in protection of water quality standards. The permit does, however, contain a reopener clause should new information indicate the discharges from the MS4 is causing, or significantly contributing to, a violation of the State's water quality standards.

a. **Storm Water Management Program. (SWMP)**

As part of the application process at 40 CFR 122.26(d)(2)(iv), each applicant was required to propose a comprehensive storm water management program, which is being incorporated into the permit by reference. The SWMP addresses runoff from residential and commercial areas, industrial sites, construction sites, and includes a program to eliminate illicit discharges and improper disposal of wastes into the separate storm sewer system.

The SWMP must contain program elements for each of the items in Table 11.1. 40 CFR 122.26(d)(2)(iv) authorizes differing content of the program elements for each permittee, and different controls for different areas of the MS4 on a watershed, jurisdiction, or individual outfall basis. Due to differences in climate, age, topography, historical development patterns, legal authority, sensitivity of receiving waters, and many other factors, Region IV believes some flexibility in prioritizing the scope and timing of individual program elements must be afforded the permittees. The standard of reducing the pollutants to the MEP, is therefore applied to the SWMP as a whole, rather than to each individual program element. Region IV believes this approach is in accordance with CWA Section 402(p)(3)(B)(iii) and the intent of Congress.

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**Table 11.1 - Storm Water Management Program Elements**

| REQUIRED PROGRAM ELEMENT | REGULATORY REFERENCES |
|---|---|
| Operation and maintenance of structural controls. | 40 CFR 122.26(d)(2)(iv)(A)(1) |
| Control of discharges from areas of new development and significant redevelopment. | 40 CFR 122.26(d)(2)(iv)(A)(2) |
| Operation and maintenance of public streets, roads, and highways. | 40 CFR 122.26(d)(2)(iv)(A)(3) |
| Ensuring flood control projects consider water quality impacts. | 40 CFR 122.26(d)(2)(iv)(A)(4) |
| Identification, monitoring, and control of discharges from municipal waste treatment, storage, or disposal facilities. | 40 CFR 122.26(d)(2)(iv)(A)(5) |
| Control of pollutants related to application of pesticides, herbicides, and fertilizers. | 40 CFR 122.26(d)(2)(iv)(A)(6) |
| Implementation of an inspection program to enforce ordinances which prohibit illicit connections and illegal dumping into the MS4. | 40 CFR 122.26(d)(2)(iv)(B)(1) |
| Field screening the MS4 for illicit connections and illegal dumping. | 40 CFR 122.26(d)(2)(iv)(B)(2) |
| Implementation of standard investigative procedures to identify and terminate sources of illicit connections or discharges. | 40 CFR 122.26(d)(2)(iv)(B)(3) |
| Prevention, containment, and response to spills that may discharge into the MS4. | 40 CFR 122.26(d)(2)(iv)(B)(4) |
| Limit the infiltration of sanitary seepage into the MS4. | 40 CFR 122.26(d)(2)(iv)(B)(7) |
| Identification, monitoring, and control of discharges from municipal landfills; hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee determines are contributing a substantial pollutant loading to the MS4. | 40 CFR 122.26(d)(2)(iv)(C)(1) |
| Control of pollutants in construction site runoff | 40 CFR 122.26(d)(2)(iv)(D)(1) |
| Public education | 40 CFR 122.26(d)(2)(iv)(A)(6)<br>40 CFR 122.26(d)(2)(iv)(B)(5)<br>40 CFR 122.26(d)(2)(iv)(B)(6) |

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*Structural Controls:* Each permittee must operate and maintain any storm water structural controls for which they are the owner or operator, in a manner so as to reduce the discharge of pollutants (including floatables).

*Areas of New Development and Significant Redevelopment:* Each permittee must utilize a comprehensive master planning process to develop, implement, and enforce controls to minimize the discharge of pollutants from areas of new development and significant re-development after construction is completed.

*Roadways:* Each permittee must operate and maintain public streets, roads, and highways under its jurisdiction in a manner so as to minimize discharge of pollutants.

*Flood Control Projects:* Each permittee must ensure any flood management project it undertakes assesses impacts on water quality of receiving waters. Each permittee must also evaluate the feasibility of retrofitting existing structural flood control devices to provide additional pollutant removal from storm water.

*Identification, monitoring, and control of discharges from municipal waste treatment, storage, or disposal facilities:* Each permittee identified in the permit must implement a program to reduce pollutants in storm water discharges from municipally-operated solid waste transfer stations, maintenance and storage yards for waste transportation fleets, POTWs and sludge application sites not covered by NPDES storm water permits. The initial phase of the program shall contain procedures to evaluate, inspect, and monitor these sites. Based upon the evaluations, inspections, and monitoring performed, priorities and procedures for implementing control measures for pollutant reduction at these sites shall be developed. Monitoring methodology used during the initial investigative period may be relaxed from standard protocol and may be based on experience gained during actual field activities. The goal of the investigative portion is to actively identify areas within these sites with poorer quality discharges during storm events, so that those areas will be given priority when implementing control measures.

*Pesticide, Herbicide, and Fertilizer Application:* Each permittee must implement controls to reduce the discharge of pollutants related to application of pesticides, herbicides, and fertilizers applied by the permittee's employees or contractors to public right of ways, parks, and other municipal facilities. Permittees with jurisdiction over lands not directly owned by that entity (e.g. incorporated city) must implement controls to reduce discharge of pollutants related to application and distribution of pesticides, herbicides, and fertilizers by commercial and wholesale distributors and applicators. The public education element of the SWMP must include a component aimed at private use of fertilizers, herbicides and pesticides. The Region recognizes some State statues or regulations may limit a municipality's ability to directly control commercial applicators by means other than education or ensuring the applicator is in fact licensed by the State.

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*Illicit Discharges and Improper Disposal*: Each permittee must implement an ongoing program to detect and remove illicit discharges and improper disposal into the storm sewer. Each permittee must effectively prohibit non-storm water discharges to the MS4, other than those authorized under a separate NPDES permit.

Unless identified by either the permittee, the Director, or the State as significant sources of pollutants to waters of the United States, the following non-storm water discharges (listed in 40 CFR 122.26(d)(2)(iv)(B)(1)) need not be prohibited from entering the MS4: water line flushing; landscape irrigation; diverted stream flows; rising ground waters; uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers; uncontaminated pumped ground water; discharges from potable water sources; foundation drains; air conditioning condensate; irrigation water; springs; water from crawl space pumps; footing drains; lawn watering; non-commercial car washing; flows from riparian habitats and wetlands; dechlorinated swimming pool discharges; street wash waters; and discharges or flows from emergency fire fighting activities. As necessary, the permittees may incorporate appropriate control measures in the SWMP to ensure these discharges are not significant sources of pollutants to waters of the United States.

Each permittee must enforce ordinances which prohibit illicit connections and illegal dumping into the MS4. A random inspection program to detect and eliminate illicit connections shall be implemented. The table below indicates those permittees who must amend their ordinances to include the correct citation for the definition of "industrial activity," 40 CFR 122.26(b)(14) rather than 40 CFR 122.26(a)(14). Under the Part 2 application requirements, the permittees had to demonstrate that they possessed the legal authority to control the contribution of pollutants to the MS4 by storm water discharges associated with "industrial activity" and the quality of storm water discharged from sites of "industrial activity." In developing and adopting ordinances which satisfied this required legal authority, the permittees identified below inadvertently included an incorrect regulatory citation for the "industrial activity" definition.

| PERMITTEE | ORDINANCE |
|---|---|
| City of Sarasota | 93-3699 |
| City of North Port | 93-15, Section 180-21 |
| City of Venice | 93-14, Section 9-74 |

Each permittee shall conduct dry weather field screening of the MS4 for illicit discharges and improper disposal. The dry weather screening program is a continuation of the efforts started under Part 1 of the permit application to locate and eliminate illicit connections to the MS4. This program is intended to support the permit requirement to effectively prohibit non-storm water discharges to the MS4. The permittees will implement an effective screening program which is best suited to their individual systems, based on the experience gained during the permit application process.

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*Illicit Discharges and Improper Disposal*: (continued)

Each permittee must implement a program to prevent, contain, and respond to spills that may discharge into the MS4. The spill response program may include a combination of spill response actions by the permittee (and/or another public or private entity), and legal requirements for private entities within the permittee's municipal jurisdiction.

Each permittee must prevent (or require the operator of the sanitary sewer to eliminate) unpermitted discharges of dry and wet weather overflows from sanitary sewers into the MS4. Each permittee must limit the infiltration of seepage from sanitary sewers into the MS4.

Each permittee must prohibit the discharge or disposal of used motor vehicle fluids, household hazardous wastes, grass clippings, leaves, and animal wastes into the MS4.

Each permittee must require the elimination of illicit connections as expeditiously as possible and the immediate cessation of improper disposal practices upon identification of responsible parties. Where an expeditious elimination an illicit connection or the submittal of an NPDES application to EPA is not possible, the responsible party submit for approval a written compliance schedule for the removal of the discharge. In the interim, the permittee must require the operator of the illicit connection to take all reasonable and prudent measures to minimize the discharge of pollutants to the MS4.

*Industrial & High Risk Runoff*: Each permittee must implement a program to identify, monitor, and control pollutants in storm water discharges to the MS4 from municipal landfills; hazardous waste treatment, storage, disposal and recovery facilities and facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee determines are contributing a substantial pollutant loading to the MS4. The program must include: priorities and procedures for inspections and establishing and implementing control measures for such discharges; and a monitoring program for facilities identified under this section, including the collection of quantitative data on the discharges from those facilities. Data collected by the industrial facility to satisfy the monitoring requirements of an NPDES or State discharge permit may be used to satisfy this requirement. Permittees may also require the industrial facility to conduct self-monitoring to satisfy this requirement. The monitoring program shall include the collection of quantitative data on the following constituents:

- any pollutants limited in an existing NPDES permit for an identified facility;
- oil and grease;
- chemical oxygen demand (COD);
- pH;
- biochemical oxygen demand, five-day ($BOD_5$);
- total suspended solids (TSS);
- total phosphorous;

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- total Kjeldahl nitrogen (TKN);
- nitrate plus nitrite nitrogen; and
- any information on discharges required under 40 CFR 122.21(g)(7)(iii) and (iv).

40 CFR 122.21(g)(7)(iii) and (iv) require that permittees must indicate whether they know or have reason to believe that any of the pollutants in Tables II, III, or IV of Appendix D (toxic pollutants, total phenols, and certain conventional and nonconventional pollutants) are being discharged from the outfalls at these sites.

The permittees must provide a listing in each ANNUAL REPORT which contains any additionally identified industrial facilities which discharge storm water into the MS4. The industrial storm water discharges that must be included in this inventory fall into 11 classes of industrial activities as defined in the November 1990 regulations under 40 CFR 122.26(b)(14). These 11 categories are as follows:

(i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR subchapter N (except facilities with toxic pollutant effluent standards which are exempted under the following category (xi) below;

(ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323), 33, 3441, and 373;

(iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active and inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under 40 CFR 434.11(l) because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations which have been released from applicable State or Federal reclamation requirements after December 17, 1990, and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; (inactive mining operations are mining sites that are not being actively mined, but which have an identifiable owner/operator; inactive mining sites do not include sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials, nor sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim);

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(iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;

(v) Landfills, land application sites, and open dumps that receive of have received any industrial wastes (wastes that is received from any of the facilities described under this subsection) including these that are subject to regulation under Subtitle D of RCRA;

(vi) Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

(vii) Steam electric power generating facilities, including coal handling sites;

(viii) Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45, and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under paragraphs (i)-(vii) or (ix)-(xi) of this subsections are associated with industrial activity;

(ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with Section 405 of the CWA.

(x) Construction activity including clearing, grading and excavation activities except: operations that results in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale;

(xi) Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included with categories (ii)-(x)).

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*Construction Site Runoff:* Each permittee must implement a program to reduce the discharge of pollutants from constructions sites, including requirements for the use and maintenance of appropriate structural and nonstructural best management practices to reduce pollutants discharged to the MS4 during the time construction is underway; procedures for site planning which incorporates considerations for potential short and long term water quality impacts and minimizes these impacts; prioritized inspection of construction sites and enforcement of control measures; appropriate education and training measures for construction site operators; and notification of appropriate building permit applicants of their potential responsibilities under the NPDES permitting program for construction site runoff.

*Public Education:* Each permittee must implement a public education program including a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges of non-storm water or improper disposal of materials such as industrial and commercial wastes, household hazardous wastes, leaf litter, grass clippings, and animal wastes into the MS4; a program to promote, publicize, and facilitate the proper management and disposal of used oil and household hazardous wastes; a program to promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by the public and commercial and private applicators and distributors; and where applicable and feasible, the permittee should publicize those best management practices (including but not limited to the use of reformulated or redesigned products, substitution of less toxic materials, and improvements in housekeeping) used by the permittee that facilitates better use, application, and/or disposal of materials identified above. The Region believes that educating the public on the impacts of their everyday activities is a crucial component of preventing storm water pollution.

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1. **Pollution Prevention Measures.**

Under the CWA, MS4s are subject to the MEP standard at CWA Section 402(p)(3)(B)(iii), the effective prohibition on non-storm water standard at CWA Section 402(p)(3)(B)(ii), and applicable State water quality standards for storm water found at FAC §62-40.420(1)-(4). The Region has identified four areas where pollution prevention mechanisms have been required, in addition to the Storm Water Management Programs, to address sources of pollutants entering the MS4, minimize the degradation of storm water quality as development occurs, and further implement the statutory prohibition on non-storm water discharges to the MS4.

As an urban watershed is developed, the volume of storm water and its rate of discharge increases. The distinction between new and redevelopment is made for several reasons. First, due to increases in impervious areas such as roofs, sidewalks, and roads and increases of human activities coupled with less than 100% efficiencies in any control mechanism, it is difficult to even maintain pre-development levels of pollutants, much less achieve a reduction. The Region does recognize that, depending on previous land use, reductions in certain pollutants may be possible (e.g. sediment loadings from cropland vice residential development). It is the increased flexibility of not having to work within the confines of surrounding developed property, that make more control options cost-effective for new development. In areas undergoing redevelopment, onsite controls benefiting from controls methods developed, or required, since the site was originally developed can be designed into the new project, resulting in a net reduction in pollutants.

EPA estimates that, annually, 267 million gallons of used oil, including 135 million gallons of used oil from do-it-yourself automobile oil changes, are disposed of improperly. Some of this oil is being dumped into storm sewers or onto the ground where it can contaminate storm water runoff. In order to insure that not only is the public educated on proper disposal practices, but an economical disposal/recycling alternative is provided, permittees will be required to ensure the implementation of a program to collect used motor vehicle fluids (including, at a minimum, oil and antifreeze) for recycle, reuse, or proper disposal. The program implemented must be readily available to all private residents and publicized and promoted on at least an annual basis.

According to an EPA study, an average household generates approximately 55 to 60 grams of Household Hazardous Waste or approximately 4-5 pounds per person, per year. Household Hazardous Wastes are currently exempt from regulation as a hazardous waste under Subtitle C of the Resource Conservation and Recovery Act (RCRA) (40 CFR 261.4(b)). Improper or careless disposal of household hazardous wastes (e.g. dumping or washing leftover paint into the storm sewers, throwing partially full containers of solvents into the trash where leaks may occur, flushing of unused pesticides into sanitary sewers, etc.) can result in not only storm water contamination, but also contamination of the

municipal solid waste stream, inhibition of wastewater treatment plants, or even contribute to air pollution. The magnitude of this problem is unknown, but it is reasonable to expect Household Hazardous Wastes are being discharged to MS4s. Public education on minimizing the amounts of household hazardous wastes generated (e.g. buying only the amount of pesticide you can use before it loses effectiveness), on reusing household wastes (e.g. blending leftover paints for use by charitable organizations), on recycling wastes (e.g. blending solvents for use as an energy source), and on proper disposal of other materials is only one part of the equation. In order to insure that not only is the public educated on proper disposal practices, but an economical and readily available alternative is provided, the permittees will be required to ensure the implementation of a program to collect household hazardous waste materials (including materials such as leftover paint, solvents, pesticides, herbicides, and other hazardous materials) for recycle, reuse, or proper disposal.

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**b. Monitoring.**

As part of the application process at 40 CFR 122.26(d)(2)(iii)(C) and (D), each applicant was required to propose the following:

(1) A schedule to provide estimates for each major outfall identified of the seasonal pollutant load and of the event mean concentration (EMC) of a representative storm for any constituent detected in any sample required in the Part 2 application sampling; and

(2) A monitoring program for representative data collection for the term of the permit that describes the location of outfalls or field screening points to be sampled (or the location of instream stations), why the location is representative, the frequency of sampling, parameters to be sampled, and a description of sampling equipment.

As in (1) above, the permittees are to include a schedule to provide estimates, for each major outfall, of the seasonal pollutant load and EMC of a representative storm for any constituent detected in any sample required in the Part 2 application sampling. EPA, Region IV, reviewed the Part 2 application sampling data to determine which pollutants this requirement would include. The storm water regulation required monitoring for the 110 organic pollutants in Table II, the 15 other toxic pollutants (including metals, cyanide and total phenols) in Table III, and for the following pollutants: total suspended solids (TSS), total dissolved solids (TDS), COD, $BOD_5$, oil & grease, fecal coliform, fecal streptococcus, pH, total Kjeldahl nitrogen, nitrate plus nitrite, dissolved phosphorus, and total phosphorus.

- The overwhelming majority of 110 organic pollutants were never detected in the storm water sampling performed. Because of the low detection rate coupled with a very low concentration, Region IV concluded that the development of seasonal pollutant loadings and event mean concentrations for each of these detected compounds would require an inordinate expense and effort to sample enough storm events to generate an EMC above the limit of detection. In lieu of this requirement, Region IV has placed in the permit a condition requiring that the permittees conduct investigations of the identified drainage basins where specific organic pollutants were detected at levels which exceeded the acute criterion values for freshwater in the *EPA Quality Criteria for Water* (also known as the *"Gold Book"*) in an effort to determine the source(s) of these pollutant(s). The permittees are required to provide the result of these investigations in the Annual Report for Year Three of the permit.

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- The pollutants in the Part 2 application for which the permittees had to provide an estimate of the annual pollutant load and EMC for the overall system are included in the permit. These pollutants are: $BOD_5$, COD, TSS, TDS, total Kjeldahl nitrogen, nitrite plus nitrite, total phosphorus, dissolved phosphorus, total recoverable cadmium, total recoverable copper, total recoverable lead, and total recoverable zinc. The permittees must develop seasonal pollutant loads and EMCs for each of these pollutants for each major outfall.

- The data for remaining pollutants in the Part 2 application was reviewed. If the pollutant had not been detected, it was not included under this requirement in the permit. If the pollutant had been detected in the Part 2 sampling data but at a level below the acute criterion values in the *EPA Quality Criteria for Water* (also known as the *"Gold Book"*), this pollutant was not included under this requirement in the permit. If the pollutant had been detected in the Part 2 sampling data and it was at a level above the acute criterion values in the *EPA Quality Criteria for Water*, this pollutant was included under this requirement in the permit, and the permittees must develop seasonal pollutant loads and EMCs for this pollutant for each major outfall. EPA finds this overall approach consistent with the methodology and rationale used in the National Urban Runoff Program (NURP).

Due to differences in the availability of existing water quality data, sensitivity of receiving waters, and other factors, Region IV believes some flexibility in the scope of the monitoring program elements in item (2) above must be afforded the permittees. Region IV believes that one important goal of the monitoring program is to show a trend, over the term of the permit, pollutants are reduced to the MEP from MS4 discharges and shall not cause or contribute to violations of State water quality standards to the receiving stream. Another goal of the monitoring program is to identify the sources and impacts of specific pollutants, so that these pollutants may be more effectively reduced or eliminated.

Pursuant to Section 403.0891 of the Florida Statutes, and State Water Policy, Chapter 62-40, Florida Administrative Code, local governments are to implement on a watershed-based approach, a comprehensive storm water management program designed to minimize adverse effects of storm water on land and water resources. Programs are to be implemented in a manner that will improve and restore the quality of waters that do not meet State water quality standards and to maintain the water quality of those waters which meet

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or exceed state water quality standards. State water quality standards are found at FAC 62-40.420(1)-(4), which contain facility design and performance standards.

**11. Considerations under Federal Law**

The discharge which is being controlled by the terms of this permit is the result of natural precipitation, and as such would continue to be discharged regardless of the federal action represented here. The terms of this permit do require that the municipality reduce to the MEP pollutants in the storm water runoff discharged from the municipal separate storm sewer system. The Region believes reduction of pollutants in the natural runoff will not result in the disturbance of any site listed or eligible for listing in the National Historic Register, nor effect any endangered species. This permit specifically does not authorize any storm water discharges which would jeopardize a listed endangered or threatened species or adversely modify a designated critical habitat; adversely effect properties listed or eligible for listing in the National Register of Historic Places; or would not be in compliance with any applicable requirements of a State's Coastal Zone Management Plan.

**12. State Certification of the Draft Permit**

The Region shall formally request State Certification of today's draft permit, as required by CWA Section 401 and 40 CFR 124.53. The final permit will contain any permit condition required by the State as a condition for Section 401 Certification.

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NPDES Permit No. OKS000201

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. 1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

City of Tulsa
Department of Public Works
200 Civic Center
Tulsa, Oklahoma 74103

is(are) authorized to discharge, in accordance with the Storm Water Management Program(s), effluent limitations, monitoring requirements, and other provisions set forth in Parts I, II, III, IV, V, VI, VII, and VIII herein,

from all portions of the City of Tulsa Municipal Separate Storm Sewer System (MS4) owned or operated by any permittee listed above, to waters of the United States.

This permit will become effective October 1, 1994

This permit and the authorization to discharge under the National Pollutant Discharge Elimination System shall expire at midnight, on September 30, 1999

Signed this 26 day of August, 1994

Monica L. Burrell
Environmental Engineer
Municipal Section (6W-PM)

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

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PART I. DISCHARGES AUTHORIZED UNDER THIS PERMIT.

A. Permit Area. This permit covers all areas located within the corporate boundary of the City of Tulsa that are served by municipal separate storm sewers owned or operated by the permittee(s).

B. Authorized Discharges.

1. Except for discharges prohibited under Part I.B.2, this permit authorizes all existing or new storm water point source discharges to waters of the United States from those portions of the Municipal Separate Storm Sewer System owned or operated by the permittee(s).

2. The following discharges, whether discharged separately or commingled with municipal storm water, are not authorized by this permit:

a. *Non-storm Water and Industrial Storm Water:* discharges of non-storm water; any Storm Water Discharge Associated with Industrial Activity; or other storm water discharges required to obtain an NPDES permit, except where such discharges are:

(1) regulated by a separate NPDES permit (or the discharger has applied for such permit); or

(2) identified by and in compliance with Part II.A.6.a.

b. *Spills:* discharges of material resulting from a spill. Where discharge of material resulting from a spill is necessary to prevent loss of life, personal injury, or severe property damage, the permittee(s) shall take, or insure the responsible party for the spill takes, all reasonable steps to minimize or prevent any adverse effects on human health or the environment. (See also Part II.A.7 and Part VI.E.) This permit does not transfer liability for a spill itself from the party(ies) responsible for the spill to the permittee(s) nor relieve the party(ies) responsible for a spill from the reporting requirements of 40 CFR Part 117 and 40 CFR Part 302.

C. Permittee Responsibilities.

1. Each permittee is responsible for:

a. Compliance with permit conditions relating to discharges from portions of the Municipal Separate Storm Sewer System where the permittee is the operator;

b. Storm Water Management Program implementation on portions of the Municipal Separate Storm Sewer System where the permittee is the operator;

c. Compliance with annual reporting requirements as specified in Part V.C.;

d. Collection of representative wet weather monitoring data required by Part V.A., according to such agreements as may be established between permittees; and

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e. A plan of action to assume responsibility for implementation of storm water management and monitoring programs on their portions of the Municipal Separate Storm Sewer System should interjurisdictional agreements allocating responsibility between permittees be dissolved or in default.

2. Permittees are jointly responsible for permit compliance on portions of the Municipal Separate Storm Sewer System where operational or Storm Water Management Program implementation authority over portions of the Municipal Separate Storm Sewer System is shared or has been transferred from one permittee to another in accordance with legally binding agreements.

B. Discharge Goals.

The following goals are established for discharges from the Municipal Separate Storm Sewer System:

1. No discharge of toxics in toxic amounts.

2. No discharge of pollutants in quantities that would cause a violation of State Water Quality Standards.

3. No discharge of floatable debris, oils, scum, foam, or grease in other than trace amounts.

4. No discharge of non-storm water from the municipal separate storm sewer system (except as provided in Part I.B.2.).

5. No degradation or loss of State-designated beneficial uses of receiving waters as a result of storm water discharges from the municipal separate storm sewer (unless authorized by the State in accordance with the State's Antidegradation Policy).

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PART II. STORM WATER POLLUTION PREVENTION & MANAGEMENT PROGRAM(S).

Each permittee shall contribute to the development, revision and implementation of a comprehensive Storm Water Management Program including pollution prevention measures, treatment or removal techniques, storm water monitoring, use of legal authority, and other appropriate means to control the quality of storm water discharged from the Municipal Separate Storm Sewer System. The Storm Water Management Program shall be implemented in accordance with Section 402(p)(3)(B) of the Act, and the Storm Water Regulations (40 CFR Part 122.26).

Controls and activities in the Storm Water Management Program shall identify areas of permittee responsibility on a jurisdiction, applicability, or specific area basis. The Storm Water Management Program shall include controls necessary to effectively prohibit the discharge of non-storm water into municipal separate storm sewers and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System to the Maximum Extent Practicable (MEP).

The Storm Water Management Program shall cover the term of this permit and shall be updated as necessary, or as required by the Director, to ensure compliance with the statutory requirements of Section 402(p)(3)(B) of the Act. Modifications to the Storm Water Management Program shall be made in accordance with Parts II.G., and III. Compliance with the Storm Water Management Program and any schedules in Part III. shall be deemed compliance with Parts II.A, and II.B. The Storm Water Management Program, and all updates made in accordance with Part II.G., are hereby incorporated by reference.

Implementation of the Storm Water Management Program may be achieved through participation with other permittees, public agencies, or private entities in cooperative efforts to satisfy the requirements of Part II. in lieu of creating duplicate program elements for each individual permittee. The Storm Water Management Program, taken as a whole, shall achieve the "effective prohibition on the discharge of non-storm water" and "MEP" standards from Section 402(p)(3)(B) of the Act.

A. <u>Storm Water Management Program Requirements.</u>

1. *Structural Controls and Storm Water Collection System Operation:* The Municipal Separate Storm Sewer System and any storm water structural controls shall be operated in manner to reduce the discharge of pollutants to the Maximum Extent Practicable.

2. *Areas of New Development and Significant Redevelopment:* A comprehensive master planning process (or equivalent) to develop, implement, and enforce controls to minimize the discharge of pollutants from areas of new development and significant re-development after construction is completed shall be implemented. The goals of such controls shall be:

   a. New development - limiting increases in the discharge of pollutants in storm water as a result of development, and

   b. Re-development - reducing the discharge of pollutants in storm water.

3. *Roadways:* Public streets, roads, and highways shall be operated and maintained in a manner to minimize discharge of pollutants, including those pollutants related to deicing or sanding activities.

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4. *Flood Control Projects:* Impacts on receiving water quality shall be assessed for all flood management projects. The feasibility of retro-fitting existing structural flood control devices to provide additional pollutant removal from storm water shall be evaluated.

5. *Pesticide, Herbicide, and Fertilizer Application:* Each permittee shall implement controls to reduce the discharge of pollutants related to the permittee's storage and application of pesticides, herbicides, and fertilizers. Permittees with jurisdiction over lands not directly owned by that entity (e.g. incorporated city with authority over activities occurring anywhere within their city limits) shall also implement programs to reduce the discharge of pollutants related to commercial application and distribution of pesticides, herbicides, and fertilizers.

6. *Illicit Discharges and Improper Disposal:* Non-storm water discharges to the municipal separate storm sewer system shall be effectively prohibited.

   a. In accordance with 40 CFR 122.26(d)(2)(iv)(B)(1), certain non-storm water discharges to the municipal separate storm sewer system need not be addressed as illicit discharges or improper disposal. The Storm Water Management Program shall identify any non-storm water discharges that the permittee(s) does not prohibit, along with any conditions placed on such non-storm water discharges to the municipal separate storm sewer system. The permittee(s) shall prohibit, on a case-by-case basis, any individual non-storm water discharge (or class of non-storm water discharges) otherwise allowed under this paragraph that is determined to be contributing significant amounts of pollutants to the municipal separate storm sewer system.

   b. Each permittee shall prevent (or require the operator of the sanitary sewer to eliminate) unpermitted discharges of dry and wet weather overflows from sanitary sewers into the Municipal Separate Storm Sewer System. Each permittee shall limit the infiltration of seepage from sanitary sewers into the Municipal Separate Storm Sewer System.

   c. The permittee(s) shall ensure the implementation of a program to reduce the discharge of floatables (e.g. litter and other human-generated solid refuse). The floatables control program shall include source controls and, where necessary, structural controls.

   d. The discharge or disposal of used motor vehicle fluids, household hazardous wastes, grass clippings, leaf litter, and animal wastes into separate storm sewers shall be prohibited. The permittee(s) shall ensure the implementation of programs to collect used motor vehicle fluids (at a minimum, oil and antifreeze) for recycle, reuse, or proper disposal and to collect household hazardous waste materials (including paint, solvents, pesticides, herbicides, and other hazardous materials) for recycle, reuse, or proper disposal. Such programs shall be readily available to all private residents and shall be publicized and promoted on a regular basis.

   e. A program to locate and eliminate illicit discharges and improper disposal into the Municipal Separate Storm Sewer System shall be implemented. This program shall include dry

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weather screening activities to locate portions of the Municipal Separate Storm Sewer System with suspected illicit discharges and improper disposal. Follow-up activities to eliminate illicit discharges and improper disposal may be prioritized on the basis of magnitude and nature of the suspected discharge; sensitivity of the receiving water; and/or other relevant factors. This program shall establish priorities and schedules for screening the entire Municipal Separate Storm Sewer System at least once per five years. The permittee(s) shall utilize a consistent method (e.g. by land area, by outfall, etc.) for determining the percentage of the municipal separate storm sewer system that has been screened. Facility inspections may be carried out in conjunction with other municipal programs (e.g. pretreatment inspections of industrial users, health inspections, fire inspections, etc.), but must include random inspections for facilities not normally visited by the municipality.

f. Each permittee shall require the elimination of illicit discharges and improper disposal practices as expeditiously as reasonably possible. Where elimination of an illicit discharge within thirty (30) days is not possible, the permittee shall require an expeditious schedule for removal of the discharge. In the interim, the permittee shall require the operator of the illicit discharge to take all reasonable and prudent measures to minimize the discharge of pollutants to the Municipal Separate Storm Sewer System.

g. The permittee(s) shall maintain, and update as necessary, a list of discharges to municipal separate storm sewers that has been issued a NPDES permit. The list shall include the name, location and NPDES permit number of the discharger.

7. *Spill Prevention and Response:* A program to prevent, contain, and respond to spills that may discharge into the Municipal Separate Storm Sewer System shall be implemented. The spill response program may include a combination of spill response actions by the permittee(s) (and/or another public or private entity), and legal requirements for private entities within the permittee's municipal jurisdiction.

8. *Industrial & High Risk Runoff:* A program to identify and control pollutants in storm water discharges to the Municipal Separate Storm Sewer System from municipal landfills; other treatment, storage, or disposal facilities for municipal waste (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee(s) determines are contributing a substantial pollutant loading to the Municipal Separate Storm Sewer System shall be implemented. The program shall include:

a. priorities and procedures for inspections and establishing and implementing control measures for such discharges;

b. a monitoring program (Part II.A.11.c.); and

c. a list of industrial storm water sources discharging to the Municipal Separate Storm Sewer System shall be maintained and update as necessary.

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9. *Construction Site Runoff:* A program to reduce the discharge of pollutants from constructions sites shall be implemented. This program shall include:

   a. requirements for the use and maintenance of appropriate structural and nonstructural best management practices to reduce pollutants discharged to the Municipal Separate Storm Sewer System during the time construction is underway;

   b. inspection of construction sites and enforcement of control measures (in accordance with priorities and procedures established in the Storm Water Management Program);

   c. appropriate education and training measures for construction site operators; and

   d. notification of appropriate building permit applicants of their potential responsibilities under the NPDES permitting program for construction site runoff.

10. *Public Education:* A public education program with the following elements shall be implemented:

   a. a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or improper disposal of materials, including floatables, into the Municipal Separate Storm Sewer System;

   b. a program to promote, publicize, and facilitate the proper management and disposal of used motor vehicle fluids and household hazardous wastes.

   c. a program to promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by the public and commercial and private applicators and distributors.

11. *Monitoring Programs:* The following monitoring programs shall be implemented in addition to the monitoring required by Part V.:

   a. The *Dry Weather Screening Program* shall continue ongoing efforts to detect the presence of illicit connections and improper discharges to the Municipal Separate Storm Sewer System. All areas of the Municipal Separate Storm Sewer System must be screened at least once during the permit term. Screening methodology may be modified based on experience gained during actual field screening activities and need not conform to the protocol at 40 CFR 122.26(d)(1)(iv)(D). Sample collection and analysis need not conform to the requirements of 40 CFR Part 136. However, samples taken to <u>confirm</u> (e.g. in support of possible legal action) a particular illicit connection or improper disposal practice should conform to the requirements of 40 CFR Part 136.

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b. *Wet Weather Screening Program:* The permittee(s) shall identify, investigate, and address areas within their jurisdiction that may be contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System. The wet weather screening program:

(1) shall screen the Municipal Separate Storm Sewer System, in accordance with the procedures specified in the Storm Water Management Program.

(2) shall specify the sampling and non-sampling techniques to be used for initial screening and follow-up purposes. Sample collection and analysis need not conform to the requirements of 40 CFR Part 136. However, samples taken to confirm (e.g. in support of possible legal action) a particular discharger is a source of significant quantities of pollutants should conform to the requirements of 40 CFR Part 136.

c. The *Industrial and High Risk Runoff Monitoring Program* shall include monitoring for pollutants in storm water discharges to the Municipal Separate Storm Sewer System from municipal landfills; other treatment, storage, or disposal facilities for municipal waste (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee(s) determines are contributing a substantial pollutant loading to the Municipal Separate Storm Sewer System.

(1) Except as provided in (2) below, the monitoring program shall including the collection of quantitative data on the following constituents:

(a) any pollutants limited in an existing NPDES permit for a subject facility;
(b) oil and grease;
(c) chemical oxygen demand (COD);
(d) pH;
(e) biochemical oxygen demand, five-day ($BOD_5$);
(f) total suspended solids (TSS);
(g) total phosphorous;
(h) total Kjeldahl nitrogen (TKN);
(i) nitrate plus nitrite nitrogen; and
(j) any information on discharges required under 40 CFR 122.21(g)(7)(iii) and (iv).

Data collected by the industrial facility to satisfy the monitoring requirements of an NPDES or State discharge permit may be used to satisfy this requirement. Permittee(s) may require the industrial facility to conduct self-monitoring to satisfy this requirement.

(2) Alternative Certification: In lieu of monitoring, the permittee may accept a certification from a facility that raw and waste materials, final and intermediate products, by-products, material handling equipment or activities, industrial machinery or operations, or significant materials from past industrial activity are not presently exposed to storm water and are not expected to be exposed to storm water for the certification period. Where the permittee(s)

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accept a "no exposure" certification, the permittee(s) shall conduct at least one site inspection of the facility every five years to verify the "no exposure" exemption.

B. Area-specific Storm Water Management Program Requirements. Reserved.

C. Deadlines for Program Implementation. Except as provided in Part III., full implementation of the Storm Water Management Program shall begin within 90 days from the effective date of the permit.

D. Roles and Responsibilities of Permittee(s). The Storm Water Management Program, together with any attached interagency agreements, shall clearly identify the roles and responsibilities of each permittee.

E. Legal Authority. Each permittee shall ensure legal authority to control discharges to and from those portions the Municipal Separate Storm Sewer System over which it has jurisdiction. This legal authority may be a combination of statute, ordinance, permit, contract, order or inter-jurisdictional agreements with permittees with existing legal authority to:

1. Control the contribution of pollutants to the Municipal Separate Storm Sewer System by Storm Water Discharges Associated with Industrial Activity and the quality of storm water discharged from sites of industrial activity;

2. Prohibit illicit discharges to the Municipal Separate Storm Sewer System;

3. Control the discharge of spills and the dumping or disposal of materials other than storm water (e.g. industrial and commercial wastes, trash, used motor vehicle fluids, leaf litter, grass clippings, animal wastes, etc.) into the Municipal Separate Storm Sewer System;

4. Control through interagency or interjurisdictional agreements among permittees the contribution of pollutants from one portion of the Municipal Separate Storm Sewer System to another;

5. Require compliance with conditions in ordinances, permits, contracts or orders; and

6. Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with permit conditions.

F. Storm Water Management Program Resources. Each permittee shall provide adequate finances, staff, equipment, and support capabilities to implement their activities under the Storm Water Management Program.

G. Storm Water Management Program Review and Update.

1. *Storm Water Management Program Review:* Each permittee shall participate in an annual review of the current Storm Water Management Program in conjunction with preparation of the annual report required under Part V.C.

2. *Storm Water Management Program Update:* The permittee(s) may change the Storm Water Management Program during the life of the permit in accordance with the following procedures:

a. The approved Storm Water Management Program shall not be changed by the permittee(s) without the approval of the Director, unless in accordance with Parts II.G.2.b. and 2.c.

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b. Changes adding (but not subtracting or replacing) components, controls, or requirements to the Storm Water Management Program may be made by the permittee(s) at any time upon written notification to the Director.

c. Changes replacing an ineffective or unfeasible BMP specifically identified in the Storm Water Management Program with an alternate BMP may be requested at any time. Unless denied by the Director, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented by the permittee(s) 60 days from submittal of the request. Such requests shall include the following:

(1) an analysis of why the BMP is ineffective or infeasible (including cost prohibitive),

(2) expectations on the effectiveness of the replacement BMP, and

(3) an analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

d. Changes resulting from schedules contained in Part III. may be requested following completion of an interim task or final deadline. Unless denied by the Director, proposed changes meeting the criteria contained in the applicable Part III schedule shall be deemed approved and may be implemented by the permittee(s) 60 days from submittal date.

e. Change requests and/or notifications shall be made in writing, signed in accordance with Part VI.H. by all directly affected permittees, and include a certification that all permittees were given an opportunity to comment on proposed changes.

3. *Updates Required by the Permitting Authority:* The permitting authority may require changes to the Storm Water Management Program as needed to:

a. address impacts on receiving water quality caused, or contributed to, by discharges from the Municipal Separate Storm Sewer System;

b. include more stringent requirements necessary to comply with new State or Federal statutory or regulatory requirements; or

c. include such other conditions deemed necessary by the Director to comply with the goals and requirements of the Act.

Changes requested by the Director shall be made in writing, set forth the time schedule for the permittee(s) to develop the changes, and offer the permittee(s) the opportunity to propose alternative program changes to meet the objective of the requested modification. All changes required by the Director shall be made in accordance with 40 CFR 124.5, 40 CFR 122.62, or as appropriate 40 CFR 122.63.

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4. *Transfer of Ownership, Operational Authority, or Responsibility for Storm Water Management Program Implementation:* The permittee(s) shall implement the Storm Water Management Program on all new areas added to their portion of the municipal separate storm sewer system (or for which they become responsible for implementation of storm water quality controls) as expeditiously as practicable, but not later than three years from addition of the new areas. Implementation may be accomplished in a phased manner to allow additional time for controls that cannot be implemented immediately.

   Prior to land annexation, the permittee(s) shall include a schedule for extending the Storm Water Management Program to the annexed areas in the Storm Water Management Program. At least 30 days prior to transfer of operational authority or responsibility for Storm Water Management Program implementation, all parties shall prepare a schedule for transfer of responsibility for Storm Water Management Program implementation on the affected portions of the Municipal Separate Storm Sewer System.

E. Retention of Storm Water Management Program Records. The permittee shall retain the Storm Water Management Program developed in accordance with Parts II. and III. for at least 3 years after coverage under this permit terminates.

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PART III. SCHEDULES FOR IMPLEMENTATION AND COMPLIANCE

The Permittee(s) shall comply with the following schedules for Storm Water Management Program implementation and augmentation, and permit compliance.

A. Implementation and Augmentation of Storm Water Management Program(s)

| STORM WATER MANAGEMENT PROGRAM COMPONENT | ACTIVITY | DATE DUE/FREQUENCY |
|---|---|---|
| 1. New & Re-Development | a. Adoption of the Storm water Management Criteria Manual or another construction storm water runoff control program. | January 1, 1995 |
| | b. Implementation of the Stormwater Management Criteria or another construction storm water runoff control program. | February 1, 1995 |
| 2. Household Hazardous Waste | a. Provide summary of evaluation and assessment of results from various collection/recycling/safe disposal program options, including those currently underway, to determine the most applicable program for long term use which meets criteria specified in b. below. | July 1, 1996 |
| | b. Develop collection/recycling/safe disposal program which includes periodic collection events and should ensure a publicly available drop off location(s) that provides for occasional long weekday hours, or weekend operations. | August 1, 1996 |
| | c. Implement collection/recycling/safe disposal program. | August 1, 1997 |

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| STORM WATER MANAGEMENT PROGRAM COMPONENT | ACTIVITY | DATE DUE/FREQUENCY |
|---|---|---|
| 3. Floatables | a. Implement public education program. | January 1, 1995 |
| | b. Install two floatables monitoring locations. | May 1, 1995 |
| | c. Complete study for targeting of structural controls and develop schedule for implementation. | May 1, 1996 |
| 4. Illicit Discharges and Improper Disposal | a. Implement public education program. | January 1, 1995 |
| | b. Complete dry weather screening of 20% of MS4. | June 1, 1995 |
| | c. Complete dry weather screening of 40% (cumulative) of MS4 | June 1, 1996 |
| | d. Complete dry weather screening of 60% (cumulative) of MS4 | June 1, 1997 |
| | e. Complete dry weather screening of 80% (cumulative) of MS4 | June 1, 1998 |
| | f. Complete dry weather screening of 100% (cumulative) of MS4 | June 1, 1999 |
| 5. Legal Authority | a. Adopt comprehensive Storm Water Ordinance | July 1, 1996 |
| 6. Wet Weather Screening Program | a. Update SWMP to include wet weather screening program. | July 1, 1995 |
| | b. Complete wet weather screening of 50% of MS4. | July 1, 1997 |
| | c. Complete wet weather screening of 100% (cumulative) of MS4. | July 1, 1999 |
| | | |

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| STORM WATER MANAGEMENT PROGRAM COMPONENT | ACTIVITY | DATE DUE/FREQUENCY |
|---|---|---|
| 7. Flood Control Projects | a. Complete evaluation of existing flood control structures for feasible water quality retrofit projects. | October 1, 1998 |
| | b. Complete schedule for proposed water quality retrofits to existing flood control structures. | November 1, 1998 |
| 8. Industrial and High Risk | a. Develop program to identify, monitor, and control pollutants from targeted facilities | July 1, 1995 |
| | b. Implement program | July 1, 1996 |
| 9. Pesticide, Herbicide, and Fertilizer Application | a. Implement annual training/education on pesticide and fertilizer management techniques. | January 1, 1995 |
| | b. Establish requirement for commercial pesticide applicators to be licensed under the Oklahoma Pesticide Applicators Law. | April 1, 1995 |

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B. Compliance with effluent limitations. Reserved.

C. Reporting compliance with schedules. No later than 14 days following a date for a specific action (interim milestone or final deadline) identified in the above schedule(s), the permittee(s) shall submit a written notice of compliance or noncompliance to the Director in accordance with Parts V.E.

D. Updating Storm Water Management Program. The permittee(s) shall update the Storm Water Management Program(s), as appropriate, in response to changes required by Part III.A. Such updates shall be made in accordance with Part II.G.2.

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PART IV. DISCHARGE LIMITATIONS.

...RESERVED...

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PART V. MONITORING AND REPORTING REQUIREMENTS.

A. Storm Event Discharges.

1. *Representative Monitoring:* Monitoring shall be conducted on representative outfalls, internal sampling stations, and/or instream monitoring locations to characterize the quality of storm water discharges from the Municipal Separate Storm Sewer System.

   a. Monitoring Requirements: Refer to Table(s) V.A.1.a(1).

   b. Outfall Descriptions: Refer to Table V.A.1.b.

   c. Alternate representative monitoring locations may be substituted for just cause during the term of the permit. Requests for approval of alternate monitoring locations shall be made to the Director in writing and include the rationale for the requested monitoring station relocation. Unless disapproved by the Director, use of an alternate monitoring location (except for outfalls with numeric effluent limitations) may commence 30 days from the date of the request. For outfalls where numeric effluent limitations have been established, the permit must be modified prior to substitution of alternate monitoring locations. Six samples shall be collected during the first year of monitoring at substitute outfalls.

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Table V.A.1.a.(1) - Representative Monitoring Requirements: Outfalls 001, 002, 003, 003, 004, & 005

| PARAMETERS | REPORT FOR EACH MONITORING PERIOD (each sample type) | | | SAMPLE TYPE(S) | | MONITORING FREQUENCY[1] |
|---|---|---|---|---|---|---|
| | Minimum | Average | Maximum | Grab | Composite | |
| Biochemical Oxygen Demand ($BOD_5$) (mg/l) | | Yes | Yes | | Yes | 1/season[2] |
| Chemical Oxygen Demand (COD) (mg/l) | | Yes | Yes | | Yes | 1/season |
| Oil and Grease (mg/l) | | Yes | Yes | Yes | | 1/season |
| Total Suspended Solids (TSS) (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Dissolved Solids (TDS) (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Nitrogen (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Kjeldahl Nitrogen (TKN) (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Phosphorus (mg/l) | | Yes | Yes | | Yes | 1/season |
| Dissolved Phosphorus (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Cadmium (ug/l) | | Yes | Yes | | Yes | 1/season |
| Total Copper (ug/l) | | Yes | Yes | | Yes | 1/season |
| Total Lead (ug/l) | | Yes | Yes | | Yes | 1/season |
| Total Zinc (ug/l) | | Yes | Yes | | Yes | 1/season |
| Fecal Coliform (colonies/100 ml) | | Yes | Yes | Yes | | 1/season |
| pH (S.U.) | Yes | | Yes | Yes | | 1/season |
| Hardness (as $CaCO_3$) (mg/l) | Yes | Yes | Yes | Yes | | 1/season |
| Temperature (°C) | Yes | Yes | Yes | Yes | | 1/season |

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| PARAMETERS | REPORT FOR EACH MONITORING PERIOD (each sample type) | | | SAMPLE TYPE(S) | | MONITORING FREQUENCY[1] |
|---|---|---|---|---|---|---|
| | Minimum | Average | Maximum | Grab | Composite | |
| Diazinon (ug/l) | | Yes | Yes | Yes | Yes | 1/season |
| Total Phenol (mg/l)[3] | | Yes | Yes | Yes | | 1/season |

[1] Monitoring frequency for each year unless monitoring under Alternative Bioassessment Option (See Part V.A.2.)
[2] Seasonal monitoring periods are: July - October, November - February, and March - June.
[3] Total Phenol shall be monitored only at outfall 002.

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Table V.A.1.b - Representative Monitoring Outfall Descriptions

| OUTFALL | LOCATION | DESCRIPTION | RESPONSIBLE PERMITTEE |
|---|---|---|---|
| 001 | 2400 26th Street East, 200 feet west of Lewis Avenue and 5 ft south of 26th Street | 100% old residential, drains 39.3 acres | City of Tulsa |
| 002 | 11th Street (Southwest Blvd.), on the east bank of the Arkansas River, 50 ft north of the old 11th St. Bridge | Old commercial area, drains approximately 14.7 acres | City of Tulsa |
| 003 | 71st Street East @ Joe Creek, 50 ft. south of 71st Street on the west bank of Joe Creek | 100% New Commercial, drains 15.1 acres | City of Tulsa |
| 004 | 54th Street East @ Mingo Creek, on the west bank of Mingo Creek at the end of 54th Street | 100% Industrial, drains 25.0 acres | City of Tulsa |
| 005 | 9717 58th Street East, directly north of 9717 E. 58th Street on the south bank of Mingo Creek | 100% Industrial, drains 23.0 acres | City of Tulsa |

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2. *Representative Monitoring - Rapid Bioassessment Option:* The permittee(s) has the option of developing and implementing a rapid bioassessment monitoring program.

   a. The permittee(s) shall obtain all necessary aquatic wildlife collection permits from appropriate State and/or Federal agencies (e.g. State Fish and Game Commission).

   b. Permittee(s) utilizing the rapid bioassessment monitoring option shall conduct monitoring of the separate storm sewer system as described in Part V.A.1., except the monitoring for years 2, 3, and 5 are no longer required. All other requirements of Part V.A.1., A.3., and A.4. (e.g.: samples types, parameters,...) remain unchanged.

   c. If the permittee(s) elects to develop and implement a rapid bioassessment monitoring program, the permittee(s) shall submit an approvable monitoring program to EPA no later than one year from the effective date of this permit. An approvable program must include:

      (1) monitoring of at least two waterbodies receiving storm water discharges from the municipal separate storm sewer system plus a reference site located within the same ecological region as the municipal separate storm sewer system;

      (2) monitoring of each station at least twice per year, with monitoring conducted at essentially the same time periods each year; and

      (3) concurrent (e.g. within a day or two) monitoring of the reference site each time a station located in the receiving waters of the municipal separate storm sewer system is monitored.

      Unless disapproved by the Director within 60 days, a proposed rapid bioassessment monitoring plan meeting the criteria herein shall be deemed approved and the permittee(s) may implement the alternate rapid bioassessment program.

   d. The permittee(s) shall notify the Director and State (addresses provided in Part V.E.), in writing, at least 14 days prior to commencing an alternate rapid bioassessment monitoring program.

3. *Storm Event Data:* For Part V.A.1. and any additional sampling conducted for Part V.A.6., quantitative data shall be collected to estimate pollutant loadings and event mean concentrations for each parameter sampled. Records shall be maintained of all analytical results, the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event which generated the sampled runoff; the duration (in hours) between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge sampled.

4. *Sample Type, Collection, and Analysis:* The following requirements apply only to samples collected for Part V.A.1 and any additional sampling conducted for Part V.A.6.

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a. For discharges from holding ponds or other impoundments with a retention period greater than 24 hours, (estimated by dividing the volume of the detention pond by the estimated volume of water discharged during the 24 hours previous to the time that the sample is collected) a minimum of one grab sample may be taken.

b. Grab samples taken within the first two hours of discharge shall be used for the analysis (if required) of pH, temperature, cyanide, oil & grease, fecal coliform, fecal streptococcus, total phenols, residual chlorine, and (at the permittee's option) volatile organics. For all other parameters, data shall be reported for flow weighted composite samples of the entire event or, at a minimum, the first three hours of discharge.

c. Samples shall be collected from the discharge resulting from a representative storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Composite samples may be taken with a continuous sampler or as a combination of a minimum of three sample aliquots taken in each hour of discharge for the entire discharge or for the first three hours of the discharge, with each aliquot being separated by a minimum period of fifteen minutes.

The required 72 hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge. The required 72 hour storm event interval may also be waived where the permittee(s) documents that less than a 72 hour interval is representative for local storm events during the season when sampling is being conducted.

d. Analysis and collection of samples shall be done in accordance the methods specified at 40 CFR Part 136. Where an approved Part 136 method does not exist, any available method may be used unless a particular method or criteria for method selection (such as sensitivity) has been specified in the permit.

5. *Seasonal Loadings and Event Mean Concentrations.* All necessary sampling data shall be collected to provide estimates for each major outfall of seasonal pollutant loadings and event mean concentrations for a representative storm event for the parameters listed in Table V.A.1.a.(1) - Representative Monitoring Requirements. This information may be estimated from the representative monitoring locations and shall take into consideration land uses and drainage areas for the outfall. The estimates of seasonal loadings and event mean concentrations shall be included in the Annual Report for year four of the permit.

B. <u>Floatables Monitoring.</u>

Shall establish two monitoring locations for removal of floatable material in discharges to or from the Municipal Separate Storm Sewer System. Floatable material shall be collected at the frequency necessary for maintenance of the removal devices, but not less that twice per year. The amount of material collected shall be estimated in cubic yards.

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C. Annual Report. Each permittee shall contribute to the preparation of an annual system-wide report to be submitted by no later than October 15, 1995, and annually thereafter by October 15th in accordance with this permit. The report shall cover the previous year from July 1 to June 30 (with first annual report period beginning on the effective date of the permit) and include the following separate sections, with an overview for the entire Municipal Separate Storm Sewer System and subsections for each permittee:

1. The status of implementing the storm water management program(s) (status of compliance with any schedules established under this permit shall be included in this section);

2. Proposed changes to the storm water management program(s) ;

3. Revisions, if necessary, to the assessments of controls and the fiscal analysis reported in the permit application under 40 CFR 122.26(d)(2)(iv) and (d)(2)(v);

4. A summary of the data, including monitoring data, that is accumulated throughout the reporting year;

5. Annual expenditures for the reporting period, with a breakdown for the major elements of the storm water management program, and the budget for the year following each annual report;

6. A summary describing the number and nature of enforcement actions, inspections, and public education programs; and

7. Identification of water quality improvements or degradation.

Preparation and submittal of a system-wide annual report shall be coordinated by the city of Tulsa. The report shall indicate which, if any, permittees have failed to provide required information on the portions of the Municipal Separate Storm Sewer System for which they are responsible to the core municipality by 45 days prior to the report due date. Joint responsibility for report submission shall be limited to participation in preparation of the overview for the entire system and inclusion of the identity of any permittee who failed to provide input to the annual report. Each individual permittee shall be individually responsible for content of the report relating to the portions of the Municipal Separate Storm Sewer System for which they are responsible and for failure to provide information for the system-wide annual report in a timely manner. Each permittee shall sign and certify the annual report in accordance with Part VI.H. and include a statement or resolution that the permittee's governing body or agency (or delegated representative) has reviewed or been appraised of the content of the Annual Report.

D. Certification and Signature of Reports. All reports required by the permit and other information requested by the Director shall be signed and certified in accordance with Part VI.H.

E. Reporting: Where and When to Submit.

1. Representative monitoring results (Part V.A.1) obtained during the reporting period running from July 1 to June 30 shall be submitted on Discharge Monitoring Report Form(s) no later than the due date for the annual report required by Part V.C.. The Discharge Monitoring Reports should be submitted along with the Annual Report. A separate Discharge Monitoring Report Form is required for each monitoring period (e.g. season) specified in Part V.A.1.

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2. Signed copies of discharge monitoring reports required under Part V., the Annual Report required by Part V.C., and all other reports required herein, shall be submitted to:

U.S. EPA, Region 6
Water Management Division
Enforcement Branch (6W-EA)
1445 Ross Avenue
Dallas, Texas 75202-2733

3. Requests for Storm Water Management Program updates, changes in monitoring locations, or application for an individual permit shall be submitted to:

U.S. EPA, Region 6
Water Management Division (6W-PM)
1445 Ross Avenue
Dallas, Texas 75202-2733

4. Additional Notification. In addition, the permittee(s) shall provide copies of discharge monitoring reports, annual reports, requests for Storm Water Management Program updates or changes in monitoring locations, and all other reports required herein, to:

Program Manager
Oklahoma Department of Environmental Quality
Water Quality Program
1000 N.E. 10th Street, WQS 0207
Oklahoma City, OK 73117-1212

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PART VI. STANDARD PERMIT CONDITIONS.

A. Duty to Comply. The permittee(s) must comply with all conditions of this permit insofar as those conditions are applicable to each permittee, either individually or jointly. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

B. Penalties for Violations of Permit Conditions.

1. *Criminal Penalties.*

a. Negligent Violations: The Act provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. Knowing Violations: The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Knowing Endangerment: The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both.

d. False Statement: The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309(c)(4) of the Act).

2. *Civil Penalties.* The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation.

3. *Administrative Penalties.* The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

a. Class I penalty: Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

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b. Class II penalty: Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

C. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the permit expiration date, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days prior to expiration of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR 122.6 and any subsequent amendments.

D. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate. The permittee(s) shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information. The permittee(s) shall furnish to the Director, within a time specified by the Director, any information which the Director may request to determine compliance with this permit. The permittee(s) shall also furnish to the Director upon request copies of records required to be kept by this permit.

G. Other Information. When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in any report to the Director, he or she shall promptly submit such facts or information.

H. Signatory Requirements. All Discharge Monitoring Reports, storm water management programs, reports, certifications or information either submitted to the Director or that this permit requires be maintained by the permittee(s), shall be signed by:

1. for a municipality, State, or other public agency: by either a principal executive officer or ranking elected official; or

2. a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director.

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

   c. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new written authorization satisfying the requirements of this paragraph must be submitted to the Director prior to or together with

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any reports, information, or applications to be signed by an authorized representative.

3. Certification: Any person signing documents under this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Penalties for Falsification of Monitoring Systems. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the Act.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the Act or section 106 of CERCLA.

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

M. Requiring a Separate Permit.

1. The Director may require any co-permittee authorized by this permit to obtain a separate NPDES permit. Any interested person may petition the Director to take action under this paragraph. The Director may require any co-permittee authorized to discharge under this permit to apply for a separate NPDES permit only if the co-permittee has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form (as necessary), a statement setting a deadline for the co-permittee to file the application, and a statement that on the effective date of the separate NPDES permit, coverage under this permit shall automatically terminate. Separate permit applications shall be submitted to the address shown in Part V.E. The Director may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner a separate NPDES permit application as required by the Director, then the applicability of this permit to the co-permittee is automatically terminated at the end of the day specified for application submittal.

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2. Any co-permittee authorized by this permit may request to be excluded from the coverage of this permit by applying for an separate permit. The co-permittee shall submit a separate application as specified by 40 CFR 122.26(d) with reasons supporting the request to the Director. Separate permit applications shall be submitted to the address shown in Part V.E. The request may be granted by the issuance of a separate permit if the reasons cited by the co-permittee are adequate to support the request.

N. State/Environmental Laws.

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Act.

2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

O. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water management programs. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

P. Monitoring and Records.

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. The permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

3. Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The initials or name(s) of the individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The time(s) analyses were initiated;

e. The initials or name(s) of the individual(s) who performed the analyses;

f. References and written procedures, when available, for the

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analytical techniques or methods used; and

g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

Q. Monitoring Methods. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

R. Inspection and Entry. The permittee shall allow the Director or an authorized representative of EPA, or the State, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Act, any substance or parameters at any location.

S. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

T. Additional Monitoring by the permittee. If the permittee monitor more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased monitoring frequency shall also be indicated on the DMR.

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PART VII. PERMIT MODIFICATION.

A. Modification of the Permit. The permit may be reopened and modified during the life of the permit to address:

1. changes in the State's Water Quality Management Plan, including Water Quality Standards;

2. changes in State or Federal statutes or regulations;

3. add a new permittee who is the owner or operator of a portion of the Municipal Separate Storm Sewer System;

4. changes in portions of the Storm Water Management Program that are considered permit conditions; or

5. other modifications deemed necessary by the Director to meet the requirements of the Clean Water Act.

All modification to the permit will be made in accordance with 40 CFR 122.62, 122.63, and 124.5.

B. Termination of Coverage for a Single Permittee. Permit coverage may be terminated, in accordance with the provisions of 40 CFR 122.64 and 124.5, for a single permittee without terminating coverage for other permittees.

C. Modification of Storm Water Management Program(s). Only those portions of the Storm Water Management Programs specifically required as permit conditions shall be subject to the modification requirements of 40 CFR 124.5. Replacement of an ineffective or infeasible BMP implementing a required component of the Storm Water Management Program with an alternate BMP expected to achieve the goals of the original BMP shall be considered minor changes to the Storm Water Management Program (as described in Part II.G.2.b. and 2.c.) and not modifications to the permit.

D. Changes in Monitoring Outfalls. Changes in monitoring outfalls, other than those with specific numeric effluent limitations (as described in Part V.A.1.c.), shall be considered minor modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.63.

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PART VIII. DEFINITIONS.

All definition contained in Section 502 of the Act shall apply to this permit and are incorporated herein by reference. Unless otherwise specified, additional definitions of words or phrases used in this permit are as follows:

A. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

B. "CWA" or "The Act" means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.

C. "Co-permittee" is defined at 40 CFR 122.26(b)(1).

D. "Core Municipality" means, for the purpose of this permit, the municipality whose corporate boundary (unincorporated area for counties and parishes) defines the municipal separate storm sewer system. (ex. City of Dallas for the Dallas Municipal Separate Storm Sewer System, Harris County for unincorporated Harris County).

E. "Director" means the Regional Administrator or an authorized representative.

F. "Discharge" for the purpose of this permit, unless indicated otherwise, refers to discharges from the Municipal Separate Storm Sewer System (Municipal Separate Storm Sewer System).

G. "Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

H. "Illicit connection" means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

I. "Illicit discharge" is defined at 40 CFR 122.26(b)(2).

J. "Individual Residence" refers, for the purposes of this permit, to single or multi-family residences. (e.g. single family homes and duplexes, townhomes, apartments, etc.)

K. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

L. "Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

M. "Large or medium municipal separate storm sewer system" is defined at 40 CFR 122.26(b)(4) & (7).

N. "MEP" is an acronym for "Maximum Extent Practicable," the technology-based discharge standard for Municipal Separate Storm Sewer Systems established by CWA §402(p).

O. "MS4" is an acronym for "Municipal Separate Storm Sewer System" and is

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used to refer to either a Large or Medium Municipal Separate Storm Sewer System (e.g. "the Dallas MS4").

P. "Municipal Separate Storm Sewer" is defined at 40 CFR 122.26(b)(8).

Q. "Part '#'" refers, unless otherwise indicated, to Part "#" of this permit (e.g. Part V.E.2.).

R. "Permittee" refers to any "person," as defined at 40 CFR 122.2, authorized by this NPDES permit to discharge to Waters of the United States.

S. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

T. "Storm sewer", unless otherwise indicated, refers to a municipal separate storm sewer.

U. "Storm Water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

V. "Storm Water Discharge Associated with Industrial Activity" is defined at 40 CFR 122.26(b)(14).

W. "Storm Water Management Program" refers to a comprehensive program to manage the quality of storm water discharged from the municipal separate storm sewer system. For the purposes of this permit, the Storm Water Management Program is considered a single document, but may actually consist of separate programs (e.g. "chapters") for each permittee.

X. "SWMP" is an acronym for "Storm Water Management Program."

Y. "Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Z. "Waters of the United States" is defined at 40 CFR 122.2.

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NR

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: WD-134

FEB 1 1995

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

Janice Adair, Regional Administrator
Alaska Department of Environmental Conservation
Southcentral Regional Office
3601 C Street, Suite 1334
Anchorage, AK 99503

Re: NPDES Permit No. AKS052428
Port of Anchorage NPDES Municipal Storm Water Permit

Dear Ms. Adair:

A National Pollutant Discharge Elimination System (NPDES) permit has been issued to the referenced facility. Enclosed is a copy of the transmittal letter, permit, and list of changes made from the draft to the final permit.

There were no significant comments received during the public notice period. The permit will be effective 30 days after the issuance unless a request for evidentiary hearing is received.

Sincerely,

Charles E. Findley
Director, Water Division

Enclosures

cc: Office of Management and Budget, Anchorage

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

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Reply To
Attn Of: WD-134

FEB 1 1995

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

Don Dietz, Director
Port of Anchorage
2000 Anchorage Port Road
Anchorage, Alaska 99501

Re: NPDES Permit No. AKS052426
Port of Anchorage NPDES Municipal Storm Water Permit

Dear Mr. Dietz:

We are issuing the above referenced National Pollutant Discharge Elimination System (NPDES) permit. The enclosed document is your official copy of the permit and demonstrates that the referenced facility is authorized to discharge to waters of the United States subject to certain specified requirements. Stipulations of the state's water quality certification and Coastal Management Program consistency determination have been incorporated into the permit. More specifically, the stipulations revising the monitoring conditions are in Part IV of the permit.

There were no significant comments received during the public notice period. This permit will become effective 30 days after the issuance date unless a request for an evidentiary hearing which meets the requirements of 40 CFR 124.74 is received. A copy of these requirements is enclosed for your information.

Sincerely,

Charles E. Findley
Director, Water Division

Enclosures

cc: State Regional Office, Anchorage
State District Office, Anchorage
Office of Management and Budget, Anchorage

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R0061806

## CHANGES TO DRAFT PERMIT

The following changes to the draft permit have been made for this final permit:

1) The Port of Anchorage commented that the outfall previously labelled 001, Transit Area A, was discovered by its consulting engineers to no longer exist, and asked that it be deleted from the application.

   EPA has deleted this outfall and re-numbered the remaining three outfalls as 001, 002, and 003 (see Table V.A.1.b).

2) Special requirements stipulated as part of the State of Alaska water quality certification are contained in Part IV of the permit. These special requirements include changes in monitoring, analytical test methods, and reporting requirements. Specifically:

   - The monitoring parameter "Total Aqueous Hydrocarbons" has been substituted for the parameter "Oil and Grease" found in Part II.B.9.b.

   - The analytical test methods EPA 602 and EPA 610 will be used to determine the presence of "Total Aqueous Hydrocarbons".

   - Copies of all documents, reports, and requests, required in the permit will be sent to the state offices as stipulated.

   In addition, the following changes to the permit have been made pursuant to the water quality stipulations and comments from the State:

   - Part II.A.1 has been expanded to include a statement on emphasizing source reduction techniques as a means to reduce the discharge of pollutants.

   - In Part II.B.4 the permittee is now directed to operate and maintain parking and cargo storage/staging areas in a manner to reduce, to the Maximum Extent Practicable, discharge of pollutants.

   - In Part II.B.11 the following was added as paragraph (d): a program to promote, publicize and facilitate implementation of technologies and techniques to prevent pollution through source reduction and recycling.

   - In Part II.B.7.b the items numbered 8, 12, and 13 now specify that the water be uncontaminated as found in #6.

   - The term "co-permittees" in Part II.C has been deleted.

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- In Part II.C.1 the term "port vehicles" has been clarified to mean those vehicles owned or operated by The Port.

- The citation in Part H.1 has been changed to correctly read Part II.I.

- The phrase "at the permittees option" in Part V.A.4.b has been deleted.

- The reference in Part V.B.1 has been changed to correctly read Part III.A.

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COVER PAGE

Permit No.: AKS052426

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

Port of Anchorage

is authorized to discharge from a Municipal Separate Storm Sewer System located at Port of Anchorage, 2000 Anchorage Port Road, Anchorage, Alaska,

to receiving waters named Cook Inlet,

in accordance with discharge point(s), an approved storm water management plan, monitoring requirements, and other conditions set forth herein.

This permit shall become effective March 3, 1995.

This permit and the authorization to discharge shall expire at midnight, March 3, 2000.

Signed this 1st day of February, 1995.

Director, Water Division, Region 10
U.S. Environmental Protection Agency

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NPDES PERMIT
MUNICIPAL SEPARATE STORM SEWER SYSTEM
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## PART I. DISCHARGES AUTHORIZED UNDER THIS PERMIT

A. **Permit Area**
This permit covers all areas within the jurisdictional boundary of the Port of Anchorage within the Municipality of Anchorage, Alaska, served by, or otherwise contributing to discharges from, municipal separate storm sewers (MS4s) owned or operated by the permittee listed in Part I.C.

B. **Authorized Discharges**
This permit authorizes all existing or new storm water point source discharges to waters of the United States from the MS4. This permit also authorizes the discharge of storm water commingled with flows contributed by process wastewater, non-process wastewater, or storm water associated with industrial activity provided such discharges are authorized under separate NPDES permits. This permit will consider any and all activities conducted by lessees of the Port of Anchorage while within the jurisdictional boundaries of the Port, and which activity leads to a discharge either to or from the MS4s for which this permit is written, to be the activity of the Port and subject to the conditions of this permit.

C. **Limitations on Coverage**
The following discharges are not authorized by this permit:

1. *Non-storm Water:* storm water discharges that are mixed with non-storm water or storm water associated with industrial activity except where such discharges are:

   a. in compliance with a separate NPDES permit; or

   b. identified by and in compliance with Part II.B.7 of this permit.

2. *Endangered Species Protection:* storm water discharges whose direct, indirect, interrelated, interconnected, or interdependent impacts would jeopardize a listed endangered or threatened species or adversely modify designated critical habitat.

3. *Historic Preservation:* storm water discharges, or the permittee construction activities or implementation of storm water management controls, which adversely effect properties listed or eligible for listing in the National Register of Historic Places, unless the permittee is in compliance with requirements of the National Historic Preservation Act and has coordinated any necessary activities to avoid or minimize impacts with the appropriate State Historic Preservation Officer; and

4. *Coastal Zone Management:* storm water discharges not in compliance with any applicable requirements of a State's Coastal Zone Management Plan.



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## PART II. STORM WATER POLLUTION PREVENTION & MANAGEMENT PROGRAMS

The permittee is required to develop and implement a storm water pollution prevention and management program designed to limit, to the maximum extent practicable, the discharge of pollutants from the MS4. Either collectively, or separately, the permittee's storm water pollution prevention and management program shall satisfy the requirements of paragraphs A through I, below for all portions of the MS4 authorized to discharge under this permit.

A. POLLUTION PREVENTION REQUIREMENTS

The permittee shall develop and implement the following pollution prevention measures:

1. The permittee shall include requirements to consider water quality impacts of new and significant re-development in its comprehensive master planning process. The goal of such requirements shall be limiting, to the maximum extent practicable, the discharge of pollutants to pre-development levels.

2. The permittee shall ensure the establishment or availability of a program to collect used motor vehicle fluids (including oil and antifreeze) and batteries for recycle or reuse. Such program shall be readily available to all lessees. This program shall be publicized and promoted on a regular basis, but at least anually.

3. The permittee shall ensure the establishment or availability of a program to collect commonly-used hazardous materials (including paint, pesticides, herbicides, cleaners, solvents, and similar hazardous materials) for recycle, reuse, or safe disposal. The program shall be readily available to all lessees and include information on locations accepting such materials on a continuous basis. This program shall be publicized and promoted on a regular basis, but at least anually.

4. The permittee shall ensure the establishment of a program, including structural controls where necessary, to reduce the discharge of floatables (including solid wastes) to the maximum extent practicable.

B. SWMP SYSTEM-WIDE REQUIREMENTS

The permittee shall operate a Storm Water Management Program (SWMP) in accordance with Section 402(p)(3)(B) of the Clean Water Act, the storm water regulations (40 CFR Part 122.26) and the approved SWMP plan to be submitted to EPA by the permittee. SWMP controls and activities identified in the SWMP plan shall clearly identify areas of applicability on a system-wide basis, jurisdiction-wide basis, or specific-area basis. The SWMP, and all approved updates, are hereby incorporated into this permit by reference and shall be implemented in a manner consistent with the following requirements:



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1. *Statutory Requirements:* SWMPs shall include controls necessary to reduce the discharge of pollutants from the MS4 to the Maximum Extent Practicable (MEP). Controls may consist of a combination of best management practices, control techniques, system design and engineering methods, and such other provisions as the permittee, Administrator or the State determines appropriate. The various components of the SWMP, taken as a whole (rather than individually), shall be sufficient to meet the statutory MEP standard. The SWMP shall be updated as necessary to ensure conformance with the statutory requirements of Clean Water Act §402(p)(3)(B)(ii) and (iii).

2. *Structural Controls:* The permittee shall operate and maintain any storm water structural controls over which it has jurisdiction, in a manner so as to reduce the discharge of pollutants (including floatables) to the MEP.

3. *Areas of New Development:* The Port of Anchorage shall utilize a comprehensive master planning process to develop, implement, and enforce controls to reduce, to the MEP, the discharge of pollutants from areas of new development and significant redevelopment after construction is completed.

4. *Roadways:* The permittee shall operate and maintain public streets, roads, highways, parking areas, and cargo storage/staging areas under its jurisdiction in a manner so as to reduce, to the MEP, discharge of pollutants (including those related to deicing or sanding activities).

5. *Flood Control Projects:* The permittee shall ensure any flood control project it undertakes assesses and minimize to the MEP the impacts on water quality of the receiving waters. The permittee shall also evaluate the feasibility of retro-fitting existing structural flood control devices to provide additional pollutant removal from storm water. If retro-fitting is found to be feasible, the permittee shall implement the retro-fitting of existing structural devices within 3 years of such determination of feasibility.

6. *Pesticide, Herbicide, and Fertilizer Application:* The permittee shall implement controls to reduce, to the MEP, the discharge of pollutants related to application of pesticides, herbicides, and fertilizers applied by Port employees, contractors, or lessees to public right of ways, parks, and all port lands and facilities.

7. *Illicit Discharges and Improper Disposal:* The permittee shall implement an ongoing program to detect and eliminate illicit discharges and improper disposal into the storm sewer. The permittee may chose to require the discharger to the MS4 to eliminate the illicit discharges or obtain a separate NPDES permit for such discharges.



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a. The permittee shall effectively prohibit non-storm water discharges to the MS4.

b. Unless identified by either the permittee, the Administrator, or the State as significant sources of pollutants to waters of the United States, the following non-storm water discharges need not be prohibited from entering the MS4, provided the necessity of such discharge(s) and appropriate control measures (if needed) to minimize the impacts of such sources, are developed under the SWMP:

(1) water line flushing;
(2) landscape irrigation;
(3) diverted stream flows;
(4) rising ground waters;
(5) uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers;
(6) uncontaminated pumped ground water;
(7) discharges from potable water sources;
(8) uncontaminated foundation drains;
(9) air conditioning condensate;
(10) irrigation water;
(11) springs;
(12) uncontaminated water from crawl space pumps;
(13) uncontaminated footing drains;
(14) lawn watering;
(15) individual residential car washing;
(16) flows from riparian habitats and wetlands;
(17) dechlorinated swimming pool discharges;
(18) street wash waters;
(19) NPDES permitted non-contact cooling waters and remediated ground waters, provided appropriate management practices are implemented and the discharges are in accordance with the Municipality's storm water management program; and,
(20) discharges or flows from emergency fire fighting activities.

c. The permittee shall prevent discharges of dry and wet weather overflows from sanitary sewers into the MS4. The permittee shall limit, to the maximum extent practicable, the infiltration of seepage from sanitary sewers into the MS4.

d. The permittee shall prohibit the discharge or disposal of all motor vehicle fluids and chemical wastes into separate storm sewers.

e. The permittee shall require the elimination of illicit connections as expeditiously as possible and the immediate cessation of improper disposal practices upon identification of responsible parties. Where elimination of an illicit connection within seven (7) days is not possible, the Port of Anchorage shall require an expeditious



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schedule for elimination of the discharge. In the interim, the Port of Anchorage shall require the operator of the illicit connection to take all reasonable and prudent measures to minimize the discharge of pollutants to the MS4. Elimination schedules should not exceed ninety (90) days, except for capital intensive projects which shall not exceed 455 days (one year ninety days).

8. *Spill Prevention and Response:* The permittee shall implement a program to prevent, contain, and respond to spills that may discharge into the MS4. The spill response program may include a combination of spill response actions by the permittee and its lessees.

9. *Industrial & High Risk Runoff:* The permittee shall implement a program to identify, monitor, and control pollutants in storm water discharges to the MS4 from: hazardous waste treatment, storage and disposal facilities that are subject to EPCRA Title III, Section 313; bulk storage facilities; and, any other industrial or commercial discharges the permittee determines are contributing a substantial pollutant loading to the MS4. The program shall include:

   a. priorities and procedures for inspections and establishing and implementing control measures for such discharges;

   b. a monitoring (or self-monitoring) program for facilities identified under this section, including the collection of quantitative data on the following constituents:

      (1) any pollutants limited in an existing NPDES permit for an identified facility;
      (2) oil and grease;
      (3) chemical oxygen demand (COD);
      (4) pH;
      (5) biochemical oxygen demand, five-day ($BOD_5$);
      (6) total suspended solids (TSS);
      (7) total phosphorous;
      (8) total Kjeldahl nitrogen (TKN);
      (9) nitrate plus nitrite nitrogen; and
      (10) any of the metals cadmium, copper, lead, and zinc which can be reasonably expected in storm water runoff from such industrial site; and,
      (11) any information on discharges required under 40 CFR 122.21(g)(7)(iii) and (iv).

10. *Construction Site Runoff:* The permittee shall implement a program to reduce, to the MEP, the discharge of pollutants from constructions sites, including:

   a. requirements for the use and maintenance of appropriate structural and nonstructural best management practices to reduce pollutants



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discharged to the MS4 upon commencement of, and during, the construction activities;

b. procedures for site planning which incorporate considerations for potential short and long term water quality impacts and minimizes, to the MEP, these impacts;

c. prioritized inspection of construction sites and enforcement of SWMP-required control measures;

d. appropriate education and training measures for construction site operators; and,

e. notification of all construction permit applicants of their potential responsibilities under the NPDES permitting program for construction site runoff.

11. *Public Education:* The permittee shall implement a public education program including:

a. a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or improper disposal of materials into the MS4;

b. a program to promote, publicize, and facilitate the proper management and disposal of used oil and commonly-used hazardous materials.

c. a program to promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by commercial and private applicators and distributors conducting such business within the Port of Anchorage jusrisdictional area.

C. <u>AREA-SPECIFIC STORM WATER MANAGEMENT PROGRAM REQUIREMENTS</u>
The following SWMP requirements apply only to the areas or discharges specified below. Management practices must also be developed in the SWMP for the following:

1. The Port of Anchorage (The Port) will provide an area for the washing of Port vehicles (that is, vehicles owned or operated by The Port) that will not result in the discharge of wash waters. The Port will encourage the use of detergent-free methods of vehicle washing and will require regular maintenance of the area to ensure wash waters, and resulting contaminants, will not be transported by storm water to waters of the U.S. This area is not required to be within Port jurisdictional boundaries, and does not have to be operated by the Port or Port personnel.

2. The Port may provide this area to its tenants solely for the purpose of vehicle washing. In such case, The Port accepts the responsibilty of proper operation and



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maintenance of this area, and will ensure proper management practices are adhered to at all times.

3. All vehicle and equipment maintenance areas will be managed so as to control discharges from these areas to the maximum extent practicable. All hydrocarbon compounds used in these areas will be handled in a manner that will eliminate or minimize potential discharges to waters of the U.S.

D. DEADLINES FOR PROGRAM COMPLIANCE

1. Except as provided in PART III, compliance with the storm water management program shall be required within 120 days of the effective date of this permit.

2. Proposed modifications and updates to the SWMP, along with proposed schedules for implementation, shall be submitted with the Annual Report required under Part II.G. to EPA.

E. ROLES AND RESPONSIBILITIES OF PERMITTEE AND LESSEES

The SWMP plan shall clearly identify the roles and responsibilities of the permittee. Activities required of the lessees by the permittee must also be clearly identified.

F. LEGAL AUTHORITY

The permittee shall ensure legal authority exists to control discharges to and from those portions of the MS4 over which it has jurisdiction. This legal authority may be a combination of statute, ordinance, permit, contract, order or inter-jurisdictional agreements with entities having existing legal authority to:

1. Control the contribution of pollutants to the MS4 by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity;

2. Prohibit illicit discharges to the municipal separate storm sewer;

3. Control the discharge of spills and the dumping or disposal of materials other than storm water into the MS4;

4. Control through interagency agreements among co-permittees the contribution of pollutants from one portion of the MS4 to another;

5. Require compliance with conditions in ordinances, permits, contracts or orders; and,

6. Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with permit conditions.



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G. **SWMP RESOURCES**
The permittee shall provide adequate finances, staff, equipment, and support capabilities to fully implement the storm water management program.

H. **SWMP REVIEW AND MODIFICATION**

1. *Program Review:* The permittee shall conduct an annual review of the current SWMP in conjunction with preparation of the annual system-wide report required under Part II.I. This annual review shall include:

   a. A review of the status of program implementation and compliance (or non-compliance) with all schedules of compliance contained in this permit;

   b. An assessment of the effectiveness of controls established by the SWMP;

   c. A review of monitoring data and any trends in estimated cumulative annual pollutant loadings; and,

   d. An assessment of any SWMP modifications needed to comply with the CWA §402(p)(3)(B)(iii) requirement to reduce the discharge of pollutants to the MEP.

2. *Program Modification:* The approved SWMP, and its plan, shall not be modified by the permittee without the prior approval of the EPA, unless in accordance with items a. through c. below:

   a. Modifications adding (but not subtracting or replacing) components, controls, or requirements to the approved SWMP may be made by the permittee at any time upon written notification to the permitting authority.

   b. Modifications replacing a failing Best Management Practice (BMP) identified in the SWMP with an alternate BMP may be requested in conjunction with the annual system-wide report required by Part II.I. below. Such requests must: 1) be made in writing; 2) provide an analysis of why the BMP is failing or ineffective (including cost prohibitive); 3) discuss the expectations of the effectiveness of the replacement BMP; and, 4) explain why the replacement BMP is expected to provide at least the same level of performance as originally expected of the BMP to be replaced.

   c. Modifications made under this paragraph shall not become enforceable permit conditions until such time as the modifications are approved by EPA.

Modification requests and/or notifications shall be signed in accordance with Part VI.H.

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3. *Modifications Required by the Permitting Authority:* The EPA may require the permittee to modify the SWMP as needed to:

   a. Address contributions by the MS4 discharges to impacts on receiving water quality;

   b. Include more stringent requirements necessary to comply with new State or Federal statutory or regulatory requirements; or,

   c. Include such other conditions deemed necessary by the Administrator to comply with the goals and requirements of the Clean Water Act.

   Modifications requested by the Administrator shall be made in writing, set forth the time schedule for the permittee to develop the modification(s), and offer the permittee the opportunity to propose alternative program modifications to meet the objective of the requested modification.

I. **SYSTEM-WIDE REPORT**

The permittee shall prepare and submit a system-wide report no later than one year after the anniversary of the effective date of this permit (March 3, 1995), and continue to submit an updated system-wide report every year thereafter. The report shall include the following separate sections and an overview for the entire MS4:

1. The status of implementing the components of the SWMPs that are established as permit conditions (status of compliance with any schedules established under this permit shall be included in this section);

2. Proposed changes to the SWMPs that are established as permit conditions, including an update on areas added to the MS4 due to annexation or other legal means;

3. Revisions, if necessary, to the assessments of controls and management practices;

4. A summary of the data, including monitoring data, that is accumulated throughout the last reporting year;

5. Annual expenditures for the reporting period (i.e., the last year), and projected budget for the one year period comprising the next system-wide report;

6. A summary describing the number and nature of compliance actions, inspections, and public education programs; and,

7. Identification of water quality improvements or degradation, with a discussion of those management practices implemented or proposed for implementation to address identified water quality degradation.



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## PART III. SCHEDULES FOR COMPLIANCE

### A. IMPLEMENTATION OF POLLUTION PREVENTION MEASURES

| POLLUTION PREVENTION MEASURE | ACTIVITY DESCRIPTION | DATE DUE |
|---|---|---|
| Part II.A.1 - New Development & Re-Development | Implement construction-phase storm water runoff control program. | March 4, 1996 |
| | Modify land use planning process within Port to require controls for storm water quality. | March 3, 1998 |
| | Implement requirements for post-construction storm water quality controls for new and significant re-development. | July 30, 1998 |
| Part II.A.2 - Vehicle Fluids | Implement public education program. | July 30, 1995 |
| | Develop collection/recycling/safe disposal program. | March 4, 1996 |
| | Implement collection/recycling/safe disposal program. | March 3, 1997 |
| Part II.A.3 - Common Hazardous Waste | Implement public education program. | July 30, 1995 |
| | Develop collection/recycling/safe disposal program. | March 4, 1996 |
| | Implement collection/recycling/safe disposal program. | March 3, 1997 |
| Part II.A.4 - Floatables | Implement public education program. | July 30, 1995 |
| | Implement litter control program. | July 30, 1995 |
| | Install floatables monitoring location (See Part V.A.2) | July 30, 1995 |
| | Complete study for targeting of structural controls. | July 30, 1996 |
| | Complete installation of structural controls on 100% of targeted storm sewer. | July 30, 1997 |



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B. IMPLEMENTATION OF STORM WATER MANAGEMENT PLANS

| SWMP ACTIVITY | ACTIVITY DESCRIPTION | DATE DUE |
|---|---|---|
| PART II.B - Storm Water Management Program (SWMP) plan development | Complete development of SWMP plan | June 5, 1995 |
| Part II.B.7 - Illicit Discharges and Improper Disposal | Implement public education program. | July 30, 1995 |
| | Complete screening of the MS4. | July 30, 1996 |
| | Complete follow up investigations based on screening results. | July 30, 1999 |
| Part II.I - System-wide Report | Episodic system and implementation status report | Annually: March 3 |

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## PART IV. SPECIAL PERMIT REQUIREMENTS

The following requirements are included in this permit as stipulations of water quality certification from the Alaska Department of Environmental Conservation (ADEC).

A. MONITORING

1. In Part II.B.9.b the parameter "Total Aqueous Hydrocarbons" will be substituted for the parameter "Oil and Grease" on the list of parameters to be monitored.

   The parameter "Total Aqueous Hydrocarbons" (TAqH) means those collective dissolved and water-accomodated monoaromatic and polynuclear aromatic petroleum hydrocarbons that are persistent in the water column; TAqH does not include floating surface oils and greases. TAqH is calculated by summing the values of the parameters Total Aromatic Hydrocarbons (TAH) and Total Polynuclear Hydrocarbons (PAH). The parameters TAqH, TAH, and PAH are all defined in the Adopted Draft Water Quality Standards, 18 AAC 70.020(b) Note #8, dated 9/13/94. The test methods to be used to determine the presence of these parameters are the EPA 602 method for TAH and the EPA 610 method for PAH. Equivalent methods may be substituted for EPA 610 that meet the performance standards, Minimum Detection Limits (MDLs), precision, and standard recoveries specified in method 610. The applicable criteria are contained in Note #8 (cited above).

2. Table V.A.1.a (Monitoring Frequency) shall be modified as follows:

   a) The monitoring frequency and the parameters listed for monitoring in years 2 and 3 shall be identical to that listed for year 4, such that the full list of parameters will be sampled in years 2, 3, and 4 at the frequency listed under YEAR 4.

   b) The parameter "Total Aqueous Hydrocarbons" will be substituted in the table for the parameter "Oil and Grease" (as discussed above).

   c) Delete "Other Water Quality Parameters" from the table.

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B. **MISCELLANEOUS**

1. Copies of all reports required in the permit will be sent to the following ADEC offices:

   Alaska Department of Environmental Conservation
   Southcentral Regional Office
   3601 C Street, Suite 1334
   Anchorage, AK 99503
   (907) 563-6529

   Alaska Department of Environmental Conservation
   Anchorage Western District Office
   800 E. Dimond Blvd. #3-470
   Anchorage, Alaska 99515
   (907) 349-7755

2. In Part II.A.1., add the following statement: The permittee shall emphasize source reduction techniques as a means to reduce the discharge of pollutants. The permittee shall inform the lessees of the availability, through ADEC, of pollution prevention resources, technical assistance programs and other non-regulatory initiatives that will support the overall objective of eliminating the discharge of pollutants.

3. In Part II.B.11., add the following as paragraph (d): a program to promote, publicize and facilitate implementation of technologies and techniques to prevent pollution through source reduction and recycling.

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## PART V. MONITORING AND REPORTING REQUIREMENTS

A. Storm Event Monitoring

The permittee shall implement a wet-weather monitoring program for the MS4 to provide data necessary to: 1) assess the effectiveness and adequacy of control measures implemented under the SWMP; 2) estimate annual cumulative pollutant loadings from the MS4; 3) estimate event mean concentrations and seasonal pollutants in discharges from major outfalls; 4) identify and prioritize portions of the MS4 requiring additional controls; and, 5) identify water quality improvements or degradation.

1. *Representative Monitoring:*
The permittee shall monitor representative outfalls and/or instream monitoring locations to characterize the quality of storm water discharges from the MS4.

   a. Monitoring Requirements: (See Table V.A.1.a).

   b. Outfall Descriptions: (See Table V.A.1.b)

2. *Wet Weather Screening Program:*
The permittee shall implement a program to screen all areas contibuting storm water to the MS4 for the presence of excessive pollutants in discharges from the MS4. The wet weather screening program:

   a. Shall screen the entire MS4 at least once during the permit term.

   b. Shall specify the sampling and non-sampling techniques, parameters, collection techniques, and analytical methods to be used for initial screening purposes. For screening samples only, sample collection and analysis need not conform to the requirements of 40 CFR Part 136 and are not subject to the requirements of Paragraphs 3, 4, and 5 below.



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Table V.A.1.a. - Monitoring Requirements for Outfalls 001, 002, and 003[1]

| PARAMETER | MONITORING FREQUENCY | | | | |
|---|---|---|---|---|---|
| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 |
| Biochemical Oxygen Demand ($BOD_5$) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Chemical Oxygen Demand (COD) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Suspended Solids (TSS) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Dissolved Solids (TDS) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Nitrogen (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Kjeldahl Nitrogen (TKN) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Phosphorus (mg/l) | --------- | --------- | --------- | Once/year | --------- |
| Dissolved Phosphorus (mg/l) | --------- | --------- | --------- | Once/year | --------- |
| Oil & Grease (mg/l) | Twice/year | Twice/year | Twice/year | Twice/year | Twice/year |
| Total Cadmium (ug/l) | --------- | --------- | --------- | Once/year | --------- |
| Total Copper (ug/l) | --------- | Once/year | --------- | Once/year | --------- |
| Total Lead (ug/l) | --------- | --------- | --------- | Once/year | --------- |
| Total Zinc (ug/l) | --------- | Once/year | --------- | Once/year | --------- |
| Ph (S.U.) | Twice/year | Twice/year | Twice/year | Twice/year | Twice/year |
| Hardness (as $CaCO_3$) (mg/l) | --------- | --------- | --------- | Once/year | --------- |
| Temperature (°C) | Twice/year | Twice/year | Twice/year | Twice/year | Twice/year |

[1] This table represents the baseline monitoring requirements for the discharges and outfalls described in this permit. Some specific parameters and monitoring frequencies have have been modified pursuant to the special requirements as discussed in Part IV of this permit.



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Table V.A.1.b - Representative Monitoring Outfall Descriptions

| OUTFALL | LOCATION | DESCRIPTION |
|---|---|---|
| 001 | Transit Area B | Storm water drain for Transit Area B. This area is 52.0 total acres with 16.2 acres of impervious surface. |
| 002 | Transit Area D and Transit Area A | Storm water drain for Transit Area D and a portion of Transit Area A. Transit Area D is 43.4 total acres and has 7.8 acres of impervious surface. This portion of Transit Area A has 55 total acres with 15 acres covered by impervious surface. The total acreage of impervious surface draining to outfall 002 is 22.8 acres. |
| 003 | Transit Area 12-B | Storm water drain for Transit Area 12-B. Area 12-B is 36.7 total acres with 16.8 acres of impervious surface. |

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c. Shall establish three monitoring locations for removal of floatable material in discharges from the MS4. The amount of material collected shall be estimated in cubic yards. Floatable material shall be measured periodically as necessary for maintenance of the removal device.

d. Shall submit, along with the system-wide report required by Part II.I, the following information:

(1) An estimate of the amount of floatable material collected (cubic yards);

(2) A summary of results and actions taken or proposed based on the results of the wet weather screening program.

e. Any monitoring location that collects an annual average of less than 3 cubic yards of floatables over any consecutive 3 calendar-year period during the permit term will no longer be considered a mandatory monitoring location. The Port must maintain at least one monitoring location for floatables regardless of the amount of floatables collected.

3. *Storm Event Data:*
Quantitative data shall be collected to estimate pollutant loadings and event mean concentrations for each parameter sampled. In addition to the parameters listed above, The Port shall maintain records on site of the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event which generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge sampled.

4. *Sample Type, Collection, and Analysis:*
a. For discharges from storm water holding ponds or other storm water impoundments with a retention period greater than 24 hours, (estimated by dividing the volume of the detention pond by the estimated volume of water discharged during the 24 hours previous to the time that the sample is collected) a minimum of one grab sample may be taken.

b. Grab samples taken during the first two hours of discharge shall be used for the analysis (if required) of pH, temperature, cyanide, oil & grease, fecal coliform, fecal streptococcus, total phenols, residual chlorine, and volatile organics. For all other parameters, data shall be reported



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for flow weighted composite samples of the entire event or, at a minimum, the first three hours of discharge.

c. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Composite samples may be taken with a continuous sampler or as a combination of a minimum of three sample aliquots taken in each hour of discharge for the entire discharge or for the first three hours of the discharge, with each aliquot being separated by a minimum period of fifteen minutes.

d. Analysis and collection of samples shall be done in accordance the methods specified at 40 CFR Part 136. Where an approved Part 136 method does not exist, any available method may be used.

5. *Sampling Waiver:*
When a discharger is unable to collect samples due to adverse climatic conditions, the discharger must submit in lieu of sampling data a description of why samples could not be collected, including available documentation of the event. Adverse climatic conditions which may prohibit the collection of samples includes weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.). Dischargers are precluded from exercising this waiver more than once during a two year period.

B. **Dry Weather Monitoring**

1. *Dry Weather Screening Program:*
The permittee shall continue ongoing efforts to detect the presence of illicit connections and improper discharges to the MS4. All portions (but not necessarily all outfalls) of the MS4 must be screened at least once during the permit term, in accordance with the schedule set forth in PART III.A.

2. *Screening Procedures:*
Screening methodology may be developed and/or modified based on experience gained during actual field screening activities and need not conform to the protocol at 40 CFR 122.26(d)(1)(iv)(D).

3. *Follow-up on Dry Weather Screening Results:*
The permittee shall implement a program to locate and



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eliminate suspected sources of illicit connections and improper disposal identified during dry weather screening activities. Follow-up activities may be prioritized on the basis of:

a. magnitude and nature of the suspected discharge;

b. sensitivity of the receiving water; and

c. other relevant factors.

C. Certification and Signature of Reports

1. All reports required by the permit and other information requested by the Director shall be signed and certified in accordance with Parts VII.H. & VII.I. of the permit.

D. Reporting: Where to Submit

1. Monitoring results obtained during each anual reporting period shall be submitted on Discharge Monitoring Report Form(s) and included with the annual system-wide reprt. A separate Discharge Monitoring Report Form is required for each event monitored. The first report may include less than twelve months of information.

2. Signed copies of discharge monitoring reports required under Part V., the System-Wide Report required by Part II.G., SWMP modifications and modification requests, requests for changes in monitoring outfalls and all other reports required herein, shall be submitted to:

U.S. EPA, Region 10
Wastewater Management and Enforcement Branch
Municipal Storm Water Permits (WD-135)
1200 Sixth Avenue
Seattle, Washington 98101

E. Additional Notification

1. Copies of the discharge monitoring reports required under Part V., the System-Wide Report required by Part II.G., and other reports requested by the State shall be submitted to:

Alaska Department of Environmental Conservation
Southcentral Regional Office
3601 C Street, Suite 1334
Anchorage, AK 99503
(907) 563-6529



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Alaska Department of Environmental Conservation
Anchorage Western District Office
800 E. Dimond Blvd. #3-470
Anchorage, Alaska 99515
(907) 349-7755

F. Retention of Records

1. The permittee shall retain at The Port the latest approved version of the storm water management program developed in accordance with Part II of this permit until at least three years after coverage under this permit terminates. The permittee shall retain at The Port all records of all monitoring information, copies of all reports required by this permit, and records of all other data required by or used to demonstrate compliance with this permit, until at least three years after coverage under this permit terminates. This period may be explicitly modified by alternative provisions of this permit or extended by request of the Director at any time.

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## PART VI. STANDARD PERMIT CONDITIONS

A. Duty to Comply

1. The permittee must comply with all conditions of this permit insofar as those conditions are applicable to each permittee, either individually or jointly. Any permit noncompliance constitutes a violation of CWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

B. Penalties for Violations of Permit Conditions

1. Criminal

a. Negligent Violations The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. Knowing Violations The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Knowing Endangerment The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 year, or both.

d. False Statement The CWA provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4



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years, or by both. (See Section 309(c)(4) of the Clean Water Act).

2. Civil Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation.

3. Administrative Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

   a. Class I penalty Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

   b. Class II penalty Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

C. Duty to Reapply
If the permittee wishes to continue an activity regulated by this permit after the permit expiration date, the permittee(s) must apply for and obtain a new permit. The application shall be submitted at least 180 days prior to expiration of this permit. The Administrator may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR 122.6 and any subsequent amendments.

D. Need to halt or reduce activity not a defense
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate
The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information
The permittee shall furnish to the Administrator, within a time specified by the Director, any information which the



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Administrator may request to determine compliance with this permit. The permittee shall also furnish to the Administrator upon request copies of records required to be kept by this permit.

G. Other Information
When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in any report to the Director, he or she shall promptly submit such facts or information.

H. Signatory Requirements
All Discharge Monitoring Reports, storm water pollution prevention plans, reports, certifications or information either submitted to the Administrator or that this permit requires be maintained by the permittee, shall be signed by:

1. either a principal executive officer or ranking elected official.

2. a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director.

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

   c. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new notice of intent satisfying the requirements of this paragraph must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

I. Certification
Any person signing documents under this section shall make the following certification:



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"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

J. **Penalties for Falsification of Reports**
Section 309(c)(4) of the Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or by both.

K. **Penalties for Falsification of Monitoring Systems**
The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the CWA.

L. **Oil and Hazardous Substance Liability**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA or section 106 of CERCLA.

M. **Property Rights**
The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

N. **Severability**
The provisions of this permit are severable, and if any provision of this permit, or the application of any provision



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of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

O. Requiring an individual permit

1. The Administrator may require the permittee authorized by this permit to obtain an individual NPDES permit. Any interested person may petition the Administrator to take action under this paragraph. The Director may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form (as necessary), a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit, coverage under this permit shall automatically terminate. Individual permit applications shall be submitted to the address of the appropriate Regional Office shown in Part V.D. of this permit. The Administrator may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application as required by the Administrator, then the applicability of this permit to the individual NPDES permittee is automatically terminated at the end of the day specified for application submittal.

2. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application as specified by 40 CFR 122.26(d) with reasons supporting the request to the Administrator. Individual permit applications shall be submitted to the address of the appropriate Regional Office shown in Part V.D. of this permit. The request may be granted by the issuance of a individual permit if the reasons cited by the owner or operator are adequate to support the request.

P. State/Environmental Laws

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Act.



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2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

Q. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

R. Monitoring and records

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. The permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Administrator at any time.

3. Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;

   b. The initials or name(s) of the individual(s) who performed the sampling or measurements;

   c. The date(s) analyses were performed;

   d. The time(s) analyses were initiated;

   e. The initials or name(s) of the individual(s) who performed the analyses;

   f. References and written procedures, when available, for the analytical techniques or methods used; and



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g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

S. Monitoring Methods
Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

T. Inspection and Entry
The permittee shall allow the Administrator or an authorized representative of EPA, or the State, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and,

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

U. Permit Actions
This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.



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## PART VII. PERMIT MODIFICATION

A. **Modification of the Permit**
The permit may be reopened and modified during the life of the permit to address:

1. changes in the State's Water Quality Management Plan, including Water Quality Standards;

2. changes in State or Federal statutes or regulations;

3. add a co-permittee who is the owner or operator of a portion of the MS4;

4. changes in portions of the storm water management program that are considered permit conditions; or

5. other modifications deemed necessary by the Administrator to meet the requirements of the Clean Water Act.

All modification to the permit will be made in accordance with 40 CFR 122.62, 122.63, and 124.5.

B. **Termination of Coverage for a Single Co-permittee**
Permit coverage may be terminated, in accordance with the provisions of 40 CFR 122.64 and 124.5, for a single co-permittee without terminating coverage for other co-permittees.

C. **Modification of Storm Water Management Program(s)**
Only those portions of the SWMPs specifically required as permit conditions shall be subject to the modification requirements of 40 CFR 124.5. Replacement of a failing BMP implementing a required component of the SWMP with an alternate BMP expected to provide at least the same level of performance initially expected of the failing BMP, shall be considered minor modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.63.

D. **Changes in Monitoring Outfalls**
This permit is issued on a system-wide basis in accordance with CWA § 402(p)(3)(i) and authorizes discharges from all portions of the MS4. Since all outfalls are authorized, changes in monitoring outfalls, other than those with specific numeric effluent limitations, shall be considered minor modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.63.



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## PART VIII. DEFINITIONS

"Administrator" means the Regional Administrator.

"Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"CWA" means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.

"Co-permittee" means a permittee to a NPDES permit that is only responsible for permit conditions relating to the discharge for which it is operator.

"Director" means the Regional Administrator or an authorized representative.

"Discharge" for the purpose of this permit, unless indicated otherwise, refers to discharges from the Municipal Separate Storm Sewer System (MS4).

"Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

"Illicit connection" means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

"Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.

"Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

"Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.



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"MS4" is an acronym for "municipal separate storm sewer system" and is used to refer to either a Large or Medium Municipal Separate Storm Sewer System.

"Large or Medium municipal separate storm sewer system" means all municipal separate storm sewers that are either:

(i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or

(ii) located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or

(iii) owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

"Municipal Separate Storm Sewer" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian Tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) designed or used for collecting or conveying storm water; (iii) which is not a combined sewer; and (iv) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

"Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

"Storm sewer", unless otherwise indicated, refers to a municipal separate storm sewer.

"Storm Water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

"SWMP" is an acronym for "Storm Water Management Program."



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"Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

"Waste pile" means any noncontainerized accumulation of solid, nonflowing waste that is used for treatment or storage.

"Waters of the United States" means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(b) All interstate waters, including interstate "wetlands";
(c) All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
(1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
(3) Which are used or could be used for industrial purposes by industries in interstate commerce;
(d) All impoundments of waters otherwise defined as waters of the United States under this definition;
(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
(f) The territorial sea; and
(g) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal areas in wetlands) nor resulted from the impoundment of waters of the United States.



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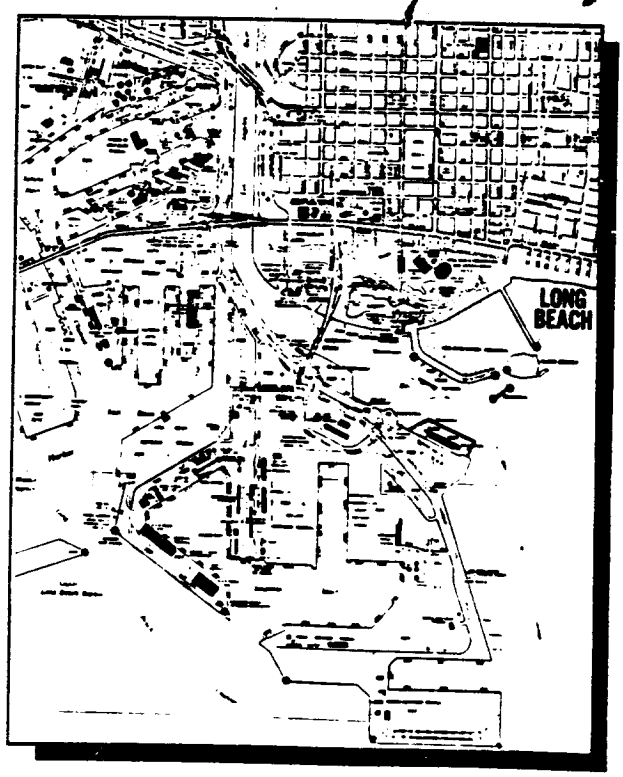
# 1993 ANNUAL REPORT
# STORM WATER DISCHARGE MONITORING
# IN THE PORT OF LONG BEACH

**Survey Period:**
**1 July 1992 to 30 June 1993**




**Prepared by:**
**MBC Applied Environmental Sciences**

**For:**
**Port of Long Beach**
**Planning Division**
**925 Harbor Plaza**
**Long Beach, California 90802**

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# 1993 ANNUAL REPORT
# STORM WATER DISCHARGE MONITORING
# IN THE PORT OF LONG BEACH

**Survey Period:**
**1 July 1992 to 30 June 1993**


**Prepared by:**

**MBC Applied Environmental Sciences**


**For:**

**Port of Long Beach**
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**925 Harbor Plaza**
**Long Beach, California 90802**


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# 1993 ANNUAL REPORT
# STORM WATER DISCHARGE MONITORING
# IN THE LONG BEACH HARBOR DISTRICT

## INTRODUCTION

This report is a summary of the results of the non-point source water quality monitoring program implemented by the Port of Long Beach (POLB), covering the monitoring period from 1 July 1992 to 30 June 1993. This program was initiated in response to the requirements for an annual report in the STATEWIDE GENERAL PERMIT - WQ ORDER NOS. 91-13-DWG & 92-12-DWG (NPDES CA000001). The annual report questionnaire from the Regional Water Quality Control Board (RWQCB) is completed and attached as Appendix 1 of this report.

The Long Beach Harbor District encompasses approximately 2,945 acres; however, 1,297 acres are federal lands and 457 acres belong to Union Pacific Resources Company. Approximately 1,191 acres are controlled and under the jurisdiction of the Port of Long Beach. This report addresses only the Long Beach Harbor District.

## ENVIRONMENTAL SETTING

The Long Beach-Los Angeles Harbor complex encompasses approximately 6,000 acres at the southeastern base of Palos Verdes Peninsula in Los Angeles County (Figure 1). It is bounded on the landward side by the cities of San Pedro, Wilmington, and Long Beach and to seaward by the San Pedro, Middle, and Long Beach breakwaters. Two major drainage channels, Dominguez Channel and the Los Angeles River, discharge into the harbor, and the San Gabriel River discharges just south of Alamitos Bay.

Long Beach Harbor is composed of the Inner, Middle, and Outer Harbors. The Inner Harbor comprises Cerritos Channel, a turning basin, and Channels Two and Three. Middle Harbor consists of West Basin, which supports the Naval complex, and the East Basin, which supports Piers D, E, F, G, and H. Long Beach Outer Harbor, used for anchorage and maneuvering, is a large semi-enclosed basin contiguous with Los Angeles Outer Harbor. Queen's Gate, between Middle and Long Beach breakwaters, is the main entrance to POLB.

## NON-POINT SOURCES OF POLLUTION

Terminal Island and the areas bordering the harbor serve many diverse industries including a variety of cargo terminals, the Terminal Island Treatment Plant, the Long Beach Generating Station, petroleum refineries, manufacturing plants, and other potential sources of materials that may affect the harbor water quality. Non-point or diffuse sources that carry contamination into Los Angeles-Long Beach Harbor include aerial fallout, surface runoff, advective transport, and boating and shipping activities.

A potentially large source of contaminants is surface runoff, which enters Long Beach-Los Angeles Harbor via the drainage channels of the Los Angeles and San Gabriel Rivers and the Dominguez Channel and from runoff from the piers and docks. About 70% of this discharge occurs during storms (MBC 1988) and contains organic matter, inorganic debris, dissolved minerals and nutrients, pesticides and herbicides, oils and grease, and many other industrial and domestic discharges (EPA 1977).

Contaminants from any of these sources may adversely affect the water quality of the harbor.

## STATION LOCATIONS

The POLB harbor is characterized by approximately 1,000 storm water outfalls that discharge to harbor waters. The RWQCB requirements were to collect grab samples within 30 minutes of

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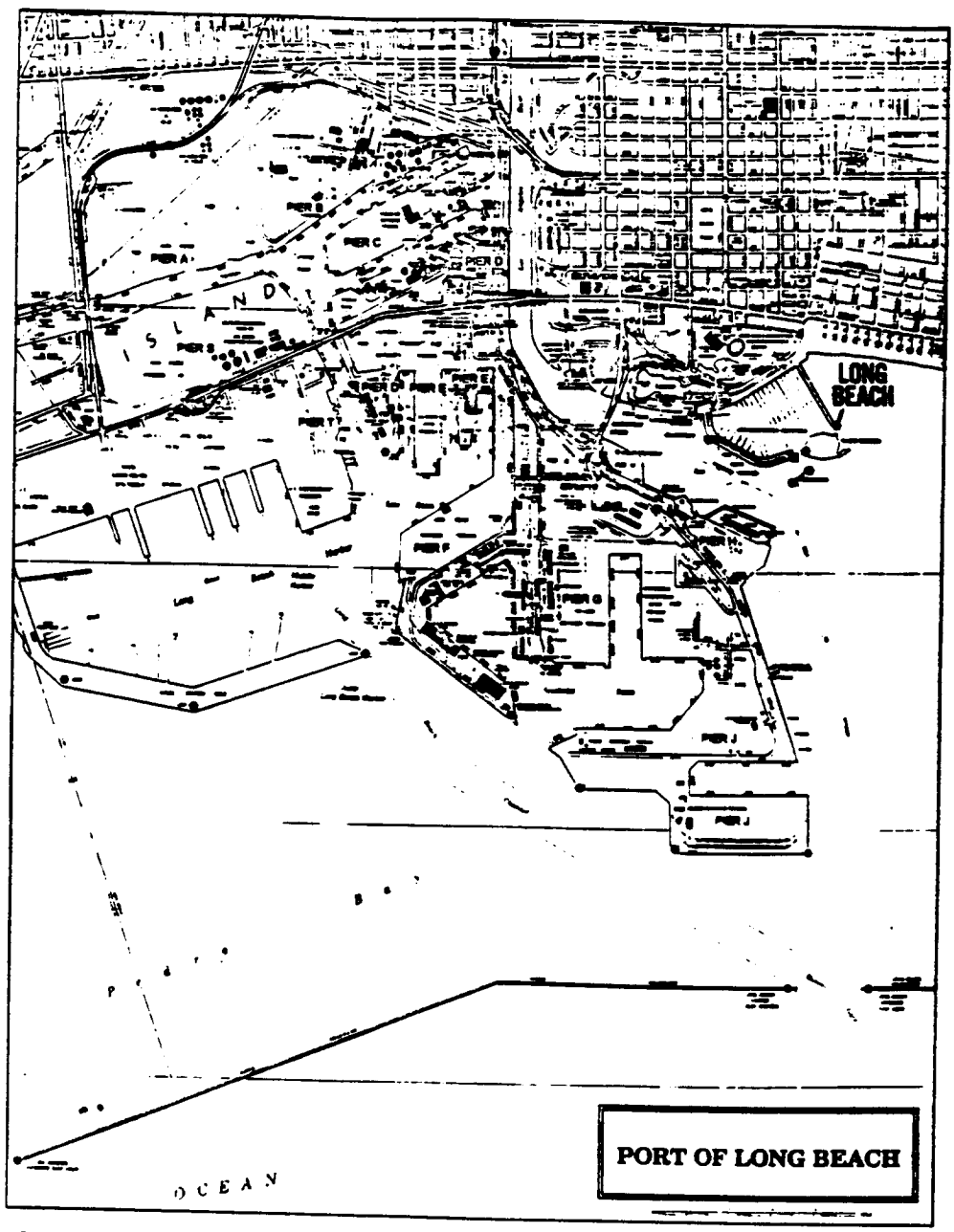


Figure 1. Vicinity map of the Port of Long Beach.



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a significant storm event (continuous discharge of storm water for approximately one hour or more). Because it is impracticable to sample all these outfalls within the first half hour following a major storm water event, a broad-based approach which could determine the presence or absence of contaminants in specific areas of the harbor complex following a storm was proposed and approved by the Los Angeles Regional Water Quality Control Board. Results from this receiving water sampling program could be utilized to focus an investigation into a specific area of the harbor should any contaminants be detected above permitted levels. With the concurrence of the RWQCB, a plan incorporating sampling at 20 stations throughout the harbor was proposed (Figure 2).

The appropriate analytical testing at each station necessary for the monitoring program was determined by review of all the Storm Water Runoff Facility Questionnaires submitted by the various tenants engaged in manufacturing or industrial activities. Other potential contaminants specified by the RWQCB were also included in the sampling design.

Station 1 was located at the mouth of the Los Angeles River, mid-way between the Magnolia Bridge and the Queen Mary, Station 2 was opposite the south side of Pier J, and Station 3, was located in the slip of the newly constructed Pier J facility. Six stations were located in Southeast Basin (Stations 4 through 9). Stations 10 and 11 were located in the Long Beach Channel adjacent to the channel edge of Pier F. Stations 12 through 16 were located in the Middle Harbor. Station 17 was located in the Inner Harbor between the Heim Bridge in the Cerritos Channel and the entrances to Channel Two and Three and Stations 18 and 19 were located in the middle of Channels Two and Three. Station 20 was located in the Outer Harbor south of the U.S. Navy Mole.

## DATA COLLECTION AND ANALYSIS

Analytical parameters, detection limits, and stations where sampled and measured are listed in Table 1. Two wet weather sampling episodes were conducted on 17 February during the period between 1805 and 2303 hrs and 25-26 March 1993 between 2217 and 0137 hrs on 25-26 March 1993. A dry-season sampling was conducted on 12 August 1993 between 0900 and 1410 hrs. An supplementary sampling was performed on 2 September 1993. In accordance with the provisions of the storm monitoring plan at the Port of Long Beach, the storm monitoring surveys were conducted during winter storms which occurred after several days or weeks of no precipitation. Both storms produced significant water runoff in the flood control channels, the rivers, and from the various docks, wharfs, and piers within the harbor.

Samples were collected from a small mobile vessel with a crew of three deployed into Long Beach Harbor during the storms. All water samples for each parameter were collected with a van Dorn bottle from the water surface. New sample containers were cleaned and prepared prior to sampling using laboratory clean-techniques appropriate for the various parameters analyzed. All collected samples were labeled and placed on ice for immediate transport to the analytical laboratory.

Quality assurance and quality control (QA/QC) procedures were initiated prior to sampling. Approximately 10% of all samples were randomly resampled. Prior to sampling, a random number generator was used with the station designation numbers to determine which of the 20 stations would be resampled for each parameter. These QA/QC sample containers were labeled Stations A and B and were submitted with the other samples labeled Stations 1 through 20. The analytical laboratory was not apprised of the identity of the stations labeled A and B.

The field log sheets with station designations, surface observations, chemical parameters sampled, and sampling duration are archived and available at the Port of Long Beach in separate Storm Water Reports for each survey. Complete laboratory reports on parameters analyzed,



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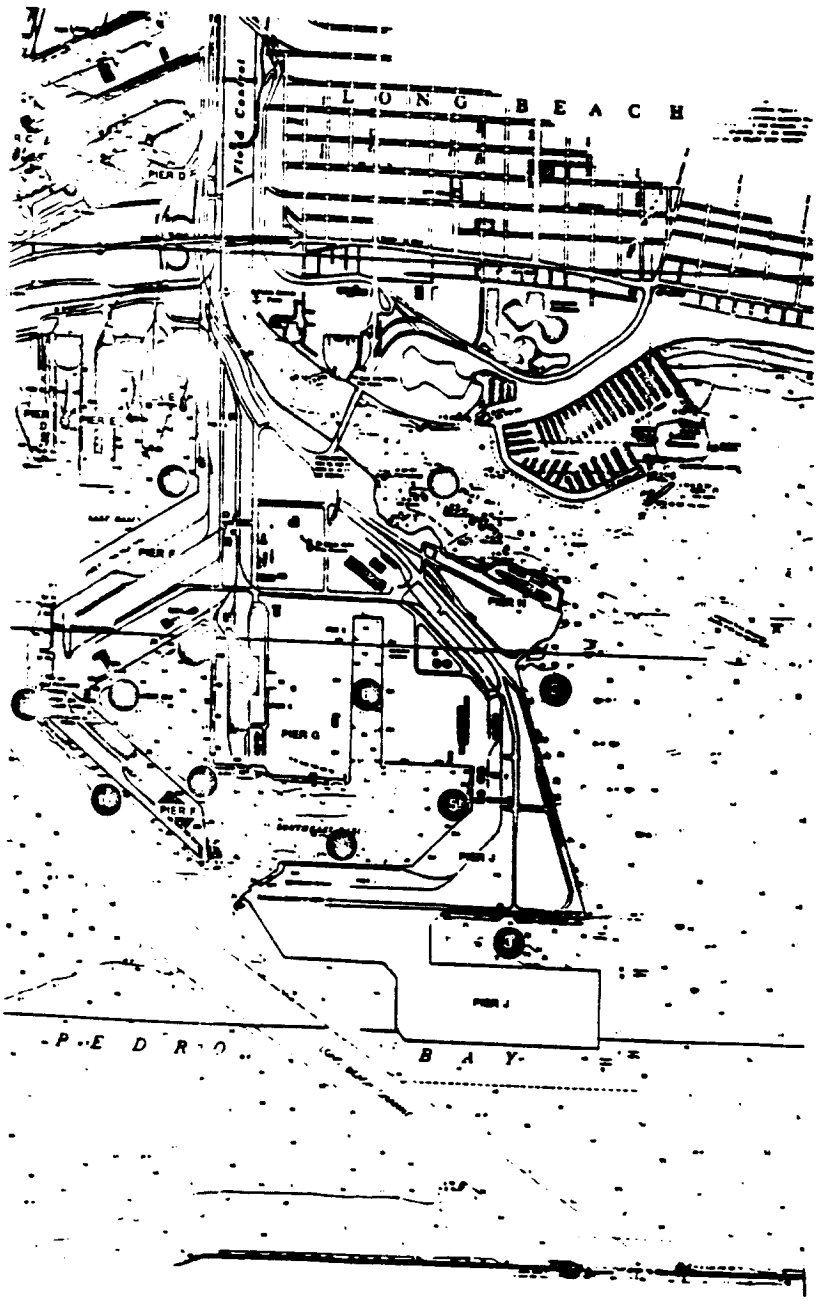


Figure 2. Port of Long Beach Water Quality Sampling Stations Non-Point Source Survey.

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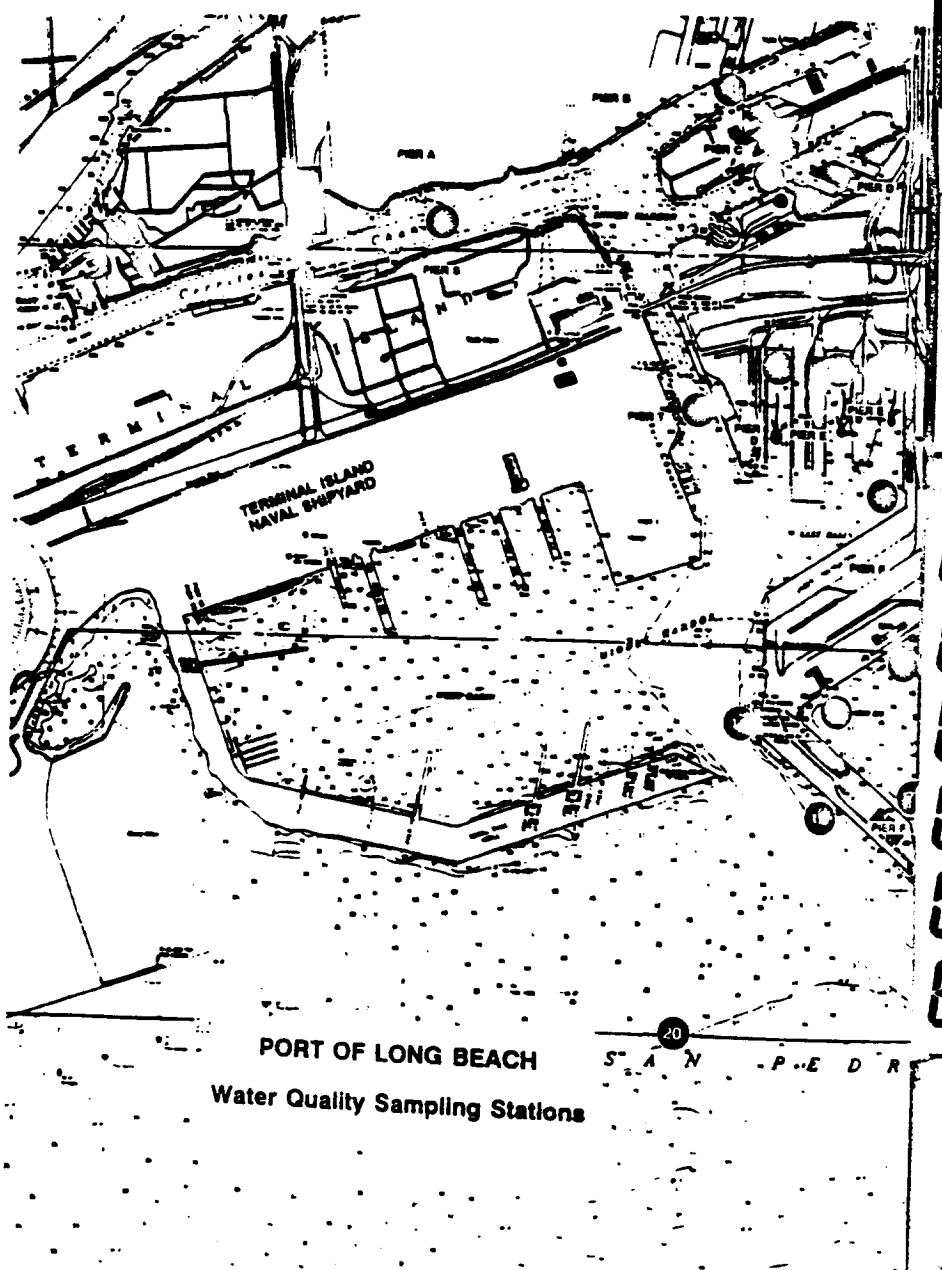


PORT OF LONG BEACH

Water Quality Sampling Stations

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Table 1. Analysis parameter, detection limits, EPA Method, and stations where sampled.

| Parameter | Detection Limit | EPA Method | Stations where Measured |
|---|---|---|---|
| Total organic carbon | 1.0 mg/l | 415.2 | all |
| Total suspended solids | 5.0 mg/l | 160.2 | all |
| Total recoverable petroleum hydrocarbons | 1.0 mg/l | 418.1 | all |
| Benzene, toluene | 0.3 ug/l | CA DHS - Mod. 8020 | 1-10, 13-18 |
| Ethylbenzene, xylene | 0.5 ug/l | CA DHS - Mod. 8020 | 1-10, 13-18 |
| Metals | 0.002-0.5 mg/l | 6010, 7060, 7191, 7196, 7421, 7470, 7740 | 1-10, 14-18 |
| Surfactants | 0.5 mg/l | 425.1 | 1-2, 3-6, 13 |
| Sulfide | 0.1 mg/l | 376.2 | 9 |
| Volatile organics | 2-10 ug/l | 8240 | 17-18 |
| Semi-volatile organics | 10-100 ug/l | 8270 | 17-18 |
| Extractable fuel hydrocarbons | 0.5 mg/l | CA DHS - Mod. 8015 | 17-18 |
| Volatile fuel hydrocarbons | 50 mg/l | CA DHS - Mod. 8015 | 17-18 |

including Quality Assurance/Quality Control method blanks, and spike analyses are also available at the Port of Long Beach in the separate Storm Water Reports for each survey.

## RESULTS

Two wet weather and one dry season monitoring episodes have been conducted since the inception of the storm water monitoring plan. Sampling conditions and results of each of the three monitoring episodes are described in the following text.

## FEBRUARY STORM SAMPLING PARAMETERS

During the February storm survey, rainfall began in the early morning and was intermittent during the day, becoming heavy in the late afternoon and on into the late evening. According to published weather service reports, approximately 1.2 inches of rain fell during the period from 0600 to 2400 hrs on 17 February.

During sampling, winds were blowing from the southeast at 15 knots and seas were 2 to 3 ft. Winds gradually became less, decreasing to 4 knots by 1930 hrs, and then increased to 18 knots and 4 ft seas by 2030 hrs. Winds alternately increased and decreased throughout the remainder of the sampling period.

### February Storm Surface Obeervations

Runoff from several piers was observed; however, few streams were noted, except at Station 18. At that station a sheet of water approximately 6 ft wide by 2 in deep on the south bulkhead was flowing from the container parking area into the harbor and a 24 in pipe was discharging water into the harbor approximately 300 m west of the station on the south bulkhead.

No odors were detected at any station, and turbidity was detected only at Stations 1, 2, and 3, which are directly influenced by the Los Angeles River. Wood and trash were observed on the surface at Station 1 and styrofoam was noted at Station 12.

## MARCH STORM SAMPLING PARAMETERS

During the March storm, rainfall began in the early morning and was intermittent during the day, becoming heavy in the late afternoon and on into the late evening. According to published



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weather service reports, approximately 1.56 inches of rain fell during the period from 0800 to 0800 hrs on 25-26 March.

During sampling, winds were blowing from the west to southwest at 10 to 20 knots and seas were 3 to 5 ft from the west. Winds alternately increased and decreased throughout the sampling period.

### March Storm Surface Obeservations

Runoff in the form of small streams was observed from several piers and storm drains. Water was percolating through the bulkhead at Stations 3 and 7. Water was flowing from a single storm drain each at Stations 9 and 12, two storm drains each at Stations 10 and 18, and six at Station 14. A sheet of water approximately 4 ft wide was flowing from a parking lot at Station 12 and a 3 ft wide sheet of water was flowing from the pavement and into the harbor at Station 18. Heavy water flow from the Los Angeles River was noted at Station 1.

There was a strong oily odor present at Stations 1 and 2; no odors were detected at any of the remaining stations. Visible turbidity was present at Stations 1, 2, and 3 in the path of the Los Angeles River and inside the Harbor at Stations 9, 10, 11, 12, 17, 18, and 19. Terrestrial debris, trash, and styrofoam were noted at Stations 1 and 2, located at the mouth of the Los Angeles River, and at Stations 5 and 9.

## AUGUST DRY SEASON SAMPLING PARAMETERS

The dry season sampling was preceded by several months of no significant rainfall; the most recent had occurred on 5 May 1993. During sampling, winds were from the west to southwest at 3 to 10 knots most of the day and seas began flat, becoming a light chop by mid-day.

### August Surface Obeservations

Due to the dry weather conditions, most drains had no visible discharges. The one exception was between Stations 6 and 7 in the southeast basin, where a 24" pipe was discharging 2 to 3 gallons per minute. Small discharges were noted from ships near Stations 9, 14, and 20.

No odors, oil, grease, or turbid or color patches were noted at any station. Floating trash (paper) was seen at Station 1, at the mouth of the Los Angeles River.

## HYDROGEN ION CONCENTRATION (pH)

February storm water hydrogen ion concentrations (pH) were nearly uniform ranging narrowly from 7.98 to 8.02 among all stations, except Stations 1 (in the mouth of the Los Angeles River mouth) and 19 in Cerritos Channel (Table 2). The pH value at Station 1 was 8.14 and the value at Station 19 was 7.93. All values, including these two stations, are normal for Long Beach Harbor and the Southern California Bight in general. QA/QC results for the two stations selected were nearly identical to the values determined for the required sampling.

March storm water hydrogen ion concentrations (pH) were nearly uniform among all stations ranging from 7.90 to 8.15, except Station 1 (in the mouth of the Los Angeles River) which had a pH of 7.54 (Table 2). The slightly lower reading found at several stations is probably the result of rainwater on the surface, and the low reading at Station 1 was because of the mixture of freshwater and seawater present at the river mouth. All values are normal for Long Beach Harbor and the Southern California Bight in general. QA/QC results for the two stations selected were nearly identical to the values determined for the required sampling.



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Table 2. Storm water monitoring analytical results.

| Station Number | PHYSICAL AND CHEMICAL ANALYTICAL RESULTS | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | | | Conductivity (ms/cm) | | | TSS (mg/l) | | | TOC (mg/l) | | | Petroleum Hydrocarbons (mg/l) | | |
| | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug |
| 1 | 8.14 | 7.54 | 8.25 | 3.69 | 4.33 | 31.1 | 580 | 160 | 110 | 3.5 | 7.5 | 3.7 | 1.4 | 1.6 | nd |
| 2 | 7.98 | 8.11 | 8.20 | 32.1 | 32.2 | 40.2 | 160 | 190 | 84 | nd | nd | nd | nd | nd | nd |
| 3 | 7.98 | 8.15 | 8.16 | 39.3 | 34.2 | 40.6 | 170 | 210 | 270 | nd | nd | nd | nd | nd | nd |
| 4 | 8.00 | 8.00 | 8.17 | 44.5 | 37.2 | 40.9 | 200 | 160 | 99 | nd | nd | nd | nd | nd | nd |
| 5 | 8.00 | 8.01 | 8.10 | 45.2 | 38.4 | * | 200 | 380 | 69 | nd | nd | nd | nd | nd | nd |
| 6 | 8.01 | 8.01 | 8.13 | 47.5 | 38.2 | 40.4 | 200 | 380 | 82 | nd | nd | nd | nd | nd | nd |
| 7 | 7.99 | 8.00 | 8.17 | 45.8 | 35.3 | 40.8 | 200 | 380 | 75 | nd | nd | nd | nd | nd | nd |
| 8 | 8.02 | 7.99 | 8.13 | 44.9 | 37.5 | 40.9 | 160 | 280 | 99 | nd | nd | nd | nd | nd | nd |
| 9 | 8.02 | 8.06 | 8.16 | 44.8 | 35.8 | 40.8 | 180 | 210 | 74 | nd | nd | nd | nd | nd | nd |
| 10 | 8.01 | 8.01 | 8.21 | 43.5 | 38.8 | 40.8 | 160 | 210 | 75 | nd | nd | nd | nd | nd | nd |
| 11 | 8.01 | 8.00 | 8.19 | 43.8 | 39.3 | 40.8 | 160 | 380 | 220 | nd | nd | nd | nd | nd | nd |
| 12 | 8.01 | 7.99 | 8.21 | 46.9 | 40.2 | 50.1 | 160 | 300 | 86 | nd | nd | nd | nd | nd | nd |
| 13 | 8.01 | 7.99 | 8.17 | 46.3 | 38.2 | 50.9 | 170 | 160 | 240 | nd | nd | nd | nd | nd | nd |
| 14 | 7.99 | 7.96 | 8.20 | 45.9 | 39.7 | 49.9 | 200 | 160 | 65 | nd | nd | nd | nd | nd | nd |
| 15 | 8.01 | 7.99 | 8.21 | 47.4 | 39.8 | 50.3 | 230 | 210 | 66 | nd | nd | nd | nd | nd | nd |
| 16 | 8.01 | 7.99 | 8.16 | 46.2 | 40.5 | 50.2 | 200 | 160 | 84 | nd | nd | nd | nd | nd | nd |
| 17 | 8.01 | 7.94 | 8.10 | 47.1 | 40.9 | 50.3 | 210 | 280 | 170 | nd | nd | nd | nd | nd | nd |
| 18 | 7.99 | 7.90 | 8.11 | 47.7 | 38.8 | 50.5 | 210 | 280 | 66 | nd | nd | nd | nd | 1.5 | nd |
| 19 | 7.93 | 7.91 | 8.18 | 44.9 | 37.2 | 50.4 | 160 | 160 | 76 | nd | nd | 2.2 | nd | nd | nd |
| 20 | 8.01 | 8.02 | 8.23 | 43.8 | 42.4 | 49.4 | 280 | 240 | 76 | nd | nd | 2.3 | nd | nd | nd |
| A | 8.01 | 8.00 | 8.18 | 3.1 | 40.8 | 50.0 | 170 | 210 | 140 | nd | nd | 2.1 | nd | nd | nd |
| B | 8.01 | 7.96 | 8.17 | 31.0 | 42.4 | 49.9 | 200 | 220 | 61 | nd | nd | 2.0 | nd | nd | nd |
| QA/QC Station designations | | | | | | | | | | | | | | | |
| A | 10 | 5 | 16 | 1 | 9 | 16 | 3 | 16 | 4 | 9 | 20 | 2 | 9 | 2 | 2 |
| B | 5 | 13 | 19 | 2 | 4 | 12 | 1 | 4 | 14 | 20 | 2 | 12 | 3 | 16 | 9 |

* an anomalous reading resulted from ice water leaking into the linetown jar
nd = not detected; - = not sampled

Hydrogen ion concentrations (pH) in August were nearly uniform among all stations ranging from 8.10 to 8.25 (Table 2). All values were normal for Long Beach Harbor and the Southern California Bight in general. QA/QC results were within 0.02 units between the two samples at each station.

## CONDUCTIVITY

February conductivity measurements indicated that fresh water was mixed in the water column to a depth of at least 1 m at Stations 1, 2, and 3 downstream of the Los Angeles River (Table 2). Conductivity measurements at the other 17 stations taken from the surface interphase were varied narrowly, ranging from 43.8 in the Outer Harbor to 47.7 in Channel Two in the Inner Harbor. QA/QC results for the two stations selected were nearly identical to the values determined for the required sampling at the station.

March conductivity measurements again indicated that a fresh water lens was present on the surface in varying degrees at all stations; based on conductivity measurements, no station was above a salinity of 27 ppt indicating a fresh water lens was present on the surface from storm waters. Conductivity and, therefore, salinity was especially low at Stations 1 and 2, at the mouth of the Los Angeles River, and was highest at the Outer Harbor Station 20 (Table 1). All other conductivity measurements were relatively similar among the other 17 stations during the survey. Conductivity ranged from 4.3 in the mouth of the Los Angeles River to 42.4 in the Outer



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Harbor. QA/QC results for the two stations selected did not correlate well with the values determined for the required sampling and may reflect the inherent variability in sampling a thin freshwater lens mixed with seawater.

With the exception of Station 1, conductivity measurements in August varied only slightly, from 49.2 to 50.6 (Table 2), and correspondingly, salinity ranged from 32.2 to 33.3 ppt which is normal for seawater in the Southern California Bight. Conductivity measurements indicated a fresh water lens only at Station 1 (31.1 ms/cm; 19.3 ppt) at the mouth of the Los Angeles River, and a slight influx of fresh water at Station 2 (49.2 ms/cm; 32.2 ppt). QA/QC results for the two stations selected correlated well with the values determined originally and were within 0.2 ms/cm.

## TOTAL SUSPENDED SOLIDS

February storm water total suspended solids levels were similar at most stations, near 200 mg/ℓ; however, levels in the Los Angeles River mouth were markedly higher (590 mg/ℓ). QA/QC results for the two stations selected were nearly identical to the values determined for the required sampling (Table 2).

Total suspended solids levels during the March storm were similar at most stations (near 200 mg/ℓ), ranging from 190 to 220 mg/ℓ (Table 2). QA/QC results for one of the two stations selected was identical to the values determined for the required sample; however during the QA/QC audit total suspended solids were slightly higher in the Station B QA/QC sample (which was collected at Station 4) than the results recorded for the required sampling at Station 4; again, this probably reflects the variable amount of seawater and freshwater in each collection.

As might be expected, suspended solid levels in the Port were much lower during the dry season than during the rainy season. Total suspended solids levels in August varied widely in the port, ranging from 69 to 270, but averaging less than 115 mg/ℓ (Table 2). Highest levels were found at Station 3 in the new Pier J slip, Station 11 near the entrance to Middle Harbor, and Station 13 in East Basin. No spatial trends were evident in highest and lowest levels. Compared to the original samples, QA/QC results at Station 14 were similar, while at Station 4 the QA/QC sample was higher.

## TOTAL ORGANIC CARBON

February storm water levels of organic carbon were below the detection level at all stations, except Station 1 in the Los Angeles River mouth, where levels of 3.5 mg/ℓ were found. QA/QC results for the two stations selected were nearly identical to the values determined for the required station samples (Table 2).

In March, total organic carbon was detected only at Station 1 at the Los Angeles River mouth at a value of 7.5 mg/ℓ (Table 1). All remaining stations had levels of organic carbon that were below the detection level of 1.0 mg/ℓ (Table 2). QA/QC results for the two stations selected were identical to the results determined for the required station samples.

Total organic carbon was detected at five stations in August, three in original samples and two in QA/QC samples taken from different stations (Table 2). Detected levels ranged from 2.0 to 3.7 mg/ℓ. All remaining stations had levels of organic carbon that were below the detection level of 1.0 mg/ℓ.

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH)

In February, petroleum hydrocarbons were detected only at Station 1 (1.4 mg/ℓ). QA/QC results for the two stations selected were identical to the values determined for the required station sampling (Table 2).



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During the March storm survey, petroleum hydrocarbons were detected only at Stations 1 and 18, with values of 1.6 and 1.5, respectively (Table 2). QA/QC results for the two stations selected were identical to the results determined for the required station sampling.

In August, no petroleum hydrocarbons were detected at any station. QA/QC results for the two stations selected were identical to the values determined for the required station sampling (Table 2).

## BENZENE, TOLUENE, ETHYLBENZENE, XYLENE (BTEX)

During the February storm survey, traces of toluene and total xylene were found at Station 1 and traces of benzene, toluene, and total xylene were found at Station 14 (in the recesses of Pier C). No other analyzed parameters were detected at any of the other stations. QA/QC results for one of the two stations selected was identical to the values determined for the station, however during the QA/QC audit no traces of toluene or total xylene were found in the Station B QA/QC sample, which was collected at Station 1 (Table 3).

**Table 3. Storm water monitoring analytical results.**

| Station Number | PHYSICAL AND CHEMICAL ANALYTICAL RESULTS | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Benzene (ug/l) | | | Toluene (ug/l) | | | Ethylbenzenes (ug/l) | | | Xylene (ug/l) | | | Volatile Organics (ug/l) | | |
| | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug |
| 1 | nd | nd | nd | 0.5 | 0.7 | 0.56 | nd | nd | nd | 0.8 | 0.8 | nd | – | – | – |
| 2 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 3 | nd | nd | 0.51 | nd | nd | 0.83 | nd | nd | nd | nd | nd | 1.7 | – | – | – |
| 4 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 5 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 6 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 7 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 8 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 9 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 10 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 11 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 12 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 13 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 14 | 0.3 | nd | nd | 0.9 | nd | nd | nd | nd | nd | 0.8 | nd | nd | – | – | – |
| 15 | nd | 0.8 | nd | nd | 40 | nd | nd | 10 | nd | nd | 60 | nd | – | – | – |
| 16 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| 17 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| *18 | nd | 2.0 | nd | nd | 5.0 | nd | nd | nd | nd | nd | 9.0 | nd | nd | 2.0** | nd |
| 19 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 20 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| A | nd | 0.8 | nd | nd | 40 | nd | nd | 11 | nd | nd | 68 | nd | – | – | – |
| B | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | – | – | – |
| QA/QC Stations | | | | | | | | | | | | | | | |
| A | 7 | 15 | 13 | 7 | 15 | 13 | 7 | 15 | 13 | 7 | 15 | 13 | – | – | – |
| B | 1 | 2 | 10 | 1 | 2 | 10 | 1 | 2 | 10 | 1 | 2 | 10 | – | – | – |

* Benzene, toluene, and xylene were detected as volatile organics, not during BTEX anayses
** 1,1,1-Trichloroethane
nd = not detected; – = not sampled



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During the March storm survey, traces of toluene and total xylene were found at Station 1 (Table 3). Benzene, toluene, ethylbenzene, and total xylene were detected at Station 15. None of these parameters were detected at any of the other stations sampled (Table 3). QA/QC results for the two stations selected were nearly identical to the values determined for the required sample.

Traces of benzene and total xylene were found at Station 3 in August and toluene was found at Stations 1 and 3 (Table 2). None of these parameters were detected at any of the other stations sampled or in the QA/QC samples (Table 3). When Station 3 was resampled in September, none of these constituents were detected.

## VOLATILE ORGANICS

Solvents and other volatile organics were sampled during the storm water survey during February at two stations. No solvents were detected at either Station 17 or 18 (Table 3).

During the March storm, solvents and other volatile organics were measured at Stations 17 and 18. No solvents were detected at Station 17; however, benzene, toluene, 1,1,1 trichloroethane, and total xylene were detected at Station 18 (Table 3).

No solvents or other volatile organics were measured at either Stations 17 or 18 during the dry season August survey (Table 3).

## INDUCTIVELY COUPLED ARGON PLASMA (ICAP) TRACE METALS

During the February storm survey, barium, lead, and zinc were found in the sample from Station 1 and lead was found in the sample from Station 2. No other trace metals were above detection levels at any other station. QA/QC results for the two stations selected were identical or nearly identical to the values determined for the required samples at the station (Table 4).

Results from the March survey indicated barium, lead, and zinc were found in the sample from Station 1 (Table 4). No other trace metals were above detection levels at any other station. QA/QC results for the two stations selected were identical to results determined for the required sample.

No trace metals were detected at any station, including the QA/QC stations, during the August sampling (Table 4).

## METHYL BLUE ACTIVE SUBSTANCES (MBAS) SURFACTANTS

During the February storm, surfactants were recorded at four stations (Stations 4, 5, 6, and 13). Stations 4, 5, and 6 are located in the Southeast Basin and Station 13 is located between Piers A and B. Surfactants were not present at the other two stations in levels above detection. QA/QC results for the one station selected were identical or nearly identical to the value determined from the required sample taken at the station (Table 5).

During the March storm, surfactants were recorded only at Station 1 (Table 5). Surfactants were not detected at the other five stations. QA/QC results for the one station selected were identical to the result determined from the required sample taken at the station.

Surfactants were recorded in five of the six samples during the August dry season sampling including the QA/QC sample from Station 6 (Table 5).

In September, samples from three previously sampled stations and two additional stations were analyzed for surfactants. All five of these stations had detectable levels, though in lower



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Table 4. Storm water monitoring analytical results.

| Station Number | PHYSICAL AND CHEMICAL ANALYTICAL RESULTS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Barium (mg/l) | | | Lead (mg/l) | | | Zinc (mg/l) | | | All other metals (mg/l) | | |
| | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug |
| 1 | 0.07 | 0.06 | nd | 0.01 | 0.13 | nd | 0.07 | 0.06 | nd | nd | nd | nd |
| 2 | nd | nd | nd | 0.03 | nd | nd | nd | nd | nd | nd | nd | nd |
| 3 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 4 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 5 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 6 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 7 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 8 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 9 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 10 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 11 | - | - | - | - | - | - | nd | nd | nd | nd | nd | nd |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - |
| 13 | - | - | - | - | - | - | - | - | - | - | - | - |
| 14 | nd | nd | nd | nd | nd | nd | - | - | - | - | - | - |
| 15 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 16 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 17 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 18 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 19 | - | - | - | - | - | - | nd | nd | nd | nd | nd | nd |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - |
| A | nd | nd | nd | nd | nd | nd | - | - | - | - | - | - |
| B | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| QA/QC Stations | | | | | | | nd | nd | nd | nd | nd | nd |
| A | 17 | 3 | 6 | 17 | 3 | 6 | 17 | 3 | 6 | 17 | 3 | 6 |
| B | 18 | 5 | 14 | 18 | 5 | 14 | 18 | 5 | 14 | 18 | 5 | 14 |

nd = not detected; - = not sampled

concentrations than found in August, indicating that surfactants were widespread in the port during this time period.

## SULFIDES

Sulfides in February were measured at only one station. No sulfides were detected at Station 9 (Table 5).

During the March storm, sulfides were measured at Station 9 only. No sulfides were detected at Station 9 (Table 5).

No sulfides were measured at Station 9 during the August dry season sampling survey (Table 5).

## SEMI-VOLATILE ORGANICS, EXTRACTABLE FUEL HYDROCARBONS, AND VOLATILE FUEL HYDROCARBONS

Stations 17 and 18 were sampled for semi-volatile organics, extractable fuel hydrocarbons, and volatile fuel hydrocarbons in February, March, and August 1993. No levels of any of these parameters were present above detection limits at either of the two stations during any of the three surveys (Table 5).



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Table 5. Storm water monitoring analytical results.

| Station Number | PHYSICAL AND CHEMICAL ANALYTICAL RESULTS | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Surfactants (mg/l) | | | Sulfide (mg/l) | | | Semi-volatile organics | | | Extractable fuel hydrocarbons | | | Volatile fuel hydrocarbons | | |
| | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug |
| 1 | nd | 0.6 | nd | - | - | - | - | - | - | - | - | - | - | - | - |
| 2 | nd | nd | 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | 1.4 | nd | 1.2 | - | - | - | - | - | - | - | - | - | - | - | - |
| 5 | 0.9 | nd | 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | 1.1 | nd | 1.0 | - | - | - | - | - | - | - | - | - | - | - | - |
| 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 9 | - | - | - | nd | nd | nd | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 13 | 1.0 | nd | 1.0 | - | - | - | - | - | - | - | - | - | - | - | - |
| 14 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 17 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 18 | - | - | - | - | - | - | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 19 | - | - | - | - | - | - | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| A | nd | nd | 1.4 | - | - | - | - | - | - | - | - | - | - | - | - |
| B | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| QA/QC Stations | | | | | | | | | | | | | | | |
| A | 1 | 6 | 6 | - | - | - | - | - | - | - | - | - | - | - | - |
| B | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

nd = not detected; - = not sampled

## EFFECTIVENESS OF STORM WATER POLLUTION PREVENTION PLAN

Two wet season and one dry season monitoring episodes, each sampling 20 discrete receiving water points, have been conducted. Both storm water episodes detected contaminants in the harbor waters at several locations. As two of the sampling periods were conducted during periods of heavy storm water runoff, it is likely that the detected contaminants (semi-volatile organics characteristic of motor fuels, and heavy metals) reflected the input of non-point source runoff. Two of the locations are in the Los Angeles River mouth, and probably not affected by runoff from the Port. The other locations, Stations 14, 15, and 18, are located in dead-end slips within the harbor proper.

The summer dry season sampling found that none of the drains going into the harbor were flowing (with the exception of a single drain in the southeast basin know to the RWQCB). Therefore, the detection of surfactants throughout the harbor in low levels, and of semi-volatile organics at Station 3 is an indication that sources other than surface runoff are responsible for the dry season detection of contaminants.

The presence of contaminants in harbor waters indicated that current operational practices and control measures, including those incorporated into the POLB SWPPP, are not totally effective at preventing receiving water contamination. However, the detection of contaminants at a few stations should not overshadow the analytical results indicating that no contaminants were detected at most stations. This indicates that the program, while not perfect, is, nevertheless, highly effective.



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The Port is undertaking an investigation of possible sources of the detected contaminants. The results of that investigation will be included in the 1994 Annual Report.



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# APPENDIX

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

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STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITIES

STATEWIDE GENERAL PERMIT - WQ ORDER NOS. 91-13-DWQ & 92-12-DWQ (NPDES CA000001)
OR THE
SANTA CLARA COUNTY GENERAL PERMIT - BOARD ORDER NOS. 92-011 & 92-116 (NPDES CAG12001)

Please provide the following information. ***Provide a brief explanation, on a separate sheet(s), to all questions you have answered with a NO response, and to those questions that request additional information. Attach the separate sheets as an addendum to your report.*** If you have any questions regarding this report please contact your local Regional Water Quality Control Board (Regional Board), or the State Water Resources Control Board (State Board) (see Attachment I).

This report requires that you provide an accurate and honest assessment of your facility's status of compliance with the storm water program. All incidents of non-compliance are to be reported. Provide a brief explanation of the incident that resulted in the non-compliance. Include in this discussion what you will do, or how you intend to bring your facility into compliance along with a time schedule for implementation of your actions.

This report must be certified and signed, under penalty of perjury, that the information provided in this report is true and complete. The certification must be signed by an appropriate official of your company (see Section C.9).

## GENERAL OWNER/FACILITY INFORMATION

A. Facility WDID No: **4B198003828**

B. Facility/Site Information:

Name: **The Port of Long Beach** County: **Los Angeles**

Street Address: **925 Harbor Plaza**

City: **Long Beach** State: **California** Zip: **90802**

SIC Code(s): **Various - see POLB NOI (NPDES Stormwater Management System)**

Describe your business activities: **Oversee shipping and commerce in the POLB**

Mailing Address: **925 Harbor Plaza**

City: **Long Beach** State: **CA** Zip: **90802**

Contact Person: **Geraldine Knatz, Ph.D.** Phone: **(310) 590-4154**

C. Is your facility part of a Group Monitoring Plan? __ Yes X No **Port of Long Beach conducts monitoring for itself and all of its tenants but is not considered a "Group Monitoring Plan"**

If Yes, please answer the following questions:

- What is the Group Monitoring Plan's name:
- Is your facility designated to collect storm water samples? __ Yes __ No

D. Has your facility been approved for exemption to storm water sample collection (Section B.9.a,b and c)?

__ Yes X No **Port of Long Beach currently conducts the required storm water monitoring**

If Yes, were you: __ self-certified __ certified by a local agency?

Provide the date you submitted your certification to the Regional Board office: _____



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STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT

STATEWIDE GENERAL PERMIT - WQ ORDER NOS. 91-13-DWQ & 92-12-DWQ (NPDES CA000001)
OR THE
SANTA CLARA COUNTY GENERAL PERMIT - BOARD ORDER NOS. 92-011 & 92-116 (NPDES CAG12001)

1. Is all the information contained in your NOI current and correct, i.e., facility address, contact name, phone number, etc.? X Yes __ No
   If No, please submit a revised NOI to the State Board with a copy to your Regional Board.
2. Have you prepared a Storm Water Pollution Prevention Plan (SWPPP) as required in Section A of the Permit?
   X Yes __ No
3. Have you implemented all elements of your SWPPP? X Yes __ No
4. Have all non-storm water discharges been permitted or eliminated (Section A.6)? __ Yes X No
   If No, have you reported all the non-storm water discharges to the appropriate Regional Board office?
   __ Yes X No **One unpermitted industrial discharge occurs as a result of a faulty pump. Alternatives for insuring reliable operation for this system, given the acidic nature of the discharge, are currently being investigated by Port of Long Beach Engineering Staff.**
5. Have you developed a monitoring program as required in Section B of the Permit? X Yes __ No
6. Have your implemented all the elements of your monitoring plan? X Yes __ No
7. Did you conduct an annual site inspection (Section B.5.a)? X Yes __ No
   If Yes, what date was it conducted: various, and by whom POLB staff. Please provide a brief summary of your inspection findings. **POLB staff visits each site included in the NOI on an annual basis.**
8. Did you conduct monthly visual wet weather inspections (Section B.5.c)? __ Yes X No
   If Yes, please indicate the storm water discharge points that were inspected, and provide the following information for each point: **Due to the extent and complexity of this facility, it is impractical to inspect all stormwater discharge locations during the first hour of one storm event each month.**
   - Date and time of inspection. Include a sketch or site plan of the facility showing all the points of discharge. Indicate on this sketch or plan which points of discharge were monitored.
   - Storm water flow characteristics observed per discharge point. For example was the flow discolored, very turbid; did it have an odor, evidence of floating or suspended material; did it have a sheen; or any other unusual characteristics? If none of these types of flow characteristics were observed, please proceed to the next question. If they were, please discuss the corrective actions taken or to be taken.
9. Did you conduct dry season site inspections (Section B.5.b)? X Yes __ No
   If Yes, please provide the number of storm water discharge points observed, and provide the following for each point:
   a. Date and time of inspection, and a sketch or site map as indicated under Question No. 8.
   b. Was there a dry weather (non-storm water) flow occurring at the time of inspection?
      If Yes, please provide the following:
      i. Is the flow subject to a NPDES permit? __ Yes __ No
         If No, proceed to item ii. If Yes, what is the Board Order No. _____, proceed with discussion of next discharge.
      ii. Did you report the non-storm water discharge to the Regional Board? __Yes __ No
         If No, did you address this flow under Question No. 4? __ Yes __ No
         If Yes, and you have addressed items iii-v below, proceed with discussion of next discharge. Otherwise amend your answer to No. 4 to include a discussion of items ii-v, and proceed.
      iii. Description of the flow characteristics, i.e., odor, color, etc.
      iv. Possible source of flow.
      v. Corrective action taken. If no action has been taken, please discuss what actions will be taken to eliminate the non-storm water discharge.



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OR THE
SANTA CLARA COUNTY GENERAL PERMIT - BOARD ORDER NOS. 92-011 & 92-116 (NPDES CAG12001)

10. On a separate sheet, evaluate the effectiveness of the facility's SWPPP and Best Management Practices (BMPs). Discuss specific areas or elements of the SWPPP that are or are not effective. For plans that were not effective, provide alternatives or proposed revisions to the SWPPP that will be implemented as a result of your monitoring program.

    Examples of the types of questions this discussion should answer are: Did the SWPPP work? Where did it fail? Are there more discharge points than originally identified? Did the BMPs work effectively; if not why? What types of pollutants are present in the facility's storm water runoff, and what are their potential sources; and did you implement appropriate BMPs to control these pollutants? **The SWPPPs prepared by the Port of Long Beach and its tenants appear to be effective since receiving water monitoring conducted in accordance with an agreement with the Regional Water Quality Control Board - Los Angeles Region (RWQCB - LA) identified only two locations at which storm water runoff may have adversely affected receiving water quality. Those two areas are currently under investigation by Port of Long Beach Staff. The results of that investigation will be communicated to the RWQCB-LA when they are available. If that investigation confirms that receiving waters have been affected by storm water discharges, all SWPPPs and BMPs will be re-evaluated and revised as appropriate.**

11. a. Did you collect storm water samples (Section B.5.d)? X Yes __ No
    If No, explain why you were unable to collect samples.

    b. How many storm water discharge points does your facility have? **Per an agreement with RWQCB-LA, the Port of Long Beach monitors storm water discharges at 20 stations in the receiving waters.**

    c. If you collected samples, did you monitor all storm water discharge points (Section B.11)? __ Yes X No **See 11(b).** If No, have you documented in your monitoring program that the storm water discharges from different locations are substantially identical? __ Yes X No **See 11(b).**
    If No, please update your monitoring program and provide the documentation as an addendum to this report.

    d. Please complete the table provided on page 5 of this report for each discharge point monitored. You should copy page 5 if you will need additional blank tables. Add to the list of constituents any toxic or other pollutants included in your monitoring program.

    e. Is your facility identified under Category 1 of Attachment 1 of the General Permit as a facility that is subject to Federal Effluent Storm Water Guidelines? __ Yes X No **None of the facilities covered by the Port of Long Beach NOI are identified under Category 1 of Attachment 1.**

    If Yes, please provide the following information. If No, please proceed to the next question.

    - The Guidelines for your facility are listed in 40 CFR Subchapter N, Part ___.
    - Were samples collected in accordance with the Federal requirements? ___ Yes ___ No

    If No, please provide an explanation. If Yes, please answer the following:

    Did the sample analytical results indicate that any of the applicable effluent limits had been exceeded?
    X Yes __ No

    If Yes, please provide the following information for each pollutant exceeding the effluent limitation:

    - Storm Water Discharge Point sample collected
    - Constituent analyzed
    - Federal Storm Water Effluent Guidelines
    - Sample Result
    - A brief explanation

12. Do you certify (as indicated on page 4) that, based on your annual site inspection, your facility is in compliance with the requirements of the Permit and your SWPPP? X Yes __ No



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ANNUAL REPORT

STATEWIDE GENERAL PERMIT - WQ ORDER NOS. 91-13-DWQ & 92-12-DWQ (NPDES CA000001)
OR THE
SANTA CLARA COUNTY GENERAL PERMIT - BOARD ORDER NOS. 92-011 & 92-116 (NPDES CAG12001)

**CERTIFICATION**

I am a person duly authorized to sign reports required by the STATEWIDE INDUSTRIAL GENERAL PERMIT or the SANTA CLARA COUNTY GENERAL PERMIT (Section C.9), and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: ROBERT KANTER

Signature: Robert Kanter Date: 11/5/93

Title: MGR ENVIRONMENTAL PLANNING



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STATE OF CALIFORNIA
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OR THE
SANTA CLARA COUNTY GENERAL PERMIT - BOARD ORDER NOS. 92-011 & 92-116 (NPDES CAG12001)

## SWPPP PHYSICAL AND CHEMICAL ANALYSES (11.d)

PHYSICAL AND CHEMICAL ANALYTICAL RESULTS

| Station Number | pH | | | Conductivity (mmhos/cm) | | | TSS (mg/l) | | | TOC (mg/l) | | | Petroleum Hydrocarbons (mg/l) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug |
| 1 | 8.14 | 7.84 | 8.25 | 3.69 | 4.33 | 31.1 | 880 | 180 | 110 | 3.5 | 7.5 | 3.7 | 1.4 | 1.8 | nd |
| 2 | 7.98 | 8.11 | 8.26 | 32.1 | 32.2 | 49.2 | 100 | 100 | 84 | nd | nd | nd | nd | nd | nd |
| 3 | 7.98 | 8.15 | 8.16 | 39.3 | 34.2 | 49.9 | 170 | 210 | 270 | nd | nd | nd | nd | nd | nd |
| 4 | 8.00 | 8.00 | 8.17 | 44.5 | 37.2 | 49.6 | 200 | 100 | 90 | nd | nd | nd | nd | nd | nd |
| 5 | 8.00 | 8.01 | 8.10 | 46.2 | 38.4 | * | 200 | 200 | 80 | nd | nd | nd | nd | nd | nd |
| 6 | 8.01 | 8.01 | 8.13 | 47.5 | 38.2 | 49.4 | 200 | 200 | 92 | nd | nd | nd | nd | nd | nd |
| 7 | 7.99 | 8.00 | 8.17 | 46.8 | 39.3 | 49.8 | 200 | 200 | 75 | nd | nd | nd | nd | nd | nd |
| 8 | 8.02 | 7.99 | 8.13 | 44.6 | 37.6 | 49.9 | 100 | 200 | 90 | nd | nd | nd | nd | nd | nd |
| 9 | 8.02 | 8.06 | 8.15 | 44.6 | 38.6 | 49.8 | 100 | 210 | 74 | nd | nd | nd | nd | nd | nd |
| 10 | 8.01 | 8.01 | 8.21 | 43.6 | 38.6 | 49.8 | 100 | 210 | 75 | nd | nd | nd | nd | nd | nd |
| 11 | 8.01 | 8.00 | 8.19 | 43.6 | 39.3 | 49.9 | 100 | 200 | 200 | nd | nd | nd | nd | nd | nd |
| 12 | 8.01 | 7.99 | 8.21 | 46.9 | 40.2 | 50.1 | 100 | 200 | 90 | nd | nd | nd | nd | nd | nd |
| 13 | 8.01 | 7.99 | 8.17 | 46.3 | 39.2 | 50.9 | 170 | 100 | 240 | nd | nd | nd | nd | nd | nd |
| 14 | 7.98 | 7.98 | 8.20 | 45.9 | 39.7 | 49.9 | 200 | 100 | 95 | nd | nd | nd | nd | nd | nd |
| 15 | 8.01 | 7.99 | 8.21 | 47.4 | 39.6 | 50.3 | 220 | 210 | 98 | nd | nd | nd | nd | nd | nd |
| 16 | 8.01 | 7.99 | 8.16 | 46.2 | 40.6 | 50.2 | 200 | 100 | 84 | nd | nd | nd | nd | nd | nd |
| 17 | 8.01 | 7.94 | 8.10 | 47.1 | 40.0 | 50.3 | 210 | 200 | 170 | nd | nd | nd | nd | nd | nd |
| 18 | 7.99 | 7.99 | 8.11 | 47.7 | 38.8 | 50.6 | 210 | 200 | 98 | nd | nd | nd | nd | 1.5 | nd |
| 19 | 7.93 | 7.91 | 8.19 | 44.9 | 37.2 | 50.4 | 100 | 100 | 76 | nd | nd | 2.2 | nd | nd | nd |
| 20 | 8.01 | 8.02 | 8.23 | 43.8 | 42.4 | 49.4 | 200 | 210 | 76 | nd | nd | 2.3 | nd | nd | nd |
| A | 8.01 | 8.00 | 8.18 | 3.1 | 40.0 | 50.0 | 170 | 230 | 140 | nd | nd | 2.1 | nd | nd | nd |
| B | 8.01 | 7.98 | 8.17 | 31.0 | 42.4 | 49.9 | 200 | 220 | 61 | nd | nd | 2.0 | nd | nd | nd |
| QA/QC Station designations | | | | | | | | | | | | | | | |
| A | 10 | 5 | 18 | 1 | 9 | 19 | 3 | 16 | 4 | 8 | 20 | 2 | 9 | 2 | 2 |
| B | 8 | 13 | 18 | 2 | 4 | 12 | 1 | 4 | 14 | 20 | 2 | 12 | 3 | 16 | 9 |

* an anomalous reading resulted from ice water leaking into the bottom jar
nd = not detected; – = not sampled



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STATE OF CALIFORNIA
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OR THE
SANTA CLARA COUNTY GENERAL PERMIT - BOARD ORDER NOS. 92-011 & 92-116 (NPDES CAG12001)

## SWPPP PHYSICAL AND CHEMICAL ANALYSES (11.d) (continued)

PHYSICAL AND CHEMICAL ANALYTICAL RESULTS

| Station Number | Benzene (ug/l) | | | Toluene (ug/l) | | | Ethylbenzenes (ug/l) | | | Xylene (ug/l) | | | Volatile Organics (ug/l) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug |
| 1 | nd | nd | nd | 0.5 | 0.7 | 0.55 | nd | nd | nd | 0.8 | 0.8 | nd | - | - | - |
| 2 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 3 | nd | nd | 0.51 | nd | nd | 0.53 | nd | nd | nd | nd | nd | 1.7 | - | - | - |
| 4 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 5 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 6 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 7 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 8 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 9 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 10 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 13 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 14 | 0.3 | nd | nd | 0.6 | nd | nd | nd | nd | nd | 0.5 | nd | nd | - | - | - |
| 15 | nd | 0.8 | nd | nd | 40 | nd | nd | 10 | nd | nd | 60 | nd | - | - | - |
| 16 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| 17 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| *18 | nd | 2.0 | nd | nd | 5.0 | nd | nd | nd | nd | nd | 6.0 | nd | nd | 2.0** | nd |
| 19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| A | nd | 0.8 | nd | nd | 40 | nd | nd | 11 | nd | nd | 66 | nd | - | - | - |
| B | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | - | - | - |
| QA/QC Stations | | | | | | | | | | | | | | | |
| A | 7 | 15 | 13 | 7 | 15 | 13 | 7 | 15 | 13 | 7 | 15 | 13 | - | - | - |
| B | 1 | 2 | 10 | 1 | 2 | 10 | 1 | 2 | 10 | 1 | 2 | 10 | - | - | - |

* Benzene, toluene, and xylene were detected as volatile organics, not during BTEX analysis
** 1,1,1-Trichloroethane
nd = not detected; - = not sampled



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STATE WATER RESOURCES CONTROL BOARD

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STATEWIDE GENERAL PERMIT - WQ ORDER NOS. 91-13-DWQ & 92-12-DWQ (NPDES CA000001)
OR THE
SANTA CLARA COUNTY GENERAL PERMIT - BOARD ORDER NOS. 92-011 & 92-116 (NPDES CAG12001)

## SWPPP PHYSICAL AND CHEMICAL ANALYSES (11.d) (continued)

PHYSICAL AND CHEMICAL ANALYTICAL RESULTS

| Station Number | Barium (mg/l) | | | Lead (mg/l) | | | Zinc (mg/l) | | | All other metals (mg/l) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug |
| 1 | 0.07 | 0.06 | nd | 0.01 | 0.13 | nd | 0.07 | 0.06 | nd | nd | nd | nd |
| 2 | nd | nd | nd | 0.03 | nd | nd | nd | nd | nd | nd | nd | nd |
| 3 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 4 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 5 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 6 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 7 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 8 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 9 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 10 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 11 | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - |
| 13 | - | - | - | - | - | - | - | - | - | - | - | - |
| 14 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 15 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 16 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 17 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 18 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 19 | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - |
| A | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| B | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| QA/QC Stations | | | | | | | | | | | | |
| A | 17 | 3 | 6 | 17 | 3 | 6 | 17 | 3 | 6 | 17 | 3 | 6 |
| B | 18 | 5 | 14 | 18 | 5 | 14 | 18 | 5 | 14 | 18 | 5 | 14 |

nd = not detected; - = not sampled



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SANTA CLARA COUNTY GENERAL PERMIT - BOARD ORDER NOS. 92-011 & 92-116 (NPDES CAG12001)

## SWPPP PHYSICAL AND CHEMICAL ANALYSES (11.d) (continued)

PHYSICAL AND CHEMICAL ANALYTICAL RESULTS

| Station Number | Surfactants (mg/l) | | | Sulfide (mg/l) | | | Semi-volatile organics | | | Extractable fuel hydrocarbons | | | Volatile fuel hydrocarbons | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug | Feb | Mar | Aug |
| 1 | nd | 0.6 | nd | - | - | - | - | - | - | - | - | - | - | - | - |
| 2 | nd | nd | 1.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | 1.4 | nd | 1.2 | - | - | - | - | - | - | - | - | - | - | - | - |
| 5 | 0.9 | nd | 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | 1.1 | nd | 1.9 | - | - | - | - | - | - | - | - | - | - | - | - |
| 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 9 | - | - | - | nd | nd | nd | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 13 | 1.0 | nd | 1.0 | - | - | - | - | - | - | - | - | - | - | - | - |
| 14 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 17 | - | - | - | - | - | - | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 18 | - | - | - | - | - | - | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| A | nd | nd | 1.4 | - | - | - | - | - | - | - | - | - | - | - | - |
| B | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| QA/QC Stations | | | | | | | | | | | | | | | |
| A | 1 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| B | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

nd = not detected; - = not sampled



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# 1994 ANNUAL REPORT
# STORM WATER DISCHARGE MONITORING
# IN THE PORT OF LONG BEACH

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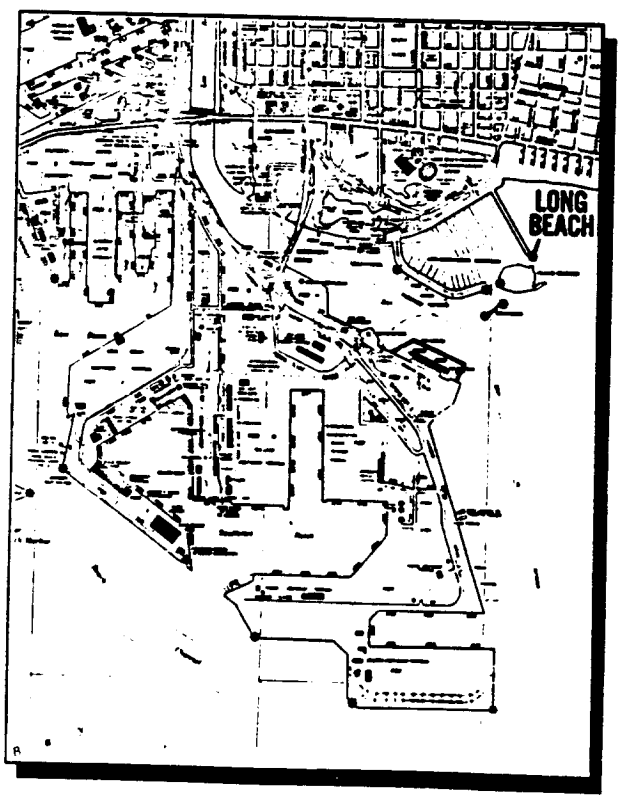
**Survey Period :**
**1 July 1993 to June 1994**




**1 July 1994**

**Prepared by:**

**MBC Applied Environmental Sciences**

**For:**

**Port of Long Beach**
**Planning Division**
**925 Harbor Plaza**
**Long Beach, California 90802**

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The Port of Long Beach
"America's most Modern Port"
P. O. BOX 570 · LONG BEACH, CA 90801-0570 · TELEPHONES: (310) 437-0041 · FAX: (310) 437-3231 · TELEX: 65-6452 PORTOBEACH LGB

June 30, 1994

RECEIVED
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CALIF. REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Mark Pumford
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: Storm Water Discharge Monitoring Annual Report

Reference: 4B19S003628

Dear Mr. Pumford:

Attached is the Port of Long Beach Storm Water Discharge Annual Report for the period July 1, 1993 to June 30, 1994. The report summarizes the Port's visual monitoring program and sampling results, and certifies the Port's compliance with the General Permit.

If you have any questions, please contact Stacey Crouch, Project Manager, at (310) 590-4160.

Sincerely,

Geraldine Knatz, Ph.D.
Director of Planning

SEC:s

Attachment

PRESIDENT'S "E" AND "E-STAR" AWARDS FOR EXCELLENCE IN EXPORT

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# 1994 ANNUAL REPORT
# STORM WATER DISCHARGE MONITORING
# IN THE LONG BEACH HARBOR DISTRICT

## INTRODUCTION

This report is a summary of the results of the non-point source water quality monitoring program implemented by the Port of Long Beach (POLB), covering the monitoring period from 1 July 1993 to 30 June 1994. This program was initiated in response to the requirements for an annual report in the STATEWIDE GENERAL PERMIT - WQ ORDER NOS. 91-13-DWG & 92-12-DWG (NPDES CA000001). The completed annual report questionnaire from the Regional Water Quality Control Board (RWQCB) is attached as Appendix 1 of this report.

The Long Beach Harbor District encompasses approximately 2,945 acres; however, 525 acres are federal lands, while approximately 2,420 acres are controlled and under the jurisdiction of the Port of Long Beach. This report addresses only the Long Beach Harbor District.

## ENVIRONMENTAL SETTING

The Long Beach-Los Angeles Harbor complex encompasses approximately 6,000 acres at the southeastern base of Palos Verdes Peninsula in Los Angeles County (Figure 1). It is bounded on the landward side by the cities of San Pedro, Wilmington, and Long Beach and to seaward by the San Pedro, Middle, and Long Beach breakwaters. Two major drainage channels, Dominguez Channel and the Los Angeles River, discharge into the harbor, and the San Gabriel River discharges just south of Alamitos Bay.

Long Beach Harbor is composed of the Inner, Middle, and Outer Harbors. The Inner Harbor comprises Cerritos Channel, a turning basin, and Channels Two and Three. Middle Harbor consists of West Basin, which supports the Naval complex, and East Basin, which supports Piers D, E, F, G, and H. Long Beach Outer Harbor, used for anchorage and maneuvering, is a large semi-enclosed basin contiguous with Los Angeles Outer Harbor. Queen's Gate, between Middle and Long Beach breakwaters, is the main entrance to the Port of Long Beach.

## NON-POINT SOURCES OF POLLUTION

Terminal Island and the areas bordering the harbor serve many diverse industries including a variety of cargo terminals, the Terminal Island Treatment Plant, the Long Beach Generating Station, petroleum refineries, manufacturing plants, and other potential sources of materials that may affect the harbor water quality. Non-point or diffuse sources that carry contamination into Los Angeles-Long Beach Harbor include aerial fallout, surface runoff, advective transport, and boating and shipping activities.

A potentially large source of contaminants is surface runoff, which enters Long Beach-Los Angeles Harbor via the drainage channels of the Los Angeles and San Gabriel Rivers and the Dominguez Channel and from runoff from the piers and docks. About 70% of this discharge occurs during storms (MBC 1988) and contains organic matter, inorganic debris, dissolved minerals and nutrients, pesticides and herbicides, oils and grease, and many other industrial and domestic discharges (EPA 1977).

Contaminants from any of these sources may adversely affect the water quality of the harbor.

## STATION LOCATIONS

The POLB harbor complex is characterized by 164 storm water outfalls that discharge to harbor waters. The RWQCB requirements are to collect grab samples within 30 minutes of a

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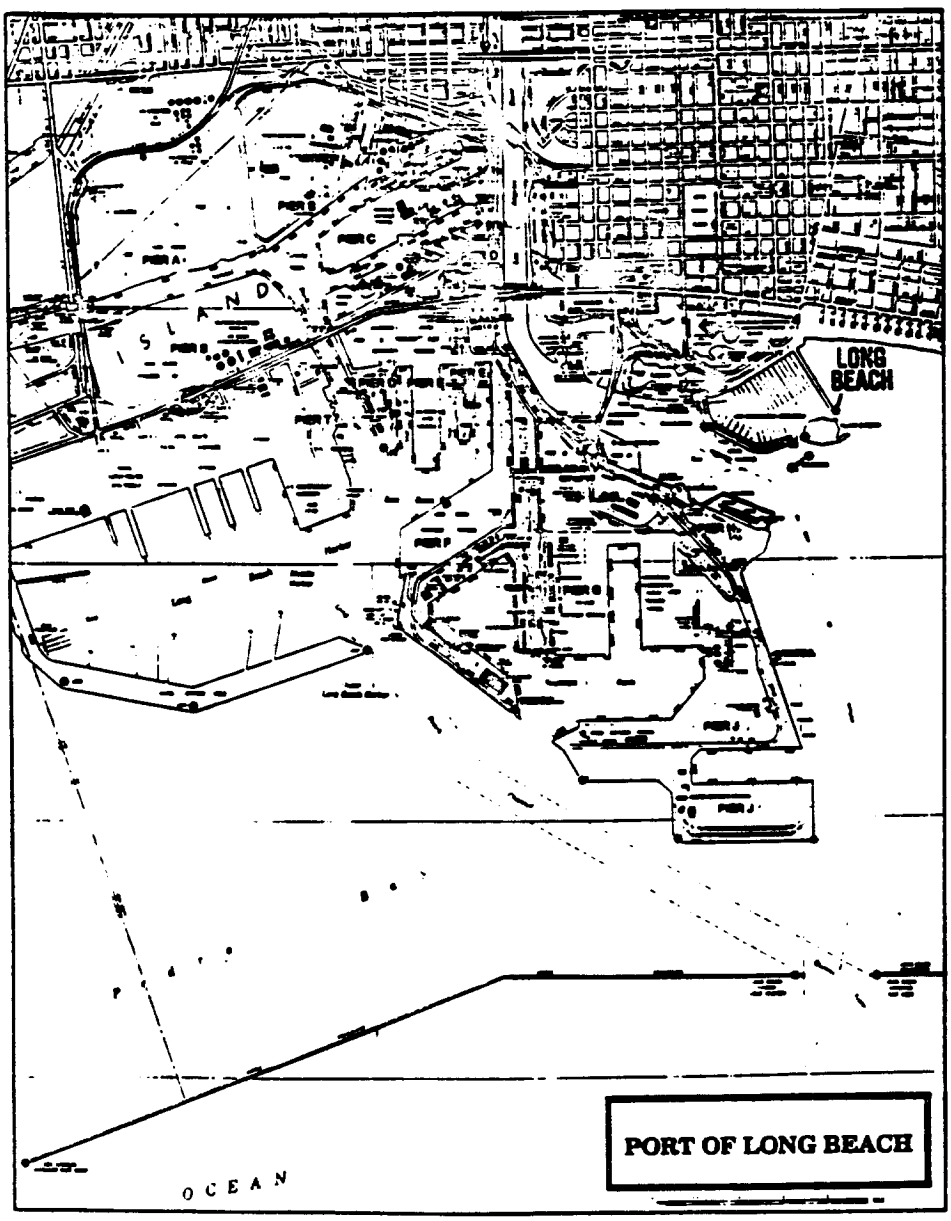


Figure 1. Map of the vicinity of the Port of Long Beach.



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significant storm event (continuous discharge of storm water for approximately one hour or more). Because it is impractical to sample every outfall within the first half hour following a major storm water event, a broad-based approach which could determine the presence or absence of contaminants in specific areas of the harbor complex following a storm was proposed to and approved by, the Los Angeles Regional Water Quality Control Board. This receiving water sampling program will not only determine areas of the harbor that may receive contaminants from storm drains, but will also identify contaminants that may run off the piers and wharfs in the harbor. Results from this program may be utilized to focus an investigation into a specific area of the harbor should any contaminants be detected above RWQCB permitted levels. With the concurrence of the RWQCB, a plan incorporating sampling at 20 stations throughout the harbor was developed (Figure 2).

The appropriate analytical testing at each station necessary for the monitoring program was determined by review of all the Storm Water Runoff Facility Questionnaires submitted by the various tenants engaged in manufacturing or industrial activities. Other potential contaminants specified by the RWQCB were also included in the sampling design.

Station 1 is located at the mouth of the Los Angeles River, mid-way between the Magnolia Bridge and the Queen Mary, Station 2 is opposite the south side of Pier J, and Station 3 is located in the slip of the newly constructed Pier J facility. Six stations are located in Southeast Basin (Stations 4 through 9). Stations 10 and 11 are located in the Long Beach Channel adjacent to Pier F. Stations 12 through 16 are located in the Middle Harbor. Stations 17 and 18 are located in the middle of Channels Three and Two and Station 19 is located in the Inner Harbor between the Heim Bridge in the Cerritos Channel and the entrances to Channel Two and Three. Station 20 is located in the Outer Harbor south of the U.S. Navy Mole.

## DATA COLLECTION AND ANALYSIS

Analytical parameters, the stations where each was measured, and detection limits are listed in Table 1. The first of two dry-season samplings was preceded by several months of no rainfall and was conducted on 12 August 1993 between 0900 and 1410 hrs. The second dry season survey was performed on 2 September between 0910 and 1530 hours. Two wet weather sampling episodes were conducted during winter 1994. The first took place between 2248 hrs on 24 January and 0128 hrs on 25 January, and the second between 1143 and 1418 hrs on 7 February. In accordance with the provisions of the POLB storm monitoring plan, the storm monitoring surveys were conducted during winter storms which occurred after several days or weeks of no precipitation. Both storms produced significant water runoff into the flood control channels and the rivers, and from the various docks, wharfs, and piers within the harbor.

Samples were collected by a trained crew familiar with analytical chemistry collection techniques in a small vessel deployed into Long Beach Harbor. All water samples for each parameter were collected with a Van Dorn bottle from the water surface. New sample containers were cleaned and prepared prior to sampling using laboratory clean-techniques appropriate for the various parameters analyzed. All collected samples were labeled and placed on ice for immediate transport to the analytical laboratory.

Quality assurance and quality control (QA/QC) procedures were initiated prior to sampling. Approximately 10% of all samples were randomly resampled. Prior to sampling, a random number generator was used with the station designation numbers to determine which of the 20 stations would be resampled for each parameter. These QA/QC sample containers were labeled Stations A and B and were submitted to the analytical laboratory with the other samples labeled Stations 1 through 20. The laboratory was not apprised of the sampling location for the QA/QC bottles labeled A and B.



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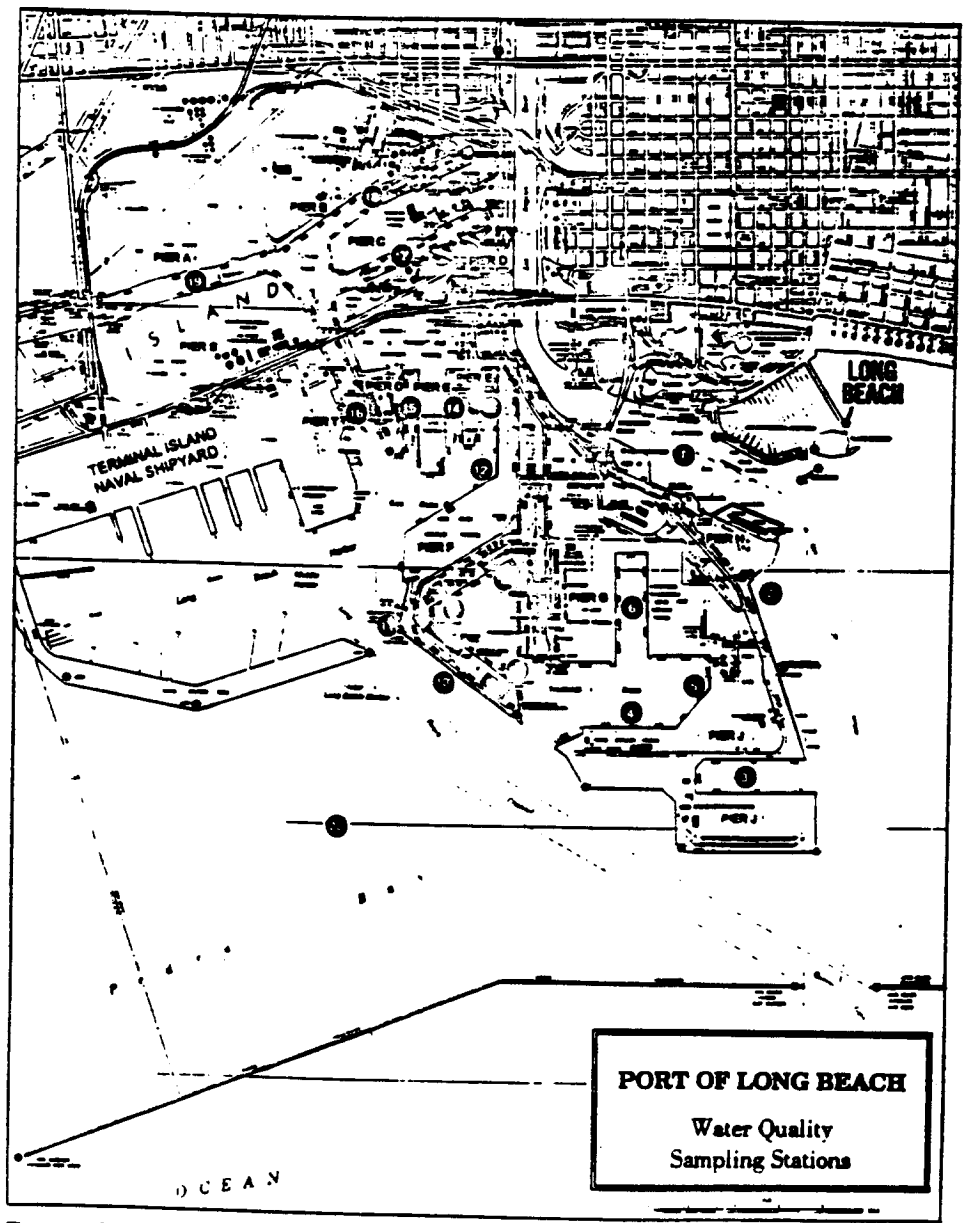


Figure 2. Port of Long Beach water quality sampling stations, Non-Point Source Survey.



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Table 1. Analyses parameters, detection limits, EPA Method and stations where each was measured.

| Parameter | Detection Limit | EPA Method | Stations where measured |
|---|---|---|---|
| Total organic carbon | 1.0 mg/l | 415.2 | all |
| Total suspended solids | 5.0 mg/l | 160.2 | all |
| Total recoverable petroleum hydrocarbons | 1.0 mg/l | 418.1 | all |
| Benzene, toluene | 0.3 µg/l | CA DHS - Mod. 8020 | 1-10, 13-18 |
| Ethylbenzene, xylene | 0.5 µg/l | CA DHS - Mod. 8020 | 1-10, 13-18 |
| Metals | 0.002-0.5 mg/l | 6010, 7060, 7191, 7196, 7421, 7470, 7740 | 1-10, 14-18 |
| Surfactants | 0.5 mg/l | 425.1 | 1-2, 4-6, 13 (Sept: 3, 4, 6, 11, 15) |
| Sulfide | 0.5 mg/l | 376.2 | 9 |
| Volatile organics | 2-10 µg/l | 8240 | 17-18 |
| Semi-volatile organics | 10-100 µg/l | 8270 | 17-18 |
| Extractable fuel hydrocarbons | 0.5 mg/l | CA DHS - Mod. 8015 | 17-18 |
| Volatile fuel hydrocarbons | 5.0 mg/l | CA DHS - Mod. 8015 | 17-18 |

The field log sheets with station designations, surface observations, chemical parameters sampled, and sampling duration are archived and are available at the POLB in separate Storm Water Reports for each survey. Complete laboratory reports on parameters analyzed, including QA/QC method blanks, and spike analyses are also available in the Storm Water Reports.

## RESULTS

Two dry season and two wet weather monitoring episodes are included in this annual report for the storm water monitoring plan. Sampling conditions and results of each of the monitoring episodes are described in the following text.

## DRY SEASON MONITORING

### August Sampling Parameters

The dry season sampling on 12 August 1993 was preceded by several months of no significant rainfall; the most recent had occurred three months before on 5 May 1993. During sampling, winds were from the west to southwest at 3 to 10 knots (kn) most of the day and seas were flat in the morning, increasing to a light chop by mid-day.

### August Surface Observations

Due to the dry weather conditions, most drains had no visible discharges. The one exception was between Stations 6 and 7 in the Southeast Basin, where a 24 inch pipe was discharging 2 to 3 gallons per minute. Small discharges were noted from ships near Stations 9, 14, and 20.

No odors, oil, grease, or turbid or color patches were noted at any station. Floating trash (paper) was seen at Station 1, at the mouth of the Los Angeles River.



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### September Sampling Parameters

The dry season sampling on 2 September 1993 was preceded by several months of no significant rainfall; the most recent had occurred four months prior. During sampling, winds were calm during the morning, but increased to 10 knots in the afternoon. Swells were non-existent in the morning, but increased to a light chop by mid-day.

### September Surface Observations

Due to the dry weather conditions, no drains seen during the survey had visible discharges.

No odors, oil, grease, or turbid or color patches were noted at any station. Floatables in the form of styrofoam trash were seen at Stations 1, 3, and in the Southeast Basin.

## WINTER STORM MONITORING

The early winter storm season was characterized by a series of fast moving storms that either skirted the edge of the Los Angeles basin or moved through so fast that little rain and almost no runoff occurred.

Based on NOAA weather information, indicating approaching storms expected to produce significant runoff, and contact with the Harbor Masters office in Long Beach Harbor, sampling crews were placed on standby and dispatched to the harbor on 11 and 23 November 1993. Rainfall was predicted to be significant; however, in each case the storm lost strength and produced inadequate rainfall to cause storm drains to flow or cause runoff from the piers and wharfs. Again on 11, 18, and 27 December 1993 crews were placed on standby. Samples were collected during the 11 December cruise, but based on the insignificant amount of rain (much less than 0.25 inches) and the absence of fresh water in any of the samples, which would have indicated runoff in the harbor, the samples were discarded. The next predicted-to-be-major storm occurred on 24 and 25 of January 1994. Crews were again dispatched to the harbor and deployed to collect samples. Although rainfall was light, approximating 0.25 inches, the storm was deemed relevant as it characterized the first three months of the winter sampling period and the potential for a much stronger storm appeared remote. Two weeks later, on 7 February, the first large storm of the season hit the Los Angeles Basin. This storm was also sampled as it produced substantial runoff.

### January Storm Sampling Parameters

During the day on Monday, 24 January, there was a light drizzle for several hours, which increased to heavy rain around 2100 hrs, and then decreased to a drizzle or light rain later that evening and during most of the sampling period. According to published weather service reports, approximately 0.22 inches of rain fell during the storm.

Winds were blowing from the west at 1 to 6 kn during most of the sampling but were up to 15 to 18 kn just after midnight and 8 to 10 kn around 0130 hrs. Seas were mostly flat with 1 to 2 ft chop when winds were greatest.

### January Storm Surface Observations

Runoff was observed from several piers and storm drains. Water was dripping through or off the wharfs at Stations 4, 6, 7, and 14 and was flowing from drains at Stations 2, 5, 10, 12, 13, 14, 15, and 18.



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A petroleum odor was present near a fuel barge at Stations 8 and 9; no odors were detected at any of the remaining stations. Visible turbidity was present at most stations while clear water was noted at Stations 3, 4, 7, 8, 9, 17, and 19. Floating trash was observed at Stations 5, 11, 12, and 15.

**February Storm Sampling Parameters**

A light rain fell on Saturday, 5 February, followed by intermittent rain beginning Sunday evening and continuing into Monday, 7 February. A heavy rain began around 1100 hrs on Monday which decreased to a light rain during sampling in the afternoon. Published weather service reports on rainfall totaled 1.58 inches for the storm.

**February Storm Surface Observations**

Runoff was flowing from drains at most stations and dripping through wharfs in some areas. Greatest flow from drains was seen at Stations 6 and 19 (approx. 100 gal/min) and Station 18 (approx. 50 gal/min). Most areas of the harbor were turbid from the runoff and many areas contained trash or floating wood and algae.

## HYDROGEN ION CONCENTRATION (pH)

Hydrogen ion concentrations (pH) in August were nearly uniform among all stations ranging from 8.10 to 8.25 (Table 2). All values were normal for Long Beach Harbor and the Southern California Bight in general. QA/QC results were within 0.02 units between the two samples at each station.

In January, pH values were again nearly uniform among all stations ranging from 8.13 to 8.25 (Table 2). The slightly lower readings found at several stations in East Basin and Inner Harbor, (i.e., Stations 12 through 19) were probably the result of rainwater on the surface. QA/QC results for the two stations randomly selected were nearly identical to the values determined for the station samples.

Values were lower in February than in August and January due to the influx of rainwater. With the exception of Station 1, pH values were very similar among all stations, ranging from 7.91 to 8.09 (Table 2). Station 1 is influenced by flow from the Los Angeles River and the lower pH (7.37) is due to the greater input of fresh water. The QA/QC results verified the lower pH recorded at that station.

## CONDUCTIVITY and SALINITY

With the exception of Station 1, conductivity measurements in August varied only slightly, from 49.2 to 50.6 (Table 2), and correspondingly, salinity ranged from 32.3 to 33.3 ppt which is normal for seawater in the Southern California Bight. Measurements indicated a fresh water lens only at Station 1 (31.1 ms/cm; 19.4 ppt) at the mouth of the Los Angeles River, and a slight influx of fresh water at Station 2 (49.2 ms/cm; 32.3 ppt). QA/QC results for the two stations selected correlated well with the values determined originally and were within 0.2 ms/cm (0.2 ppt).

During the January storm, measurements were lowest at Station 1 and indicated that a fresh water lens was present on the surface (Table 2). Conductivity, and therefore, salinity, were also slightly lower at Stations 2 and 3 near the mouth of the Los Angeles River, and at Station 18 in Channel Two. All other measurements were relatively similar among the remaining 16 stations during the survey. No station other than Station 1 had a salinity below 31 ppt. QA/QC results for the two stations randomly selected were similar to those determined for the station samples.



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**Table 2. Results of water quality and chemical analyses in the Port of Long Beach, August 1993 to February 1994.**

| Station Number | pH | | | Conductivity (ms/cm) | | | Salinity ppt | | | TSS (mg/l) | | | TOC (mg/l) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Aug | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb |
| 1 | 8.25 | 8.20 | 7.37 | 31.1 | 37.9 | 12.0 | 19.4 | 24.1 | 6.8 | 110 | 41 | 38 | 3.7 | 2.8 | 6.3 |
| 2 | 8.20 | 8.17 | 7.98 | 49.2 | 49.5 | 37.9 | 32.3 | 32.5 | 24.1 | 84 | 62 | 167 | nd | 1.5 | 2.0 |
| 3 | 8.16 | 8.20 | 8.02 | 49.8 | 49.3 | 33.3 | 32.8 | 32.4 | 20.9 | 270 | 61 | 32 | nd | nd | 2.2 |
| 4 | 8.17 | 8.18 | 7.99 | 49.9 | 50.8 | 47.7 | 32.8 | 33.3 | 31.2 | 80 | 59 | 61 | nd | nd | nd |
| 5 | 8.10 | 8.13 | 8.02 | * | 50.0 | 42.9 | * | 32.9 | 27.7 | 69 | 68 | 44 | nd | nd | nd |
| 6 | 8.13 | 8.18 | 8.05 | 49.4 | 50.1 | 29.4 | 32.4 | 33.0 | 18.2 | 82 | 65 | 46 | nd | nd | nd |
| 7 | 8.17 | 8.21 | 8.03 | 49.8 | 50.8 | 48.2 | 32.7 | 33.5 | 31.8 | 75 | 47 | 51 | nd | nd | nd |
| 8 | 8.13 | 8.20 | 8.04 | 49.9 | 50.8 | 48.5 | 32.8 | 33.5 | 31.8 | 80 | 47 | 47 | nd | nd | nd |
| 9 | 8.15 | 8.17 | 8.09 | 49.8 | 50.8 | 42.2 | 32.7 | 33.8 | 27.2 | 74 | 49 | 80 | nd | nd | nd |
| 10 | 8.21 | 8.16 | 7.98 | 49.8 | 51.0 | 49.0 | 32.7 | 33.8 | 32.1 | 76 | 60 | 88 | nd | nd | nd |
| 11 | 8.19 | 8.20 | 7.96 | 49.9 | 50.7 | 49.1 | 32.8 | 33.4 | 32.2 | 280 | 65 | 88 | nd | nd | nd |
| 12 | 8.21 | 8.18 | 8.04 | 50.1 | 50.3 | 36.3 | 33.0 | 33.1 | 23.0 | 96 | 36 | 84 | nd | nd | nd |
| 13 | 8.17 | 8.16 | 8.00 | 50.6 | 50.2 | 45.2 | 33.3 | 33.0 | 29.4 | 240 | 49 | 55 | nd | nd | nd |
| 14 | 8.20 | 8.15 | 8.00 | 49.9 | 50.6 | 45.9 | 32.8 | 33.3 | 29.7 | 85 | 49 | 45 | nd | nd | nd |
| 15 | 8.21 | 8.14 | 7.99 | 50.3 | 49.9 | 47.0 | 33.1 | 32.8 | 30.7 | 86 | 52 | 45 | nd | nd | nd |
| 16 | 8.18 | 8.14 | 7.94 | 50.2 | 50.5 | 48.2 | 33.0 | 33.3 | 31.9 | 84 | 56 | 53 | nd | nd | nd |
| 17 | 8.10 | 8.14 | 7.92 | 50.3 | 50.3 | 45.8 | 33.1 | 33.1 | 29.8 | 170 | 57 | 51 | nd | nd | nd |
| 18 | 8.11 | 8.14 | 7.91 | 50.5 | 48.0 | 39.8 | 33.3 | 31.4 | 25.5 | 86 | 78 | 140 | nd | nd | nd |
| 19 | 8.19 | 8.13 | 7.91 | 50.4 | 49.7 | 43.8 | 33.2 | 32.7 | 28.4 | 76 | 66 | 51 | 2.2 | nd | nd |
| 20 | 8.23 | 8.25 | 8.05 | 49.4 | 50.4 | 49.8 | 32.4 | 33.2 | 32.6 | 76 | 66 | 44 | 2.3 | nd | nd |
| A | 8.16 | 8.17 | 8.06 | 50.0 | 50.1 | 48.8 | 32.8 | 33.0 | 32.0 | 140 | 62 | 43 | 2.1 | nd | 1.8 |
| B | 8.17 | 8.22 | 7.48 | 49.9 | 50.7 | 33.1 | 32.8 | 33.4 | 20.8 | 81 | 66 | 58 | 2.0 | nd | nd |
| QA/QC Station designations | | | | | | | | | | | | | | | |
| A | 18 | 13 | 6 | 18 | 18 | 10 | 18 | 18 | 10 | 4 | 18 | 1 | 2 | 18 | 3 |
| B | 18 | 11 | 1 | 12 | 10 | 3 | 12 | 10 | 3 | 14 | 3 | 2 | 12 | 19 | 19 |

PHYSICAL AND CHEMICAL ANALYTICAL RESULTS

* an anomalous reading resulted from ice water leaking into the broken jar
nd = not detected

Conductivity measurements indicated that a fresh water lens was present on the surface in varying degrees at many stations during the February storm; salinity ranged from 6.8 ppt at Station 1 near the Los Angeles River mouth to 32.6 ppt at Station 20 in the Outer Harbor. Measurements were also low at Station 6 where one of the largest drain flows was found. QA/QC results for the two stations randomly selected were almost identical to the values determined for the station samples.

## TOTAL SUSPENDED SOLIDS

Total suspended solids (TSS) levels in August varied widely in POLB, ranging from 69 to 270 mg/ℓ, but averaging less than 115 mg/ℓ (Table 2). Highest levels were found at Station 3 in the new Pier J slip, Station 11 near the entrance to Middle Harbor, and Station 13 in East Basin. No spatial trends were evident in highest and lowest levels. Compared to the original samples, QA/QC results at Station 14 were similar, while at Station 4 concentration in the QA/QC sample was higher.

TSS in January ranged from 38 to 70 mg/ℓ (Table 2). Station 18, which had second lowest salinity, had the highest TSS indicating the influence of turbid runoff. QA/QC results corroborated the station analytical results.

During the February storm, TSS levels ranged from 32 mg/ℓ at Station 3 near Pier J to 140 mg/ℓ at Station 18 near one of the drains with greatest flow (Table 2). The QA/QC result for



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one of the two stations randomly selected was lower than the station sample results, probably reflecting the overall variability and incomplete mixing of the runoff with the seawater.

## TOTAL ORGANIC CARBON

Total organic carbon (TOC) was detected at five stations in August, three in original samples and two in QA/QC samples taken from different stations (Table 2). Detected levels ranged from 2.0 to 3.7 mg/ℓ and were from several areas in the POLB. All remaining stations had levels of organic carbon that were below the detection level of 1.0 mg/ℓ.

In January, TOC was detected only at Stations 1 and 2 near the Los Angeles River mouth (Table 2). All remaining stations had levels of organic carbon that were below the detection level of 1.0 mg/ℓ. QA/QC results were also below detection levels.

TOC was detected in February at Stations 1, 2, and 3 near the Los Angeles River mouth and near Pier J (Table 2). QA/QC sample results corroborated station analytical results, as TOC was also detected in the QA/QC sample from Station 3, but not in that from Station 19.

## BENZENE, TOLUENE, ETHYLBENZENE, XYLENE (BTEX)

Traces of benzene and xylene were found at Station 3 in August and toluene was found at Stations 1 and 3 (Table 3). None of these parameters were detected at any of the other stations sampled or in the QA/QC samples. When Station 3 was resampled during the September dry season sampling, none of these constituents were detected.

During the January storm, traces of benzene, toluene, ethylbenzene, and xylenes were found at many of the stations (Table 3). Highest levels were found at Station 1 near the Los Angeles River mouth, Station 10 outside Southeast Basin, and at Station 14 in East Basin. None were detected at Stations 17 and 18 in the Inner Harbor. QA/QC results for the two stations randomly selected were similar to the values determined for the station samples.

Traces of benzene, toluene, ethylbenzene, and xylenes were also found during the February storm at stations near the Los Angeles River mouth, and in the Southeast and East Basins (Table 3). QA/QC results corroborated well with the original samples, having similar levels or being undetected.

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH)

No petroleum hydrocarbons were detected in August or January at any station. QA/QC results were also undetected (Table 3).

In February, petroleum hydrocarbons were detected at Stations 6, 12, and 18 (Table 3), and were highest at Station 18 in the Inner Harbor. QA/QC results were undetected, confirming results from the corresponding station samples.

## METALS

Of the seventeen metals assayed, none were detected during the August sampling at any station, including the QA/QC stations.

In January only zinc was detected (Table 4). Detected levels were similar among the stations, but were slightly higher near the Los Angeles River mouth at Stations 1 and 2 and near Pier G at Station 6. QA/QC results corresponded well with those for the station samples.



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Table 3. Results of chemical analyses in the Port of Long Beach, August 1993 to February 1994.

PHYSICAL AND CHEMICAL ANALYTICAL RESULTS

| Station Number | Benzene (ug/l) | | | Toluene (ug/l) | | | Ethylbenzenes (ug/l) | | | Xylene (ug/l) | | | Petroleum Hydrocarbons (mg/l) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Aug | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb |
| 1 | nd | 3.5 | nd | 0.58 | 11 | 0.47 | nd | 3.2 | nd | nd | 18 | nd | nd | nd | nd |
| 2 | nd | 1.5 | 2.8 | nd | 4.3 | 8.9 | nd | 0.88 | 1.5 | nd | 5.7 | 8.2 | nd | nd | nd |
| 3 | 0.5 | 1.4 | nd | 0.93 | 4.2 | 0.31 | nd | 0.86 | nd | 1.7 | 5.5 | nd | nd | nd | nd |
| 4 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | 0.86 | nd | nd | nd | nd |
| 5 | nd | 1.2 | 0.44 | nd | 2.8 | 0.88 | nd | 0.42 | nd | nd | 3.3 | nd | nd | nd | nd |
| 6 | nd | nd | nd | nd | nd | 0.70 | nd | nd | nd | nd | nd | 0.82 | nd | nd | 1.1 |
| 7 | nd | 1.1 | nd | nd | 1.2 | nd | nd | nd | nd | nd | 0.88 | nd | nd | nd | nd |
| 8 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 9 | nd | 1.8 | 0.83 | nd | 2.3 | 1.5 | nd | nd | nd | nd | 1.8 | 0.75 | nd | nd | nd |
| 10 | nd | 4.8 | nd | nd | 11 | nd | nd | 2.4 | nd | nd | 15 | nd | nd | nd | nd |
| 11 | - | - | - | - | - | - | - | - | - | - | - | - | nd | nd | nd |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | nd | nd | 1.2 |
| 13 | nd | nd | nd | nd | nd | 0.32 | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 14 | nd | 4.1 | nd | nd | 11 | nd | nd | 2.4 | nd | nd | 18 | nd | nd | nd | nd |
| 15 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 16 | nd | 1.4 | nd | nd | 1.4 | nd | nd | nd | nd | nd | 1.2 | nd | nd | nd | nd |
| 17 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| 18 | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | 5.4 |
| 19 | - | - | - | - | - | - | - | - | - | - | - | - | nd | nd | nd |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | nd | nd | nd |
| A | nd | 1.3 | nd | nd | 4.0 | nd | nd | 0.82 | nd | nd | 5.4 | nd | nd | nd | nd |
| B | nd | 0.87 | 0.88 | nd | 0.88 | 1.4 | nd | nd | nd | nd | nd | 0.88 | nd | nd | nd |
| QA/QC Stations | | | | | | | | | | | | | | | |
| A | 13 | 3 | 16 | 13 | 3 | 16 | 13 | 3 | 16 | 13 | 3 | 16 | 2 | 11 | 14 |
| B | 10 | 7 | 9 | 10 | 7 | 9 | 10 | 7 | 9 | 10 | 7 | 9 | 9 | 16 | 17 |

nd = not detected; - = not sampled

Again in February, zinc was the only metal detected in water samples (Table 4). Highest levels were at Stations 6 and 18 which had rapidly flowing drains. The QA/QC result was nearly identical to that determined for the station samples.

## SURFACTANTS

Surfactants (methyl blue active substances) were recorded at five of the six stations analyzed during the August dry season sampling including the QA/QC sample from Station 6 (Table 4). During the September dry season sampling, samples from three previously sampled stations and two additional stations were analyzed for surfactants. All five of these stations had detectable levels, though in lower concentrations than found in August, indicating that surfactants were widespread in the POLB during this time period.

Surfactants were detected in January at all six stations, at similar levels (Table 4). The QA/QC results for the one station randomly selected was close to the result determined from the sample taken at that station.

In February five of the six stations had detectable levels ranging from 0.55 to 0.71 mg/l (Table 4). Surfactants were undetected at Station 1 and in the corresponding QA/QC sample.

## SULFIDES

Sulfides, measured only at Station 9, were not detected in any of the three surveys (Table 4).



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Table 4. Results of chemical analyses in the Port of Long Beach, August 1993 to February 1994.

| Station Number | PHYSICAL AND CHEMICAL ANALYTICAL RESULTS | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Surfactants (mg/l) | | | | Sulfide (mg/l) | | | Zinc (mg/l) | | | Semi-volatile organics Pentachlorophenol (µg/l) | | | Extractable fuel hydrocarbons C14–C40 (mg/l) | | |
| | Aug | Sep | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb | Aug | Jan | Feb |
| 1 | nd | – | 0.7 | nd | – | – | – | nd | 0.13 | 0.15 | – | – | – | – | – | – |
| 2 | 1.5 | – | 0.7 | 0.55 | – | – | – | nd | 0.11 | 0.12 | – | – | – | – | – | – |
| 3 | – | 0.6 | – | – | – | – | – | nd | 0.10 | 0.09 | – | – | – | – | – | – |
| 4 | 1.2 | 0.8 | 0.7 | 0.56 | – | – | – | nd | 0.09 | 0.07 | – | – | – | – | – | – |
| 5 | 1.6 | – | 0.7 | 0.71 | – | – | – | nd | 0.08 | 0.07 | – | – | – | – | – | – |
| 6 | 1.0 | 0.7 | 0.8 | 0.61 | – | – | – | nd | 0.12 | 0.23 | – | – | – | – | – | – |
| 7 | – | – | – | – | – | – | – | nd | nd | nd | – | – | – | – | – | – |
| 8 | – | – | – | – | – | – | – | nd | 0.05 | nd | – | – | – | – | – | – |
| 9 | – | – | – | – | nd | nd | nd | nd | nd | 0.13 | – | – | – | – | – | – |
| 10 | – | – | – | – | – | – | – | nd | nd | 0.10 | – | – | – | – | – | – |
| 11 | – | 0.6 | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 12 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 13 | 1.0 | – | 0.8 | 0.66 | – | – | – | – | – | – | – | – | – | – | – | – |
| 14 | – | – | – | – | – | – | – | nd | nd | 0.07 | – | – | – | – | – | – |
| 15 | – | 0.7 | – | – | – | – | – | nd | nd | 0.08 | – | – | – | – | – | – |
| 16 | – | – | – | – | – | – | – | nd | nd | 0.07 | – | – | – | – | – | – |
| 17 | – | – | – | – | – | – | – | nd | 0.06 | 0.09 | nd | nd | nd | nd | nd | nd |
| 18 | – | – | – | – | – | – | – | nd | 0.09 | 0.58 | nd | nd | 56 | nd | nd | 4.9 |
| 19 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 20 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| A | 1.4 | – | 0.8 | nd | – | – | – | nd | 0.09 | – | – | – | – | – | – | – |
| B | – | – | – | – | – | – | – | nd | nd | 0.15 | – | – | – | – | – | – |
| QA/QC Stations | | | | | | | | | | | | | | | | |
| A | 6 | – | 4 | 1 | – | – | – | 6 | 18 | – | – | – | – | – | – | – |
| B | – | – | – | – | – | – | – | 14 | 10 | 9 | – | – | – | – | – | – |

nd = not detected; – = not sampled

## VOLATILE AND SEMI-VOLATILE ORGANICS EXTRACTABLE AND VOLATILE FUEL HYDROCARBONS

Stations 17 and 18 were sampled for volatile and semi-volatile organics and extractable and volatile fuel hydrocarbons in August, January, and February. No levels of any of these parameters were present above detection limits at either of the two stations during August or January.

In February a fuel hydrocarbon with a chain length of between 14 and 40 carbons was detected at Station 18 (Table 4). A semi-volatile organic compound, pentachlorophenol, was also found at this station.

## EFFECTIVENESS OF STORM WATER POLLUTION PREVENTION PLAN

Two dry season and two wet season monitoring episodes have been conducted, three of which, in addition to making surface observations, sampled 20 discrete receiving water points in the harbor. Both the dry season and the storm water episodes detected contaminants in the harbor waters at several locations. As two of the sampling periods were conducted during periods of heavy storm water runoff, it is likely that the detected contaminants reflected the input of non-point source runoff. Two of the locations are near the Los Angeles River mouth, and are probably not affected by runoff from POLB. The detection of surfactants during the first dry season survey at many of selected stations resulted in several stations being randomly resampled during the September dry season monitoring survey. The results from the September survey indicated that surfactants were throughout the harbor and probably did not emanate from a single source. The



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detection of traces of benzene and xylene at Station 3 during the August monitoring survey and toluene at both Stations 1 and 3 also resulted in the areas being resampled during the September dry season monitoring survey. The absence of any discharge into the slip area at Station 3, and the detection of toluene, also, at the river station and the subsequent non-detection of these contaminants during the resampling indicated these contaminants probably did not originate from the POLB facilities. The probable sources of these contaminants are unauthorized bilge discharges which contain such contaminants as oil, fuel, soap and other cleaning fluids from the thousands of boats and ships that utilize the harbor on a daily basis.

Stations nearest the Los Angeles River had highest levels of many contaminants and the greatest influx of runoff as indicated by lower salinity. Concentrations of zinc (in January and February) and of toluene and xylene (in January) were higher near the River than at most other stations. Organic carbon was found almost exclusively near the River. Lower salinity, indicating the influx of fresh water, characterized Stations 1, 2, and 3, and was apparent even during the dry season at Station 1 as well as during the winter storms.

Stations 10 (in the channel outside Pier F) and 14 (in East Basin near Pier E) in January had the highest levels of benzene, toluene, ethylbenzene and xylene, although flowing drains were noted near these stations, salinity was not noticeably affected by a fresh water influx indicating a source other than runoff.

Station 6, in Southeast Basin near Pier G, had reduced salinity in February and the highest concentration of zinc, and detectable levels of toluene, xylene, and petroleum hydrocarbons.

Total suspended solids (TSS) were higher during the dry season August sampling (69 to 270 mg/l) than during the winter 1994 storm sampling (41 to 107 mg/l). However these surveys all had lower TSS than those found during the 1993 storm sampling (160 to 590 mg/l).

Some contaminants were detected exclusively or primarily during storm episodes. These include zinc, benzene, toluene, ethylbenzene, xylene, petroleum hydrocarbons, and single occurrences of pentachlorophenol and a fuel hydrocarbon. During the summer dry season sampling none of the drains going into the harbor were found to be flowing (with the exception of a single drain in the southeast basin known to the RWQCB). Therefore, the detection of surfactants throughout the harbor and of benzene, toluene, and xylene at Station 3, is an indication that sources other than surface runoff are responsible for the dry season detection of some contaminants. That surfactants occurred less often at Station 1 in the River Mouth than at stations within the harbor further indicates sources within the POLB.

The POLB has undertaken an investigation of the possible sources of these contaminants. This investigation will also assist the POLB in determining if the SWPPP needs to be revised to prevent potential future discharges. The results of this investigation will be communicated to the RWQCB when it is concluded.



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# APPENDIX

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

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# ANNUAL REPORT
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An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. This document must be certified and signed, under penalty of perjury, by the appropriate official of your company that the information provided in this report is true and complete (see Section C.9 of the General Permit). Retain a copy of the completed Annual Report for your records.

Many of the Annual Report questions, when answered "NO", require an explanation. Please provide explanations on a separate sheet as an attachment. As necessary, include a discussion of what actions have or will be taken to bring the facility into compliance along with a time schedule for implementation of planned actions. If convenient, you may provide a single sketch or site plan that combines the sketch or site plan requirements under items 6, 7, 8, and 9(c) on pages 3 and 4.

If any information contained in items A, B, and C below is incorrect, please cross out or highlight the incorrect information (do not white out or erase) and provide the correct information next to or above the incorrect information.

If you have questions, please contact your Regional Board Storm Water Program Contact. The address of your Regional Board (where the Annual Report must be filed) along with the name and telephone number of the contact person is indicated below.

LOS ANGELES REGIONAL BOARD
101 CENTRE PLAZA DR.
MONTEREY PARK, CA 94754-2156

Contact: MARK PUMFORD
Tel: (213) 266-7500

RECEIVED
94 JUL -1 AM 10: 54
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

## *GENERAL INFORMATION*

***A. FACILITY WDID NO:*** 4B19S003626

***B. OWNER/OPER:*** **Name:** CITY OF LONG BEACH **Contact:** DR. ROBERT KANTER

**Address:** 925 HARBOR PLAZA, LONG BEACH, CA 90802 **Tel:** (310) 590-4156

***C. FACILITY INFO:*** **Name:** PORT OF LONG BEACH **Contact:** DR. ROBERT KANTER

**Address:** 925 HARBOR PLAZA, LONG BEACH, CA 90802 **Tel:** (310) 590-4156

**Regulated Activity:** TRADE AND COMMERCE **SIC Code(s):** 4412 - Deep Sea Foreign Trans. of Freight



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## *GENERAL INFORMATION (CONTINUED)*

### *D. Is your facility part of a Group Monitoring Plan?*

___ Yes _x_ No ***Port of Long Beach conducts monitoring for itself and all of its tenants but is not considered a "Group Monitoring Plan"***

If Yes, please answer the following questions:

- What is the Group Monitoring Plan's name: _____
- Is your facility designated to collect storm water samples?

___ Yes ___ No

### *E. Is your facility exempt from sample collection (Section B.9. of the General Permit?*

___ Yes _x_ No ***Port of Long Beach currently conducts the required storm water monitoring***

If Yes, which of the following apply (check one):

___ Submitted Self-Certification to Regional Board. Date Submitted: _____

___ Received certification of local agency.

___ Received exemption by the Regional Board.

**Attach, as appropriate, the first page of either the submitted self-certification, the local agency certification letter, or the Regional Board exemption letter.**



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## *SPECIFIC INFORMATION*

1. Have you prepared a Storm Water Pollution Prevention Plan (SWPPP) as required in Section A of the Permit?
   _X_ Yes ___ No If No, attach explanation.

2. Have you implemented all elements of your SWPPP?
   _X_ Yes ___ No If No, attach explanation.

3. a. Have all non-storm water discharges (see page 10 for examples) been permitted or eliminated (Section A.6)?
   _X_ Yes ___ No
   If No, describe the non-storm water discharges that have not been permitted or eliminated.

   b. Have you reported all non-storm water discharges described above to the appropriate Regional Board office?
   _X_ Yes ___ No If No, attach report (see page 10 for instructions).
   If Yes, attach a copy of the first page of the previously submitted report.

   c. Does your SWPPP include Best Management Practices (BMPs) that address existing non-storm water discharges described above?
   _X_ Yes ___ No
   If No, revise your SWPPP and attach a brief description of the revisions.

4. Have you developed a monitoring program as required in Section B of the Permit?
   _X_ Yes ___ No If No, attach explanation.

5. Have you implemented all the elements of your monitoring plan?
   _X_ Yes ___ No If No, attach explanation.

6. Did you conduct an annual site inspection (Section B.5.a)?
   _X_ Yes ___ No If No, attach explanation. ***POLB staff will visit each site included in the NOI on an annual basis.***
   If Yes, attach a sketch or site plan of the facility showing areas inspected and provide the following for each area inspected: (you may use FORM 1 to report findings)

   - Date and time of inspection: See FORM 1
   - Name and title of inspector: Stacey E. Crouch, Environmental Specialist Associate
     Michael Jenkins, Administrative Intern
   - Summary of inspection findings. Evaluate if BMPs, as identified in the SWPPP, are in place and if additional BMPs are needed. Discuss corrective actions that are necessary.
     See FORM 1



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## SPECIFIC INFORMATION (CONTINUED)

7. Did you conduct at least one wet weather visual observation per month (Section B.5.c)?

___ Yes _x_ No If No, attach explanation.

***Due to the extent and complexity of this facility, it is impractical to inspect all stormwater discharge locations during the first hour of one storm event each month. See FORM 2.***

Attach a sketch or site plan of the facility showing the discharge locations observed, and provide the following information for each location: (You may use FORM 2 to report findings)

- Date and time of observation: See FORM 2
- Name and title of inspector
- Storm water flow characteristics observed. For example, was the flow discolored, very turbid; did it have an odor, evidence of floating or suspended material; did it have a sheen; or any other unusual characteristics? If any were observed, discuss the corrective actions taken or to be taken.

8. Did you conduct at least two dry season visual observations (Section B.5.b)?

_x_ Yes ___ No If No, attach explanation. ***Two surveys were conducted, the first in August and the second in September. See FORM 3.***

Attach a sketch or site plan of the facility showing the locations inspected, and provide the following for each location: (You may use FORM 3 to report observations)

- Date and time of observation: See FORM 3
- Name and title of inspector
- Observations of non-storm water flow or indications of prior non-storm water flow. Describe the flow characteristics, i.e., odor, color, etc., and possible source of flow, and corrective action taken. If no action has been taken, discuss what and when actions will be taken to eliminate the non-storm water discharge. Report these discharges in Item 3 above.

9. a. Did you collect storm water samples from at least two different storm events (Section B.5.d)?

_x_ Yes ___ No If No, attach explanation.

b. Did you collect samples from all storm water discharge points (Section B.11)?

___ Yes _x_ No

***Due to the extent and complexity of this facility, it is impractical to inspect or monitor all stormwater discharge locations. A broad-based approach, approved by the RWQCB-LA, samples 20 stations in the harbor complex.***

If No, have you documented in your monitoring program that the storm water discharges from different locations are substantially identical?

___ Yes _x_ No ***See above***

If No, revise your Monitoring Program and attach a brief description of the revisions.

c. How many storm water discharge points does your facility have? 164

Attach a sketch or site plan of the facility showing all storm water discharge points. If you did not sample all discharge points, indicate which discharge points were and were not sampled. **Refer to maps submitted with POLB NOI.**

d. Were all samples collected no more than 30 minutes after the storm water discharge began (Section B.12)?

___ Yes _x_ No If No, attach explanation. ***See 9(b)***



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## *SPECIFIC INFORMATION (CONTINUED)*

10. Provide a summary of your sampling results. You may use FORM 4 to report findings. The summary should include the date and time of sample, constituents tested, who did the testing, the testing results, test method used, and test detection limit. Copies of the analytical results from the laboratory may also be provided, but are not required. For facilities subject to Federal Storm Water Effluent Limitation Guidelines, separately report the Federal Guidelines and the corresponding monitoring results. *See FORM 4*

11. Attach an evaluation of the overall effectiveness of the facility's SWPPP in reducing pollutants in storm water discharge. Consider the results of sampling and visual observation in this evaluation. Discuss specific areas or elements of the SWPPP that are not effective or need improvement. Provide a brief description of alternatives or proposed revisions to the SWPPP. *See attached report.*

12. Attach an evaluation of your monitoring program in detecting pollutants in storm water discharge. Discuss areas of the monitoring program that are not effective or need improvement. Provide a brief description of proposed revisions to the monitoring program. *See attached report.*

13. Do you certify that, based on your annual site inspection, your facility is in compliance with the requirements of the General Industrial Activities Storm Water Permit?

    _x_ Yes ___ No If No, attach explanation.

## *CERTIFICATION*

I am duly authorized to sign reports required by the GENERAL INDUSTRIAL ACTIVITIES STORM WATER PERMIT (see Provisions C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: Geraldine Knatz, Ph.D.

Signature: Geraldine Knatz Date: 6/30/94

Title: Director of Planning



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## *SUPPLEMENTAL QUESTIONNAIRE (OPTIONAL)*

We have received over 8000 NOIs for coverage under the STATEWIDE INDUSTRIAL GENERAL PERMIT. We have tried to make the program understandable and provide a workable means of implementing a complex set of new regulations. You may wish to spend a few minutes answering the following questions to tell us how we are doing.

You may send this form with your annual report. If you wish to submit it anonymously, please submit it separately.

1. Do you understand the GENERAL PERMIT and what it requires you to do?

   ___ Yes ___ No

2. Do you consider the GENERAL PERMIT an efficient and workable means to comply with the Clean Water Act and the Storm Water Permitting Regulations?

   ___ Yes ___ No

3. Have you had any contact (inspections, informational workshops, telephone inquiries) with staff of the Regional Water Boards or your local storm water management agency?

   ___ Yes ___ No
   If Yes, please indicate the type of contact made, and the date (if available) it was made. You may also wish to discuss the context in which the contact was made and if you were satisfied with the help or guidance received in response to your inquiry.

4. Did you (or your accounting office) understand the last ANNUAL FEE INVOICE?

   ___ Yes ___ No DID NOT RECEIVE INVOICE

5. Please use the space provided below (or an attachment) to suggest ways that we can improve and/or streamline our management of this program, or explain your responses made to the preceding questions.



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# FORM 1

**State of California & State Water Resources Control Board**
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**for**
**Storm Water Discharges Associated with Industrial Activities**

**ANNUAL SITE INSPECTION FORM**

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## FORM 1 - ANNUAL SITE INSPECTION FORM

Inspection Date: Various Dates

| INSPECTED AREAS<br>List all areas where exposed loading/unloading, access, storage, manufacturing or process activities occur | For each area, are the BMPs listed in the SWPPP in place? | | Are additional BMPs needed to control storm water pollution? | | DESCRIBE DEFICIENCIES AND CORRECTIVE ACTIONS |
|---|---|---|---|---|---|
| | YES | NO | YES | NO | |
| | **See following pages** | | | | |
| | | | | | |
| | | | | | |

Inspector Name: Stacey E. Crouch Title: Environmental Specialist Associate

Signature: Stacey E. Crouch Date: 6/4/94



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FORM 1 - ANNUAL SITE INSPECTION

| INSPECTED AREAS | BMPs IN PLACE | | ADDITIONAL BMPs | | DEFICIENCIES AND CORRECTIVE ACTIONS |
|---|---|---|---|---|---|
| | YES | NO | YES | NO | |
| A&A Oil Tools<br>1426 W. 12th Street<br>Inspection Date - 6/6/94<br>Inspection Time - 10:00 a.m. | X | | | X | Increased frequency of housekeeping practices |
| AIMCOR<br>1270 Pier G Avenue<br>Inspection to be scheduled | | | | | |
| ARCO CQC Kiln<br>Pier G Avenue<br>Inspection Date - 6/9/94<br>Inspection Time - 3:00 p.m. | X | | | X | None |
| Baker Commodities<br>Pier D, Berth D30<br>Inspection Date - 6/2/94<br>Inspection Time - 10:00 a.m. | X | | X | | Salt bag storage area should be bermed and/or covered |
| Boliden Sulex<br>1237 Pier G Avenue<br>Inspection Date - 6/30/94<br>Inspection Time - 10:30 p.m. | | | | | Analyses underway - Results not available at time of printing |
| California United Terminals<br>300 Pier B Avenue<br>Inspection Date - 6/30/94<br>Inspection Time - 3:30 p.m. | | | | | Analyses underway - Results not available at time of printing |
| Chemoil Refining Corp<br>1004 Pier F Avenue<br>Inspection Date - 6/2/94<br>Inspection Time - 1:00 p.m. | X | | X | | Drum storage area should be bermed and/or covered |
| City Paper and Metal<br>1452 W. 11 Street<br>Inspection Date - 6/2/94<br>Inspection Time - 2:45 p.m. | X | | | X | None |
| Clean Coastal Waters<br>190 S. Pico Avenue<br>Inspection Date - 6/7/94<br>Inspection Time - 9:00 a.m. | X | | | X | None |
| Coast Citrus Distributors<br>1120 Pier F Avenue<br>Inspection to be scheduled | | | | | |
| Cooper/T. Smith Stevedoring<br>1480 Pier F Avenue<br>Inspection Date - 6/2/94<br>Inspection Time - 10:00 a.m. | X | | X | | Vehicles parked in yard should have drip pans underneath |

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FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Crescent Terminals<br>Pier F, Berth F206<br>Inspection Date - 5/31/94<br>Inspection Time - 11:00 a.m. | X | | X | | Increased sweeping and cleaning around storm drains |
| Crowley Marine Services<br>Pier D, Berths D47-D49<br>Inspection Date - 6/2/94<br>Inspection Time - 11:00 a.m. | X | | | X | None |
| Domtar Gypsum<br>1401 Pier D Street<br>Inspection to be scheduled | | | | | |
| Forest Terminals<br>Pier D, Berth D90<br>Inspection Date - 6/7/94<br>Inspection Time - 10:00 a.m. | X | | | X | None |
| Fremont Forest<br>800 Pier T Avenue<br>Inspection Date - 6/9/94<br>Inspection Time - 11:00 a.m. | X | | | X | None |
| Foss Maritime<br>Pier D, Berth D35<br>Inspection Date - 5/31/94<br>Inspection Time - 2:00 p.m. | X | | X | | Drum storage area should be bermed and/or covered |
| Hampton Tedder Electric<br>1120 Pier E Street<br>Inspection Date - 6/6/94<br>Inspection Time - 11:00 a.m. | X | | | X | None |
| Hanjin Shipping<br>1521 Pier C Street<br>Inspection to be scheduled | | | | | |
| Hiuka America Corp<br>Cooper/T. Smith Stevedoring<br>Pier F, Berth F205<br>Inspection Date - 6/10/94<br>Inspection Time - 2:00 p.m. | X | | | X | None |
| International Transportation Service<br>1281 Pier J Avenue<br>Inspection Date - 6/28/94<br>Inspection Time - 11:00 a.m. | | | | | Drum storage area should be bermed and/or covered; Wash basins should be in contained areas |
| Island Express<br>900 Queensway Drive<br>Inspection Date - 6/15/94<br>Inspection Time - 9:00 a.m. | X | | | X | None |
| Koch Carbon Inc.<br>Chevron Barn<br>Pier G Avenue<br>Inspection Date - 5/31/94<br>Inspection Time - 10:00 a.m. | X | | | X | None |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Koch Carbon Inc.<br>KCBX Facility<br>1020 Pier F Avenue<br>Inspection Date - 5/31/94<br>Inspection Time - 10:00 a.m. | X | | | X | None |
| Koch Carbon Inc.<br>Koch Barn<br>Pier G Avenue<br>Inspection Date - 5/31/94<br>Inspection Time - 10:00 a.m. | X | | | X | None |
| Koch Carbon Inc.<br>Ultramar Barn<br>Pier G Avenue<br>Inspection Date - 5/31/94<br>Inspection Time - 10:00 a.m. | X | | | X | None |
| Long Beach Container Terminal<br>1171 Pier F Avenue<br>Inspection Date - 6/30/94<br>Inspection Time - 1:15 p.m. | | | | | Analyses underway - Results not available at time of printing |
| Lomita Gasoline Company<br>1348 W. 9th Street<br>Inspection Date - 6/2/94<br>Inspection Time - 2:00 p.m. | X | | | X | None |
| L.G. Everist, Inc.<br>1605 Pier D Street<br>Inspection Date - 6/28/94<br>Inspection Time - 1:15 p.m. | X | | X | | Drum storage areas should be bermed and/or covered |
| Long Beach Iron Works<br>2100 W. Anaheim<br>Inspection Date - 6/7/94<br>Inspection Time - 11:00 a.m. | X | | | X | None |
| MCC-Lucky Cement<br>Pier F, Berth F208<br>Inspection Date - 1/6/94<br>Inspection Time - 1:15 p.m. | X | | | X | None |
| Maersk Pacific Ltd<br>570 Harbor Scenic Drive<br>Inspection Date - 6/9/94<br>Inspection Time - 1:30 p.m. | X | | X | | Drums storage area should be bermed and/or covered |
| Metropolitan Stevedore<br>Pier G, Berths G212-G215<br>Inspection Date - 6/7/94<br>Inspection Time - 1:15 p.m. | X | | X | | Increased sweeping of entire facility; Drum storage area should be bermed and/or covered |
| Morton Salt<br>1050 Pier F Avenue<br>Inspection Date - 6/21/94<br>Inspection Time - 9:00 a.m. | X | | X | | Drum storage area should be bermed and/or covered |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| National Gypsum<br>1850 Pier B Street<br>Inspection Date - 6/9/94<br>Inspection Time - 10:00 a.m. | X | | | X | None |
| Pacific Coast Cement<br>601 Pier D Avenue<br>Inspection Date - 6/21/94<br>Inspection Time - 10:00 a.m. | X | | | X | None |
| Pacific Container Terminal<br>1521 Harbor Scenic Drive<br>Inspection to be scheduled | | | | | |
| Petro-Diamond Terminal Company<br>1920 Lugger Way<br>Inspection Date - 6/30/94<br>Inspection Time - 10:30 a.m. | | | | | Analyses underway - Results not available at time of printing |
| Port of Long Beach<br>Maintenance<br>1400 W. Broadway<br>Inspection to be scheduled | | | | | |
| Powerine Oil Company<br>1405 Pier C Street<br>Inspection Date - 6/7/94<br>Inspection Time - 2:30 p.m. | X | | | X | None |
| Power Systems Associates<br>1125 Pier E Street<br>Inspection to be scheduled | | | | | |
| SRM Corporation<br>Queen's Wharf<br>555 Pico Avenue<br>Inspection to be scheduled | | | | | |
| Sea-Land Service Inc.<br>669 Harbor Plaza<br>Inspection to be scheduled | | | | | |
| Seal Beach Sportfishing<br>555 Pico Avenue<br>Inspection to be scheduled | | | | | |
| Shell Pipe Line Corporation<br>Pico Avenue<br>Inspection to be scheduled | | | | | |
| Spun Products Inc.<br>1800 W. 9th Street<br>Inspection Date - 5/31/94<br>Inspection Time - 1:00 p.m. | X | | | X | None |
| Superior Electric Advertising<br>1700 W. Anaheim Street<br>Inspection Date - 6/21/94<br>Inspection Time - 2:30 p.m. | X | | X | | Drum storage area should be bermed and/or covered |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Texaco Refining and Marketing<br>2050 Edison Way<br>Inspection Date - 6/21/94<br>Inspection Time - 1:30 p.m. | X | | | X | None |
| THUMS Long Beach Company<br>Pier J - various sites<br>Inspection Date - 6/20/94<br>Inspection Time - 8:00 a.m. | X | | X | | Maintenance yard should be bermed |
| Tidelands Oil Production Company<br>Various sites<br>Inspection Date - 6/23/94<br>Inspection Time - 10:30 a.m. | X | | | X | None |
| Toyota Motor Sales<br>785 Edison Avenue<br>Inspection Date - 6/21/94<br>Inspection Time - 11:00 a.m. | X | | | X | None |
| Westway Trading Corporation<br>1395 Pier J Avenue<br>Inspection Date - 6/20/94<br>Inspection Time - 9:00 a.m. | X | | X | | Drums storage area should be bermed and/or covered |
| Weyerhaeuser Company<br>280 Pier T Avenue<br>Inspection Date - 6/2/94<br>Inspection Time - 9:00 a.m. | X | | | X | None |

All site visits were conducted by the following Port of Long Beach Staff:

Stacey E. Crouch, Environmental Specialist Associate
Michael Jenkins, Administrative Intern

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# FORM 2

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

## RECORD OF WET SEASON VISUAL OBSERVATIONS
## JANUARY 1994

R0061896

State of California
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES
*1993-1994*

## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Wet season observations are required to be done during the first hour of discharge for at least one storm per month between October 1 and April 30.

Month: January 1994 Approximate time storm water discharge began: 2130

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS (CIRCLE ALL THAT APPLY) | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| POLB | 24-25 Jan 1994 2248-0118 | See following pages. | | | |
| | | Discolorations? | Cloudiness? | | |

Comments/Corrective Actions Taken for above:

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS (CIRCLE ALL THAT APPLY) | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| | | Floating Materials? | Suspended materials? | | |
| | | Odors? | Oil/grease sheen? | | |
| | | Discolorations? | Cloudiness? | | |

Comments/Corrective Actions Taken for above:

Inspector Name: Donald D. Johnston Title: Senior Technician

Signature: Donald D. Johnston Date: 28 June 1994



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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 1 | 24 Jan 94 2248 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *No storm drain flow or other run off observed. Entire area turbid.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 2 | 24 Jan 94 2255 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Entire area turbid. Flow from a large drain at approx. 5 gal/min.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 3 | 24 Jan 94 2303 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *No storm drain flow or other run off observed. Water extremely clear.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 4 | 24 Jan 94 2316 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *No flow observed from drains. Water dripping through and under Pier J wharf. Water was clear.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 5 | 24 Jan 94 2322 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Entire area turbid. Flow from a large drain at approx. 2 gal/min. Wood, trash, and algae observed.*

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R0061898

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 6 | 24 Jan 94 2327 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Water uniformly turbid. Water dripping off wharf.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 7 | 24 Jan 94 2341 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Clear water. Water dripping off wharf.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 8 | 24 Jan 94 2348 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | Yes | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Petroleum odor from barge. Clear water. No runoff observed.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 9 | 24 Jan 94 2353 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | Yes | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Petroleum odor. Unable to observe storm drain – fuel barge in the way.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 10 | 25 Jan 94 0005 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Flow from a pipe, approx. ½ gal/min.*

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 11 | 25 Jan 94 0011 | Floating Materials | Yes | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Floating trash. No flow observed.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 12 | 25 Jan 94 0019 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Floating trash. Flow from a drain, approx. ½ gal/min.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 13 | 25 Jan 94 0021 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Flow from pipe under wharf, 6 pipes on west side, 2–6 gal/min.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 14 | 25 Jan 94 0029 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Runoff across wharf face. Flow from drain (west side) 10 gal/min.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 15 | 25 Jan 94 0037 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Floating trash. Flow from drains under wharf of east side (approx. 6) at 1 gal/min.*

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 16 | 25 Jan 94 0042 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *No flow observed.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 17 | 25 Jan 94 0052 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Clear water. No flow observed.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 18 | 25 Jan 94 0101 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Water uniformly turbid. Flow from drains on east side, approx 1 gal/min.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 19 | 25 Jan 94 0109 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Clear water. No flow observed.*

Month: January 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 20 | 25 Jan 94 0128 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *No flow observed.*

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**FORM 2**

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

**RECORD OF WET SEASON VISUAL OBSERVATIONS**
**FEBRUARY 1994**

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State of California
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES
1993-1994

## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Wet season observations are required to be done during the first hour of discharge for at least one storm per month between October 1 and April 30.

Month: FEBRUARY 1994 Approximate time storm water discharge began: _____

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS (CIRCLE ALL THAT APPLY) | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| POLB | 7 Feb94 1203-1418 | See following pages. | | | |
| | | Discolorations? | Cloudiness? | | |

Comments/Corrective Actions Taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS (CIRCLE ALL THAT APPLY) | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| | | Floating Materials? | Suspended materials? | | |
| | | Odors? | Oil/grease sheen? | | |
| | | Discolorations? | Cloudiness? | | |

Comments/Corrective Actions Taken for above: _____

Inspector Name: DONALD D. JOHNSTON Title: SENIOR TECHNICIAN

Signature: Donald D. Johnston Date: 28 June 1994



R0061903

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 1 | 7 Feb 94 1202 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Entire area turbid. No flow observed*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 2 | 7 Feb 94 1210 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Entire area turbid. Flow observed from 2 large drains at approx 5 gal/min. Moved station in closer to corner to sample near drains.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 3 | 7 Feb 94 1217 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Entire area slightly turbid. Large drain at end - approx 2 gal/min.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 4 | 7 Feb 94 1229 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Dripping under wharf.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 5 | 7 Feb 94 1233 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Trash, algae, and wood observed. Small drain with 5 gal/min flow.*

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ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 6 | 7 Feb 94 1242 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Turbid water extending out from drain. Floating trash. Flow from large drain at end of berth approx 100 gal/min. Flow from small drains 2 gal/min. Dripping off wharf. Moved station from center of berth towards end near large storm drain.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 7 | 7 Feb 94 1251 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *No flow observed*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 8 | 7 Feb 94 1255 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Trash, algae. Flow from medium-sized drain – 5 gal/min.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 9 | 7 Feb 94 1301 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Trash, wood, polystyrene. Flow from large drain: 25 gal/min., Medium drain: 10gal/min., run off from top of wharf at 10 gal/min.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 10 | 7 Feb 94 1310 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Trash, algae. Flow from large drain: 20 gal/min., small pipe: 5 gal/min.*

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## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 11 | 7 Feb 94 1315 | Floating Materials | Yes | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Trash, algae. No flow observed.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 12 | 7 Feb 94 1330 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Dark brown turbidity. Flow from large drain: 2 gal/min., small drain: 1 gal/min.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 13 | 7 Feb 94 1335 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Floating wood. Line of turbidity across channel. Small drains under wharf (both sides of channel) flowing less than 1 gal/min. Large drain at end flowing 5 gal/min.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 14 | 7 Feb 94 1341 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Turbid near edges along wharf front, clear in center of channel. Drains under wharf flowing less than 1 gal/min. Dripping off wharf.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 15 | 7 Feb 94 1347 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Trash. Drains under wharf flowing less than 1 gal/min.*

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## FORM 2 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 16 | 7 Feb 94 1354 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Entire area turbid. Large drain on south–west side 10 gal/min. Small drains (4–6) on north–east side 2–4 gal/min.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 17 | 7 Feb 94 1401 | Floating Materials | No | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *No flow observed.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 18 | 7 Feb 94 1407 | Floating Materials | No | Suspended materials | No | see comment below | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Area highly turbid from drain. Drain on north side 50 gal/min. Moved station from center of channel to near large drain.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 19 | 7 Feb 94 1418 | Floating Materials | Yes | Suspended materials | No | see comment below | not applicable |
| | | Odors | Yes | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Earthy smell. Area turbid extending from drain. Foam on surface. Large pipes on south side over 100 gal/min. Small drain on south side 10 gal/min. Moved station from center of channel to near large pipes on south side.*

Month: February 1994 — Approximate time storm water discharge began: not applicable

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 20 | 7 Feb 94 1143 | Floating Materials | Yes | Suspended materials | No | no flow | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *No flow observed.*

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# FORM 3

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

## RECORD OF DRY SEASON VISUAL OBSERVATIONS
## AUGUST 1993

R0061908

State of California
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES
*1993-1994*

## FORM 3 - RECORD OF DRY SEASON VISUAL OBSERVATIONS

Dry season visual observations are required to detect the presence of non-storm water discharges.
This form should be filled out for at least two dry season visual observations between May 1 and September 30 of each year.
Non-storm water discharges that have not been eliminated must be reported in Item 3 of the Annual Report.

| DISCHARGE LOCATION | DATE/ TIME | See following pages. | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|
| POLB | 0911-1410 hrs 12 Aug 1993 | INDICATIONS OF PRIOR DISCHARGE? YES / NO | |

Comments/Corrective Actions Taken for above:

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVED? YES / NO | DESCRIBE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|
| | | INDICATIONS OF PRIOR DISCHARGE? YES / NO | | |

Comments/Corrective Actions Taken for above:

Inspector Name: ROBERT H. MOORE Title: TECHNICAL COORDINATOR

Signature: Robert H Moore Date: 28 June 1994



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FORM 3 - RECORD OF DRY SEASON VISUAL OBSERVATIONS

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 1 | 12 Aug 93 0911 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: *Paper trash.*

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 2 | 12 Aug 93 0925 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 3 | 12 Aug 93 0935 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 4 | 12 Aug 93 1013 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: *New dock/bulkhead contruction at Berth 246, just beside station.*

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 5 | 12 Aug 93 1020 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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FORM 8 – RECORD OF DRY SEASON VISUAL OBSERVATIONS

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 6 | 12 Aug 93 1040 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 7 | 12 Aug 93 1058 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: *No flow at station. One 24" pipe halt way between Stations 6 and 7 had 2–3 gal/min flow.*

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 8 | 12 Aug 93 1120 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 9 | 12 Aug 93 1129 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 10 | 12 Aug 93 1140 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

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FORM 3 - RECORD OF DRY SEASON VISUAL OBSERVATIONS

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 11 | 12 Aug 93 1153 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 12 | 12 Aug 93 1217 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 13 | 12 Aug 93 1228 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 14 | 12 Aug 93 1242 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: *"S/R Jameston" slight discharge near stern.*

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 15 | 12 Aug 93 1255 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

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FORM 3 – RECORD OF DRY SEASON VISUAL OBSERVATIONS

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 16 | 12 Aug 93 1308 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 17 | 12 Aug 93 1331 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 18 | 12 Aug 93 1354 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 19 | 12 Aug 93 1410 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 20 | 12 Aug 93 0955 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: *Slight discharge from "B.T. Alaska" east of station.*

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**FORM 3**

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

**RECORD OF DRY SEASON VISUAL OBSERVATIONS**
**SEPTEMBER 1993**

R0061914

State of California
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES
*1993-1994*

## FORM 3 - RECORD OF DRY SEASON VISUAL OBSERVATIONS

Dry season visual observations are required to detect the presence of non-storm water discharges.
This form should be filled out for at least two dry season visual observations between May 1 and September 30 of each year.
Non-storm water discharges that have not been eliminated must be reported in Item 3 of the Annual Report.

| DISCHARGE LOCATION | DATE/ TIME | See following pages. | | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|
| POLB | 2 SEPT 93<br>0910 - 1550 | INDICATIONS OF PRIOR DISCHARGE? YES / NO | | |

Comments/Corrective Actions Taken for above:

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVED? YES / NO | DESCRIBE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|
| | | INDICATIONS OF PRIOR DISCHARGE? YES / NO | | |

Comments/Corrective Actions Taken for above:

Inspector Name: Michael D. Curtis Title: Project Scientist

Signature: Michael D. Curtis Date: 28 June 1994



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FORM 3 – RECORD OF DRY SEASON VISUAL OBSERVATIONS

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 1 | 2 Sep 93 0810 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 2 | 2 Sep 93 0910 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 3 | 2 Sep 93 0915 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 4 | 2 Sep 93 0945 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 5 | 2 Sep 93 0950 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

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FORM 3 – RECORD OF DRY SEASON VISUAL OBSERVATIONS

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 6 | 2 Sep 93 0955 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 7 | 2 Sep 93 1000 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: *No flow at station. One 24" pipe half way between Stations 6 and 7 was underwater at this tidal stage. Flow could not be verified.*

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 8 | 2 Sep 93 1005 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 9 | 2 Sep 93 1010 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 10 | 2 Sep 93 1015 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above:

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FORM 3 - RECORD OF DRY SEASON VISUAL OBSERVATIONS

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 11 | 2 Sep 93 1018 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 12 | 2 Sep 93 1025 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 13 | 2 Sep 93 1035 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 14 | 2 Sep 93 1040 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 15 | 2 Sep 93 1045 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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FORM 3 – RECORD OF DRY SEASON VISUAL OBSERVATIONS

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 16 | 2 Sep 93 1050 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 17 | 2 Sep 93 1530 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 18 | 2 Sep 93 1545 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 19 | 2 Sep 93 1550 | DISCHARGE OBSERVED? | NO | no flow | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | NO | | |

Comments/corrective actions taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | | | DISCHARGE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 20 | Not sampled | DISCHARGE OBSERVED? | | not applicable | not applicable |
| | | INDICATIONS OF PRIOR DISCHARGE? | | | |

Comments/corrective actions taken for above: _____

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# FORM 4

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

**SAMPLING RESULTS AUGUST 1993 SURVEY**

R0061920

State of California
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4
## SAMPLING RESULTS

DISCHARGE POINT: POLB

DATE AND TIME OF SAMPLE: 12 August 1993 0911-1410 TIME DISCHARGE STARTED: _____

| CONSTITUENT TESTED | TESTED BY: LAB/SELF[1] | RESULTS [2] | TEST METHOD USED[3] | DETECTION LIMIT |
|---|---|---|---|---|
| pH | | See following pages. | | |
| TOTAL SETTLEABLE | | | | |
| SPECIFIC CONDUCTANCE | | | | |
| OIL & GREASE | | mg/l | | |
| TOTAL ORGANIC CARBON | | mg/l | | |
| ADDITIONAL POLLUTANTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| FLOW [4] | | gallons | | |
| SIZE OF STORM (IF AVAILABLE) | | inches | | |

(1) If testing was done by a certified laboratory, indicate "lab"; otherwise, indicate "self".
(2) If analytical results indicate a value less than the detection limit (or non detect), show the value as less than the numerical value of the detection limit.
(3) Indicate the test method used to determine result. In cases where analyzers are used, indicate with an "A"
(4) Dischargers subject to the Santa Clara County General Permit are required to provide estimates or calculations of the volume of storm water discharged from each point. Describe, on a separate sheet, how the flow measurement was calculated.

Name of person collecting sample: ROBERT H. MOORE Title: TECHNICAL COORDINATOR



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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 1

DATE AND TIME OF SAMPLE: 12 August 1993, 0911 hrs  TIME DISCHARGE STARTED: none-dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.25 | Analyzer | 0-14 |
| Total suspended solids | Lab | 110 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 31.1 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 19.4 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | 3.7 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7198 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | < 0.5 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 0.58 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 2

DATE AND TIME OF SAMPLE: 12 August 1993, 0625 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.20 | Analyzer | 0–14 |
| Total suspended solids | Lab | 84 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.2 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.3 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total recoverable petroleum hydrocarbons (QA/QC) | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Total organic carbon (QA/QC) | Lab | 2.1 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 1.5 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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## FORM 4 - SAMPLING RESULTS
## STATION 3

DATE AND TIME OF SAMPLE: 12 August 1993, 0935 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.18 | Analyzer | 0–14 |
| Total suspended solids | Lab | 270 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | 0.5 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 0.93 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | 1.7 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 4

DATE AND TIME OF SAMPLE: 12 August 1993, 1013 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.17 | Analyzer | 0–14 |
| Total suspended solids | Lab | 80 mg/l | 160.2 | 5.0 mg/l |
| Total suspended solids (QA/QC) | Lab | 140 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.9 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 1.2 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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R0061925

## FORM 4 - SAMPLING RESULTS
## STATION 5

DATE AND TIME OF SAMPLE: 12 August 1993, 1020 hrs  TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.10 | Analyzer | 0–14 |
| Total suspended solids | Lab | 69 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | * ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | * ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 1.5 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

* an anomalous reading resulted from ice water leaking into the broken jar

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## FORM 4 - SAMPLING RESULTS
## STATION 6

DATE AND TIME OF SAMPLE: 12 August 1993, 1040 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.13 | Analyzer | 0–14 |
| Total suspended solids | Lab | 92 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 48.4 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.4 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc (QA/QC) | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 1.0 mg/l | 425.1 | 0.5 mg/l |
| Surfactants (QA/QC) | Lab | 1.4 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 7

DATE AND TIME OF SAMPLE: 12 August 1993, 1058 hrs TIME DISCHARGE STARTED: none--dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.17 | Analyzer | 0-14 |
| Total suspended solids | Lab | 75 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.8 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 32.7 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 8

DATE AND TIME OF SAMPLE: 12 August 1993, 1120 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.13 | Analyzer | 0–14 |
| Total suspended solids | Lab | 90 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.9 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 9

DATE AND TIME OF SAMPLE: 12 August 1993, 1129 hrs TIME DISCHARGE STARTED: none-dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.15 | Analyzer | 0-14 |
| Total suspended solids | Lab | 74 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.8 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 32.7 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total recoverable petroleum hydrocarbons (QA/QC) | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Sulfide | Lab | < 0.5 mg/l | 376.2 | 0.1 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 10

DATE AND TIME OF SAMPLE: 12 August 1993, 1140 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.21 | Analyzer | 0–14 |
| Total suspended solids | Lab | 75 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 48.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.7 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Benzene (QA/QC) | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene (QA/QC) | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Ethylbenzene (QA/QC) | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene (QA/QC) | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
### STATION 11

DATE AND TIME OF SAMPLE: 12 August 1993, 1153 hrs  TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.19 | Analyzer | 0–14 |
| Total suspended solids | Lab | 250 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.9 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 12

DATE AND TIME OF SAMPLE: 12 August 1993, 1217 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.21 | Analyzer | 0–14 |
| Total suspended solids | Lab | 96 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.1 ms/cm | Analyzer | 0–100 ms/cm |
| Conductivity (QA/QC) | Lab | 49.9 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.0 ppt | Analyzer | 0–40 ppt |
| Salinity (QA/QC) | Lab | 32.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Total organic carbon (QA/QC) | Lab | 2.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 13

DATE AND TIME OF SAMPLE: 12 August 1993, 1226 hrs  TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.17 | Analyzer | 0–14 |
| Total suspended solids | Lab | 240 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.6 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.3 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Surfactants | Lab | 1.0 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Benzene (QA/QC) | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene (QA/QC) | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Ethylbenzene (QA/QC) | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene (QA/QC) | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 14

DATE AND TIME OF SAMPLE: 12 August 1993, 1242 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.20 | Analyzer | 0–14 |
| Total suspended solids | Lab | 85 mg/l | 160.2 | 5.0 mg/l |
| Total suspended solids (QA/QC) | Lab | 81 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.9 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc (QA/QC) | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 15

DATE AND TIME OF SAMPLE: 12 August 1993, 1255 hrs TIME DISCHARGE STARTED: none-dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.21 | Analyzer | 0-14 |
| Total suspended solids | Lab | 86 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.3 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 33.1 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS-Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 16

DATE AND TIME OF SAMPLE: 12 August 1993, 1306 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.16 | Analyzer | 0–14 |
| pH (QA/QC) | Lab | 8.18 | Analyzer | 0–14 |
| Total suspended solids | Lab | 84 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 59.2 ms/cm | Analyzer | 0–100 ms/cm |
| Conductivity (QA/QC) | Lab | 60.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.0 ppt | Analyzer | 0–40 ppt |
| Salinity (QA/QC) | Lab | 32.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 12 August 1993, 1331 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.10 | Analyzer | 0–14 |
| Total suspended solids | Lab | 170 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.3 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.1 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Extractable fuel hydrocarbons | Lab | < 0.5 mg/l | CA DHS–Mod. 8015 | 0.5 mg/l |
| Volatile fuel hydrocarbons | Lab | < 50 µg/l | CA DHS–Mod. 8015 | 50 µg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Volatile organics | | | | |
| Acetone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Benzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromodichloromethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromoform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromomethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2–Butanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Carbon disulfide | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Carbon tetrachloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Chlorobenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chlorodibromomethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2–Chloroethyl vinyl ether | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 1,1–Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2–Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1–Dichloroethene | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| cis–1,2–Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans–1,2–Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2–Dichloropropane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| cis–1,3–Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans–1,3–Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Ethylbenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 2–Hexanone | Lab | < 10 µg/l | 8240 | 10 µg/l |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 12 August 1993, 1331 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Volatile organics (continued) | | | | |
| Methylene chloride | Lab | < 10 µg/l | 8240 | 10 µg/l |
| 4–Methyl–2–pentanone | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Styrene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2,2–Tetrachloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Tetrachloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Toluene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,1–Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2–Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichlorofluoromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl acetate | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl chloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Total Xylenes | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Semi–volatile organics | | | | |
| Acenaphthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Acenaphthylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Aniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Azobenzene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Benzidine | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benzoic Acid | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benz(a)anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(b)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(k)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(g,h,i)perylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(a)pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzyl alcohol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Bis(2–chloroethoxy)methane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–chloroethyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–chloroisopropyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–ethylhexyl)phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Bromophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Butyl benzyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Chloroaniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Chloronaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Chloro–3–methylphenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2–Chlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Chlorophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Chrysene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Dibenz(a,h)anthracene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dibenzofuran | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di–N–butyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 1,3–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,4–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 3,3–Dichlorobenzidine | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4–Dichlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Diethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4–Dichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dimethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4,6–Dinitro–2–methylphenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4–Dinitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| 2,4–Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,6–Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di–N–octyl phthalate | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Fluorene | Lab | < 10 µg/l | 8270 | 10 µg/l |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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## FORM 4 - SAMPLING RESULTS
## STATION 17

**DATE AND TIME OF SAMPLE: 12 August 1993, 1331 hrs TIME DISCHARGE STARTED: none-dry weather survey**

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Semi-volatile organics (continued) | | | | |
| Hexachlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorobutadiene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorocyclopentadiene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Hexachloroethane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Indeno(1,2,3-cd)pyrene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Isophorone | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Methylnaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Naphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 3-Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Nitroaniline | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Nitrobenzene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2-Nitrophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Nitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| N-Nitrosodiphenylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| N-Nitroso-di-N-propylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pentachlorophenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Phenanthrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Phenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2,4-Trichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4,5-Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2,4,6-Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 18

DATE AND TIME OF SAMPLE: 12 August 1993, 1354 hrs TIME DISCHARGE STARTED: *none–dry weather survey*

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.11 | Analyzer | 0–14 |
| Total suspended solids | Lab | 66 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 52.5 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.3 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Extractable fuel hydrocarbons | Lab | < 0.5 mg/l | CA DHS–Mod. 8015 | 0.5 mg/l |
| Volatile fuel hydrocarbons | Lab | < 50 µg/l | CA DHS–Mod. 8015 | 50 µg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS–Mod. 8020 | 0.5 µg/l |
| Volatile organics | | | | |
| Acetone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Benzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromodichloromethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromoform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromomethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2–Butanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Carbon disulfide | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Carbon tetrachloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Chlorobenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chlorodibromomethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2–Chloroethyl vinyl ether | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 1,1–Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2–Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1–Dichloroethene | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| cis–1,2–Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans–1,2–Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2–Dichloropropane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| cis–1,3–Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans–1,3–Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Ethylbenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 2–Hexanone | Lab | < 10 µg/l | 8240 | 10 µg/l |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 18

DATE AND TIME OF SAMPLE: 12 August 1993, 1354 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Volatile organics (continued) | | | | |
| Methylene chloride | Lab | < 10 µg/l | 8240 | 10 µg/l |
| 4–Methyl–2–pentanone | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Styrene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2,2–Tetrachloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Tetrachloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Toluene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,1–Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2–Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichlorofluoromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl acetate | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl chloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Total Xylenes | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Semi–volatile organics | | | | |
| Acenaphthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Acenaphthylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Aniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Azobenzene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Benzidine | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benzoic Acid | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benz(a)anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(b)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(k)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(g,h,i)perylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(a)pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzyl alcohol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Bis(2–chloroethoxy)methane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–chloroethyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–chloroisopropyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–ethylhexyl)phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Bromophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Butyl benzyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Chloroaniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Chloronaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Chloro–3–methylphenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2–Chlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Chlorophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Chrysene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Dibenz(a,h)anthracene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dibenzofuran | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di–N–butyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 1,3–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,4–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 3,3–Dichlorobenzidine | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4–Dichlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Diethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4–Dichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dimethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4,6–Dinitro–2–methylphenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4–Dinitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| 2,4–Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,6–Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di–N–octyl phthalate | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Fluorene | Lab | < 10 µg/l | 8270 | 10 µg/l |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
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1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 18

DATE AND TIME OF SAMPLE: 12 August 1993, 1354 hrs  TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Semi–volatile organics (continued) | | | | |
| Hexachlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorobutadiene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorocyclopentadiene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Hexachloroethane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Indeno(1,2,3–cd)pyrene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Isophorone | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Methylnaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Naphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 3–Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Nitroaniline | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Nitrobenzene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2–Nitrophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Nitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| N–Nitrosodiphenylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| N–Nitroso–di–N–propylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pentachlorophenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Phenanthrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Phenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2,4–Trichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4,5–Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2,4,6–Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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## FORM 4 - SAMPLING RESULTS
## STATION 19

DATE AND TIME OF SAMPLE: 12 August 1993, 1410 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.19 | Analyzer | 0–14 |
| Total suspended solids | Lab | 78 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.4 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.2 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | 2.2 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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R0061944

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## FORM 4 - SAMPLING RESULTS
## STATION 20

DATE AND TIME OF SAMPLE: 12 August 1993, 0955 hrs TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.23 | Analyzer | 0–14 |
| Total suspended solids | Lab | 78 mg/l | 160.2 | 6.0 mg/l |
| Conductivity | Lab | 49.4 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.4 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | 2.3 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

VOL 17

000105

R0061945

# FORM 4

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

**SAMPLING RESULTS SEPTEMBER 1993 SURVEY**

VOL 17 0001106

R0061946

State of California
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4
## SAMPLING RESULTS

DISCHARGE POINT: POLB

DATE AND TIME OF SAMPLE: 2 September 1993 1100-1330 TIME DISCHARGE STARTED: _____

| CONSTITUENT TESTED | TESTED BY: LAB/SELF[1] | RESULTS [2] | TEST METHOD USED[3] | DETECTION LIMIT |
|---|---|---|---|---|
| pH | | See following pages. | | |
| TOTAL SETTLEABLE | | | | |
| SPECIFIC CONDUCTANCE | | umhos/cm | | |
| OIL & GREASE | | mg/l | | |
| TOTAL ORGANIC CARBON | | mg/l | | |
| ADDITIONAL POLLUTANTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| FLOW [4] | | gallons | | |
| SIZE OF STORM IF AVAILABLE | | inches | | |

(1) If testing was done by a certified laboratory, indicate "lab"; otherwise, indicate "self".
(2) If analytical results indicate a value less than the detection limit (or non detect), show the value as less than the numerical value of the detection limit.
(3) Indicate the test method used to determine result. In cases where analyzers are used, indicate with an "A"
(4) Dischargers subject to the Santa Clara County General Permit are required to provide estimates or calculations of the volume of storm water discharges from each point. Describe, on a separate sheet, how the flow measurement was calculated.

Name of person collecting sample: MICHAEL D. CURTIS Title: PROJECT SCIENTIST



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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 3

DATE AND TIME OF SAMPLE: 2 September 1993 TIME DISCHARGE STARTED: none--dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Surfactants | Lab | 0.6 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS--Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS--Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.5 µg/l | CA DHS--Mod. 8020 | 0.5 µg/l |
| Xylene | Lab | < 0.5 µg/l | CA DHS--Mod. 8020 | 0.5 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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R0061948

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 4

DATE AND TIME OF SAMPLE: 2 September 1993 TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Surfactants | Lab | 0.8 mg/l | 425.1 | 0.5 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 6

DATE AND TIME OF SAMPLE: 2 September 1993 TIME DISCHARGE STARTED: none-dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Surfactants | Lab | 0.7 mg/l | 425.1 | 0.5 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 11

DATE AND TIME OF SAMPLE: 2 September 1993 TIME DISCHARGE STARTED: none–dry weather survey

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Surfactants | Lab | 0.8 mg/l | 425.1 | 0.5 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | dry weather | | |

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R0061951

VOL 17 0001-12

# FORM 4

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

**SAMPLING RESULTS JANUARY 1994 SURVEY**

R0061952

State of California
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4
## SAMPLING RESULTS

DISCHARGE POINT: POLB

DATE AND TIME OF SAMPLE: 24-25 JANUARY 94 2248-0128 TIME DISCHARGE STARTED: _____

| CONSTITUENT TESTED | TESTED BY: LAB/SELF[1] | RESULTS [2] | TEST METHOD USED[3] | DETECTION LIMIT |
|---|---|---|---|---|
| pH | | See following pages. | | |
| TOTAL SETTLEABLE SO | | | | |
| SPECIFIC CONDUCTANCE | | umhos/cm | | |
| OIL & GREASE | | mg/l | | |
| TOTAL ORGANIC CARBON | | mg/l | | |
| ADDITIONAL POLLUTANTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| FLOW [4] | | gallons | | |
| SIZE OF STORM (IF AVAILABLE) | | inches | | |

(1) If testing was done by a certified laboratory, indicate "lab"; otherwise, indicate "self".
(2) If analytical results indicate a value less than the detection limit (or non detect), show the value as less than the numerical value of the detection limit.
(3) Indicate the test method used to determine result. In cases where analyzers are used, indicate with an "A"
(4) Dischargers subject to the Santa Clara County General Permit are required to provide estimates or calculations of the volume of storm water discharged from each point. Describe, on a separate sheet, how the flow measurement was calculated.

Name of person collecting sample: DONALD D. JOHNSTON Title: SENIOR TECHNICIAN



R0061953

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 1

DATE AND TIME OF SAMPLE: 24 January 1994, 2248 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.20 | Analyzer | 0–14 |
| Total suspended solids | Lab | 41 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 37.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 24.1 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | 2.9 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.13 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.7 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | 3.5 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 11 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | 3.2 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 18 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| Volatile organics | | | | |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061954

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 2

DATE AND TIME OF SAMPLE: 24 January 1994, 2255 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.17 | Analyzer | 0–14 |
| Total suspended solids | Lab | 62 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.5 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.5 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | 1.5 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.11 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.7 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | 1.5 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 4.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | 0.99 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 5.7 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061955

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 3

DATE AND TIME OF SAMPLE: 24 January 1994, 2303 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.20 | Analyzer | 0–14 |
| Total suspended solids | Lab | 61 mg/l | 160.2 | 5.0 mg/l |
| Total suspended solids (QA/QC) | Lab | 55 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.3 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.4 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.10 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | 1.4 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Benzene (QA/QC) | Lab | 1.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 4.2 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene (QA/QC) | Lab | 4.0 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | 0.98 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene (QA/QC) | Lab | 0.92 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 5.5 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| Xylene (QA/QC) | Lab | 5.4 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061956

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 4

DATE AND TIME OF SAMPLE: 24 January 1994, 2316 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 6.16 | Analyzer | 0–14 |
| Total suspended solids | Lab | 99 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 59.6 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.3 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1. mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.08 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.7 mg/l | 425.1 | 0.5 mg/l |
| Surfactants (QA/QC) | Lab | 0.8 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 0.95 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061957

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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## FORM 4 - SAMPLING RESULTS
## STATION 5

DATE AND TIME OF SAMPLE: 24 January 1994, 2322 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.13 | Analyzer | 0-14 |
| Total suspended solids | Lab | 58 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.0 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 32.9 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.08 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.7 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | 1.2 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 2.8 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | 0.42 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 3.3 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061958

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 6

**DATE AND TIME OF SAMPLE:** 24 January 1994, 2327 hrs **TIME DISCHARGE STARTED:** not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.18 | Analyzer | 0–14 |
| Total suspended solids | Lab | 55 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.1 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.0 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.12 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.8 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061959

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 7

DATE AND TIME OF SAMPLE: 24 January 1994, 2341 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.21 | Analyzer | 0–14 |
| Total suspended solids | Lab | 47 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.5 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | 1.1 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Benzene (QA/QC) | Lab | 0.97 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 1.2 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene (QA/QC) | Lab | 0.88 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene (QA/QC) | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 0.96 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| Xylene (QA/QC) | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061960

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 8

DATE AND TIME OF SAMPLE: 24 January 1994, 2348 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.20 | Analyzer | 0–14 |
| Total suspended solids | Lab | 47 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.5 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.06 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061961

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 9

DATE AND TIME OF SAMPLE: 24 January 1994, 2353 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.17 | Analyzer | 0-14 |
| Total suspended solids | Lab | 49 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.9 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 33.6 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Sulfide | Lab | < 0.5 mg/l | 376.2 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | 1.6 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 2.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 1.8 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061962

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 10

DATE AND TIME OF SAMPLE: 25 January 1994, 0005 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.18 | Analyzer | 0-14 |
| Total suspended solids | Lab | 60 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 51.0 ms/cm | Analyzer | 0-100 ms/cm |
| Conductivity (QA/QC) | Lab | 50.7 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 33.6 ppt | Analyzer | 0-40 ppt |
| Salinity (QA/QC) | Lab | 33.4 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc (QA/QC) | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | 4.6 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 11 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | 2.4 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 15 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061963

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 11

DATE AND TIME OF SAMPLE: 25 January 1994, 0011 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.20 | Analyzer | 0–14 |
| pH (QA/QC) | Lab | 8.22 | Analyzer | 0–14 |
| Total suspended solids | Lab | 55 mg/l | 160.2 | 5.0 mg/l |
| Conducuvity | Lab | 50.7 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.4 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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00124

R0061964

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 12

DATE AND TIME OF SAMPLE: 25 January 1994, 0010 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 6.15 | Analyzer | 0–14 |
| Total suspended solids | Lab | 38 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.3 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.1 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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000125

R0061965

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 13

DATE AND TIME OF SAMPLE: 25 January 1994, 0021 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.16 | Analyzer | 0–14 |
| pH (QA/QC) | Lab | 8.17 | Analyzer | 0–14 |
| Total suspended solids | Lab | 49 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.2 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.0 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Surfactants | Lab | 0.8 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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000126

R0061966

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 14

DATE AND TIME OF SAMPLE: 25 January 1994, 0029 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.15 | Analyzer | 0–14 |
| Total suspended solids | Lab | 48 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.3 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | 4.1 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 11 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | 2.4 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 16 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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R0061967

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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## FORM 4 - SAMPLING RESULTS
## STATION 15

DATE AND TIME OF SAMPLE: 25 January 1994, 0037 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.14 | Analyzer | 0-14 |
| Total suspended solids | Lab | 52 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.9 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 32.8 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 16

DATE AND TIME OF SAMPLE: 25 January 1994, 0042 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.14 | Analyzer | 0–14 |
| Total suspended solids | Lab | 85 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.5 mo/cm | Analyzer | 0–100 mo/cm |
| Salinity | Lab | 33.3 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Total organic carbon (QA/QC) | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | 1.4 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 1.4 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 1.2 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

VOL 17 — 00129

R0061969

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 25 January 1994, 0052 hrs | TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.14 | Analyzer | 0–14 |
| Total suspended solids | Lab | 57 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.3 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.1 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.08 mg/l | 6010 | 0.05 mg/l |
| Extractable fuel hydrocarbons | Lab | < 0.5 mg/l | CA DHS–Mod. 8015 | 0.5 mg/l |
| Volatile fuel hydrocarbons | Lab | < 5 mg/l | CA DHS–Mod. 8015 | 5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| Volatile organics | | | | |
| Acetone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Benzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromodichloromethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromoform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromomethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2–Butanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Carbon disulfide | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Carbon tetrachloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Chlorobenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chlorodibromomethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2–Chloroethyl vinyl ether | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 1,1–Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2–Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1–Dichloroethene | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| cis–1,2–Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans–1,2–Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2–Dichloropropane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| cis–1,3–Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans–1,3–Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Ethylbenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 2–Hexanone | Lab | < 10 µg/l | 8240 | 10 µg/l |

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R0061970

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 25 January 1994, 0952 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Volatile organics (continued) | | | | |
| Methylene chloride | Lab | < 10 µg/l | 8260 | 10 µg/l |
| 4-Methyl-2-pentanone | Lab | < 5.0 µg/l | 8260 | 5.0 µg/l |
| Styrene | Lab | < 2.0 µg/l | 8260 | 2.0 µg/l |
| 1,1,2,2-Tetrachloroethane | Lab | < 2.0 µg/l | 8260 | 2.0 µg/l |
| Tetrachloroethene | Lab | < 2.0 µg/l | 8260 | 2.0 µg/l |
| Toluene | Lab | < 2.0 µg/l | 8260 | 2.0 µg/l |
| 1,1,1-Trichloroethane | Lab | < 2.0 µg/l | 8260 | 2.0 µg/l |
| 1,1,2-Trichloroethane | Lab | < 2.0 µg/l | 8260 | 2.0 µg/l |
| Trichloroethene | Lab | < 2.0 µg/l | 8260 | 2.0 µg/l |
| Trichlorofluoromethane | Lab | < 5.0 µg/l | 8260 | 5.0 µg/l |
| Vinyl acetate | Lab | < 5.0 µg/l | 8260 | 5.0 µg/l |
| Vinyl chloride | Lab | < 5.0 µg/l | 8260 | 5.0 µg/l |
| Total Xylenes | Lab | < 2.0 µg/l | 8260 | 2.0 µg/l |
| Semi-volatile organics | | | | |
| Acenaphthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Acenaphthylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Aniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Azobenzene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Benzidine | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benzoic Acid | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benz(a)anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(b)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(k)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(g,h,i)perylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(a)pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzyl alcohol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Bis(2-chloroethoxy)methane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-chloroethyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-chloroisopropyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-ethylhexyl)phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Bromophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Butyl benzyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Chloroaniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Chloronaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Chloro-3-methylphenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2-Chlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Chlorophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Chrysene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Dibenz(a,h)anthracene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dibenzofuran | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di-N-butyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 1,3-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,4-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 3,3-Dichlorobenzidine | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4-Dichlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Diethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4-Dichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dimethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4,6-Dinitro-2-methylphenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4-Dinitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| 2,4-Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,6-Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di-N-octyl phthalate | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Fluorene | Lab | < 10 µg/l | 8270 | 10 µg/l |

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R0061971

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 25 January 1994, 0052 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Semi-volatile organics (continued) | | | | |
| Hexachlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorobutadiene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorocyclopentadiene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Hexachloroethane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Indeno(1,2,3-cd)pyrene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Isophorone | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Methylnaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Naphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 3-Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Nitroaniline | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Nitrobenzene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2-Nitrophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Nitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| N-Nitrosodiphenylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| N-Nitroso-di-N-propylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pentachlorophenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Phenanthrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Phenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2,4-Trichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4,5-Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2,4,6-Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

VOL 17 - 00132

R0061972

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 18

DATE AND TIME OF SAMPLE: 25 January 1994, 0101 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 5.14 | Analyzer | 0–14 |
| Total suspended solids | Lab | 70 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 48.9 mmhos | Analyzer | 0–100 mmhos |
| Salinity | Lab | 31.4 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total recoverable petroleum hydrocarbons (QA/QC) | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | <0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | <0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | <0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | <0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | <0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | <0.005 mg/l | 7191 | 0.005 mg/l |
| Chromium (VI) | Lab | <0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | <0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | <0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | <0.005 mg/l | 7421 | 0.005 mg/l |
| Mercury | Lab | <0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | <0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | <0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | <0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | <0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | <0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.09 mg/l | 6010 | 0.05 mg/l |
| Zinc (QA/QC) | Lab | 0.09 mg/l | 6010 | 0.05 mg/l |
| Extractable fuel hydrocarbons | Lab | < 0.5 mg/l | CA DHS-Mod. 8015 | 0.5 mg/l |
| Volatile fuel hydrocarbons | Lab | < 5 mg/l | CA DHS-Mod. 8015 | 5 mg/l |
| BTEX | | | | |
| Benzene | Lab | <0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | <0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | <0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | <0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| Volatile organics | | | | |
| Acetone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Benzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromodichloromethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromoform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromomethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2-Butanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Carbon disulfide | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Carbon tetrachloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Chlorobenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chlorodibromomethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2-Chloroethyl vinyl ether | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 1,1-Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2-Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1-Dichloroethene | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| cis-1,2-Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans-1,2-Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2-Dichloropropane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| cis-1,3-Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 18

**DATE AND TIME OF SAMPLE: 25 January 1994, 0101 hrs** **TIME DISCHARGE STARTED: not applicable**

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Volatile organics (continued) | | | | |
| trans-1,3-Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Ethylbenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 2-Hexanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Methylene chloride | Lab | < 10 µg/l | 8240 | 10 µg/l |
| 4-Methyl-2-pentanone | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Styrene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2,2-Tetrachloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Tetrachloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Toluene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,1-Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2-Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichlorofluoromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl acetate | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl chloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Total Xylenes | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Semi-volatile organics | | | | |
| Acenaphthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Acenaphthylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Aniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Azobenzene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Benzidine | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benzoic Acid | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benz(a)anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(b)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(k)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(g,h,i)perylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(a)pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzyl alcohol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Bis(2-chloroethoxy)methane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-chloroethyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-chloroisopropyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-ethylhexyl)phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Bromophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Butyl benzyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Chloroaniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Chloronaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Chloro-3-methylphenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2-Chlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Chlorophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Chrysene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Dibenz(a,h)anthracene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dibenzofuran | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di-N-butyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 1,3-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,4-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 3,3-Dichlorobenzidine | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4-Dichlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Diethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4-Dichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dimethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4,6-Dinitro-2-methylphenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4-Dinitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| 2,4-Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,6-Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |

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1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 18

DATE AND TIME OF SAMPLE: 25 January 1994, 0101 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Semi–volatile organics (continued) | | | | |
| Di–N–octyl phthalate | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Fluorene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorobutadiene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorocyclopentadiene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Hexachloroethane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Indeno(1,2,3–cd)pyrene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Isophorone | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Methylnaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Naphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 3–Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Nitroaniline | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Nitrobenzene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2–Nitrophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Nitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| N–Nitrosodiphenylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| N–Nitroso–di–N–propylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pentachlorophenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Phenanthrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Phenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2,4–Trichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4,5–Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2,4,6–Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

VOL 17 0001355

R0061975

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 19

DATE AND TIME OF SAMPLE: 25 January 1994, 0109 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.13 | Analyzer | 0–14 |
| Total suspended solids | Lab | 58 mg/l | 160.2 | 5.0 mg/l |
| Total suspended solids (QA/QC) | Lab | 62 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.7 ms/cm | Analyzer | 0–100 ms/cm |
| Conductivity (QA/QC) | Lab | 50.1 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.7 ppt | Analyzer | 0–40 ppt |
| Salinity (QA/QC) | Lab | 33.0 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Total organic carbon (QA/QC) | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

VOL 17 — 00001356

R0061976

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 20

**DATE AND TIME OF SAMPLE: 25 January 1994, 0128 hrs** **TIME DISCHARGE STARTED: not applicable**

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.25 | Analyzer | 0–14 |
| Total suspended solids | Lab | 58 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 50.4 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 33.2 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 0.22 inches | | |

VOL 17 000137

R0061977

**FORM 4**

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

**SAMPLING RESULTS FEBRUARY 1994 SURVEY**

VOL 17 000138

R0061978

State of California
STATE WATER RESOURCES CONTROL BOARD

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4
## SAMPLING RESULTS

DISCHARGE POINT: POL8

DATE AND TIME OF SAMPLE: 7 February 1994 1202-1418 TIME DISCHARGE STARTED: _____

| CONSTITUENT TESTED | TESTED BY: LAB/SELF(1) | RESULTS (2) | TEST METHOD USED(3) | DETECTION LIMIT |
|---|---|---|---|---|
| pH | See following pages. | | | |
| TOTAL SETTLEA | | | | |
| SPECIFIC CONDUCTANCE | | umhos/cm | | |
| OIL & GREASE | | mg/l | | |
| TOTAL ORGANIC CARBON | | mg/l | | |
| ADDITIONAL POLLUTANTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| FLOW (4) | | gallons | | |
| SIZE OF STORM (IF AVAILABLE) | | inches | | |

(1) If testing was done by a certified laboratory, indicate "lab"; otherwise, indicate "self".
(2) If analytical results indicate a value less than the detection limit (or non detect), show the value as less than the numerical value of the detection limit.
(3) Indicate the test method used to determine result. In cases where analyzers are used, indicate with an "A"
(4) Dischargers subject to the Santa Clara County General Permit are required to provide estimates or calculations of the volume of storm water discharged from each point. Describe, on a separate sheet, how the flow measurement was calculated.

Name of person collecting sample: DONALD D. JOHNSTON Title: SENIOR TECHNICIAN



VOL 17 000139
R0061979

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 1

DATE AND TIME OF SAMPLE: 7 February 1994, 1202 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.37 | Analyzer | 0-14 |
| pH (QA/QC) | Lab | 7.48 | Analyzer | 0-14 |
| Total suspended solids | Lab | 39 mg/l | 160.2 | 5.0 mg/l |
| Total suspended solids (QA/QC) | Lab | 43 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 12.0 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 6.9 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | 5.3 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.15 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | < 0.5 mg/l | 425.1 | 0.5 mg/l |
| Surfactants (QA/QC) | Lab | < 0.5 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 0.47 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

VOL 17 - 00014 0 -

R0061980

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 2

DATE AND TIME OF SAMPLE: 7 February 1994, 1216 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.96 | Analyzer | 0–14 |
| Total suspended solids | Lab | 107 mg/l | 160.2 | 5.0 mg/l |
| Total suspended solids (QA/QC) | Lab | 58 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 37.9 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 24.1 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | 2.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.12 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.56 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | 2.8 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 8.9 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | 1.5 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 8.2 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

VOL 17 - 00141

R0061981

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 3

DATE AND TIME OF SAMPLE: 7 February 1994, 1217 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.02 | Analyzer | 0–14 |
| Total suspended solids | Lab | 32 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 33.3 ms/cm | Analyzer | 0–100 ms/cm |
| Conductivity (QA/QC) | Lab | 33.1 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 20.9 ppt | Analyzer | 0–40 ppt |
| Salinity (QA/QC) | Lab | 20.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | 2.2 mg/l | 415.2 | 1.0 mg/l |
| Total organic carbon (QA/QC) | Lab | 1.5 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.09 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 0.31 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

VOL 17

000142

R0061982

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 4

DATE AND TIME OF SAMPLE: 7 February 1994, 1229 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.99 | Analyzer | 0–14 |
| Total suspended solids | Lab | 51 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 47.7 mS/cm | Analyzer | 0–100 mS/cm |
| Salinity | Lab | 31.2 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.07 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.58 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

VOL 17 00143

R0061983

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 5

**DATE AND TIME OF SAMPLE: 7 February 1994, 1233 hrs** **TIME DISCHARGE STARTED: not applicable**

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.02 | Analyzer | 0-14 |
| Total suspended solids | Lab | 44 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 42.9 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 27.7 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.07 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.71 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | 0.44 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 0.66 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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R0061984

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 6

DATE AND TIME OF SAMPLE: 7 February 1994, 1242 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.05 | Analyzer | 0–14 |
| pH (QA/QC) | Lab | 8.06 | Analyzer | 0–14 |
| Total suspended solids | Lab | 46 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 29.4 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 18.2 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | 1.1 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.23 mg/l | 6010 | 0.05 mg/l |
| Surfactants | Lab | 0.61 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 0.70 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 0.92 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

VOL 17 000145

R0061985

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993-1994

## FORM 4 - SAMPLING RESULTS
## STATION 7

DATE AND TIME OF SAMPLE: 7 February 1994, 1251 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.03 | Analyzer | 0–14 |
| Total suspended solids | Lab | 51 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 48.2 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 31.6 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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R0061986

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## FORM 4 – SAMPLING RESULTS
## STATION 8

DATE AND TIME OF SAMPLE: 7 February 1994, 1256 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.04 | Analyzer | 0–14 |
| Total suspended solids | Lab | 47 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 48.5 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 31.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.8 µg/l | CA DHS–Mod. 8020 | 0.8 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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R0061987

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## FORM 4 - SAMPLING RESULTS
## STATION 9

DATE AND TIME OF SAMPLE: 7 February 1994, 1301 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.09 | Analyzer | 0-14 |
| Total suspended solids | Lab | 60 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 42.2 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 27.2 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.13 mg/l | 6010 | 0.05 mg/l |
| Zinc (QA/QC) | Lab | 0.15 mg/l | 6010 | 0.05 mg/l |
| Sulfide | Lab | nd mg/l | 376.2 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | 0.83 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Benzene (QA/QC) | Lab | 0.86 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 1.5 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene (QA/QC) | Lab | 1.4 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene (QA/QC) | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | 0.75 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| Xylene (QA/QC) | Lab | 0.68 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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R0061988

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## FORM 4 - SAMPLING RESULTS
## STATION 10

DATE AND TIME OF SAMPLE: 7 February 1994, 1310 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.98 | Analyzer | 0–14 |
| Total suspended solids | Lab | 58 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.9 ms/cm | Analyzer | 0–100 ms/cm |
| Conductivity (QA/QC) | Lab | 48.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.1 ppt | Analyzer | 0–40 ppt |
| Salinity (QA/QC) | Lab | 32.0 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.10 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.56 inches | | |

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R0061989

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## FORM 4 - SAMPLING RESULTS
## STATION 11

DATE AND TIME OF SAMPLE: 7 February 1994, 1315 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.95 | Analyzer | 0–14 |
| Total suspended solids | Lab | 56 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.1 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.2 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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## FORM 4 - SAMPLING RESULTS
## STATION 12

DATE AND TIME OF SAMPLE: 7 February 1994, 1330 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.04 | Analyzer | 0–14 |
| Total suspended solids | Lab | 84 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 38.3 ms/cm | Analyzer | 0–199 ms/cm |
| Salinity | Lab | 23.0 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | 1.2 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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R0061991

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## FORM 4 - SAMPLING RESULTS
## STATION 13

DATE AND TIME OF SAMPLE: 7 February 1994, 1335 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.00 | Analyzer | 0-14 |
| Total suspended solids | Lab | 55 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 45.2 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 29.4 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Surfactants | Lab | 0.66 mg/l | 425.1 | 0.5 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | 0.32 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 14

DATE AND TIME OF SAMPLE: 7 February 1994, 1341 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.08 | Analyzer | 0–14 |
| Total suspended solids | Lab | 45 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 46.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 28.7 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.07 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 15

DATE AND TIME OF SAMPLE: 7 February 1994, 1347 hrs

TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.99 | Analyzer | 0-14 |
| Total suspended solids | Lab | 45 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 47.0 ms/cm | Analyzer | 0-100 ms/cm |
| Salinity | Lab | 30.7 ppt | Analyzer | 0-40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.08 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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R0061994

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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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## FORM 4 - SAMPLING RESULTS
## STATION 16

**DATE AND TIME OF SAMPLE:** 7 February 1994, 1354 hrs **TIME DISCHARGE STARTED:** not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.94 | Analyzer | 0–14 |
| Total suspended solids | Lab | 53 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 48.2 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 31.6 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.07 mg/l | 6010 | 0.05 mg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Benzene (QA/QC) | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene (QA/QC) | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene (QA/QC) | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| Xylene (QA/QC) | Lab | < 0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.56 inches | | |

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R0061995

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## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 7 February 1994, 1401 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.92 | Analyzer | 0–14 |
| Total suspended solids | Lab | 51 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 45.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 29.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total recoverable petroleum hydrocarbons (QA/QC) | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.09 mg/l | 6010 | 0.05 mg/l |
| Extractable fuel hydrocarbons | Lab | < 0.5 mg/l | CA DHS–Mod. 8015 | 0.5 mg/l |
| Volatile fuel hydrocarbons | Lab | < 50 µg/l | CA DHS–Mod. 8015 | 50 µg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS–Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS–Mod. 8020 | 0.6 µg/l |
| Volatile organics | | | | |
| Acetone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Benzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromodichloromethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromoform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromomethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2–Butanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Carbon disulfide | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Carbon tetrachloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Chlorobenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chlorodibromomethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2–Chloroethyl vinyl ether | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 1,1–Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2–Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1–Dichloroethene | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| cis–1,2–Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans–1,2–Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2–Dichloropropane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| cis–1,3–Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans–1,3–Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |

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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 7 February 1994, 1401 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Volatile organics (continued) | | | | |
| Ethylbenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 2–Hexanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Methylene chloride | Lab | < 10 µg/l | 8240 | 10 µg/l |
| 4–Methyl–2–pentanone | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Styrene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2,2–Tetrachloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Tetrachloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Toluene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,1–Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2–Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichlorofluoromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl acetate | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl chloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Total Xylenes | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Semi–volatile organics | | | | |
| Acenaphthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Acenaphthylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Aniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Azobenzene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Benzidine | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benzoic Acid | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benz(a)anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(b)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(k)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(g,h,i)perylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(a)pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzyl alcohol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Bis(2–chloroethoxy)methane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–chloroethyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–chloroisopropyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–ethylhexyl)phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Bromophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Butyl benzyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Chloroaniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Chloronaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Chloro–3–methylphenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2–Chlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Chlorophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Chrysene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Dibenz(a,h)anthracene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dibenzofuran | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di–N–butyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 1,3–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,4–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 3,3–Dichlorobenzidine | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4–Dichlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Diethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4–Dichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dimethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4,6–Dinitro–2–methylphenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4–Dinitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| 2,4–Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,6–Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di–N–octyl phthalate | Lab | < 40 µg/l | 8270 | 40 µg/l |

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## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 7 February 1994, 1401 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Semi-volatile organics (continued) | | | | |
| Fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Fluorene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorobutadiene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorocyclopentadiene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Hexachloroethane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Indeno(1,2,3-cd)pyrene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Isophorone | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Methylnaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Naphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 3-Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Nitroaniline | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Nitrobenzene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2-Nitrophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Nitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| N-Nitrosodiphenylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| N-Nitroso-di-N-propylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pentachlorophenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Phenanthrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Phenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2,4-Trichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4,5-Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2,4,6-Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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## FORM 4 - SAMPLING RESULTS
## STATION 18

DATE AND TIME OF SAMPLE: 7 February 1994, 1407 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.81 | Analyzer | 0–14 |
| Total suspended solids | Lab | 140 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 39.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 25.6 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | 6.4 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Metals | | | | |
| Antimony | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Arsenic | Lab | < 0.01 mg/l | 7060 | 0.01 mg/l |
| Barium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Beryllium | Lab | < 0.01 mg/l | 6010 | 0.01 mg/l |
| Cadmium | Lab | < 0.005 mg/l | 6010 | 0.005 mg/l |
| Chromium (total) | Lab | < 0.01 mg/l | 7191 | 0.01 mg/l |
| Chromium (VI) | Lab | < 0.025 mg/l | 7196 | 0.025 mg/l |
| Cobalt | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Copper | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Lead | Lab | < 0.01 mg/l | 7421 | 0.01 mg/l |
| Mercury | Lab | < 0.002 mg/l | 7470 | 0.002 mg/l |
| Molybdenum | Lab | < 0.1 mg/l | 6010 | 0.1 mg/l |
| Nickel | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Selenium | Lab | < 0.01 mg/l | 7740 | 0.01 mg/l |
| Silver | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Thallium | Lab | < 0.5 mg/l | 6010 | 0.5 mg/l |
| Vanadium | Lab | < 0.05 mg/l | 6010 | 0.05 mg/l |
| Zinc | Lab | 0.58 mg/l | 6010 | 0.05 mg/l |
| Extractable fuel hydrocarbons | Lab | 4.9 mg/l | CA DHS-Mod. 8015 | 0.5 mg/l |
| Volatile fuel hydrocarbons | Lab | < 50 µg/l | CA DHS-Mod. 8015 | 50 µg/l |
| BTEX | | | | |
| Benzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Toluene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Ethylbenzene | Lab | < 0.3 µg/l | CA DHS-Mod. 8020 | 0.3 µg/l |
| Xylene | Lab | < 0.6 µg/l | CA DHS-Mod. 8020 | 0.6 µg/l |
| Volatile organics | | | | |
| Acetone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Benzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromodichloromethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromoform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Bromomethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2-Butanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Carbon disulfide | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Carbon tetrachloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Chlorobenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chlorodibromomethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 2-Chloroethyl vinyl ether | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloroform | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Chloromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| 1,1-Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2-Dichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1-Dichloroethene | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| cis-1,2-Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans-1,2-Dichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,2-Dichloropropane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| cis-1,3-Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| trans-1,3-Dichloropropene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Ethylbenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 2-Hexanone | Lab | < 10 µg/l | 8240 | 10 µg/l |

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## FORM 4 - SAMPLING RESULTS
## STATION 18

DATE AND TIME OF SAMPLE: 7 February 1994, 1407 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Volatile organics (continued) | | | | |
| Methylene chloride | Lab | < 10 µg/l | 8240 | 10 µg/l |
| 4-Methyl-2-pentanone | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Styrene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2,2-Tetrachloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Tetrachloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Toluene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,1-Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2-Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichlorofluoromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl acetate | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl chloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Total Xylenes | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Semi-volatile organics | | | | |
| Acenaphthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Acenaphthylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Aniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Azobenzene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Benzidine | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benzoic Acid | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benz(a)anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(b)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(k)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(g,h,i)perylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(a)pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzyl alcohol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Bis(2-chloroethoxy)methane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-chloroethyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-chloroisopropyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2-ethylhexyl)phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Bromophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Butyl benzyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4-Chloroaniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2-Chloronaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Chloro-3-methylphenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2-Chlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4-Chlorophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Chrysene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Dibenz(a,h)anthracene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dibenzofuran | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di-N-butyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 1,3-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,4-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2-Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 3,3-Dichlorobenzidine | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4-Dichlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Diethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4-Dichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dimethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4,6-Dinitro-2-methylphenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4-Dinitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| 2,4-Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,6-Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di-N-octyl phthalate | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Fluorene | Lab | < 10 µg/l | 8270 | 10 µg/l |

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## FORM 4 - SAMPLING RESULTS
## STATION 18

DATE AND TIME OF SAMPLE: 7 February 1994, 1457 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Semi–volatile organics (continued) | | | | |
| Hexachlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorobutadiene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Hexachlorocyclopentadiene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| Hexachloroethane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Indeno(1,2,3–cd)pyrene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Isophorone | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Methylnaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Methylphenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Naphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 3–Nitroaniline | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Nitroaniline | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Nitrobenzene | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2–Nitrophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Nitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| N–Nitrosodiphenylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| N–Nitroso–di–N–propylamine | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pentachlorophenol | Lab | 56 µg/l | 8270 | 40 µg/l |
| Phenanthrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Phenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2,4–Trichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4,5–Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2,4,6–Trichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 19

DATE AND TIME OF SAMPLE: 7 February 1994, 1418 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.91 | Analyzer | 0–14 |
| Total suspended solids | Lab | 51 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 43.8 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 28.4 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| Total organic carbon (QA/QC) | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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1993–1994

## FORM 4 - SAMPLING RESULTS
## STATION 17

DATE AND TIME OF SAMPLE: 7 February 1994, 1401 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Volatile organics (continued) | | | | |
| Ethylbenzene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 2–Hexanone | Lab | < 10 µg/l | 8240 | 10 µg/l |
| Methylene chloride | Lab | < 10 µg/l | 8240 | 10 µg/l |
| 4–Methyl–2–pentanone | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Styrene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2,2–Tetrachloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Tetrachloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Toluene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,1–Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| 1,1,2–Trichloroethane | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichloroethene | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Trichlorofluoromethane | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl acetate | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Vinyl chloride | Lab | < 5.0 µg/l | 8240 | 5.0 µg/l |
| Total Xylenes | Lab | < 2.0 µg/l | 8240 | 2.0 µg/l |
| Semi–volatile organics | | | | |
| Acenaphthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Acenaphthylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Aniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Azobenzene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Benzidine | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benzoic Acid | Lab | < 100 µg/l | 8270 | 100 µg/l |
| Benz(a)anthracene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(b)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(k)fluoranthene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(g,h,i)perylene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzo(a)pyrene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Benzyl alcohol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Bis(2–chloroethoxy)methane | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–chloroethyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–chloroisopropyl)ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Bis(2–ethylhexyl)phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Bromophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Butyl benzyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 4–Chloroaniline | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2–Chloronaphthalene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Chloro–3–methylphenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 2–Chlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4–Chlorophenyl phenyl ether | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Chrysene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Dibenz(a,h)anthracene | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dibenzofuran | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di–N–butyl phthalate | Lab | < 20 µg/l | 8270 | 20 µg/l |
| 1,3–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,4–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 1,2–Dichlorobenzene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 3,3–Dichlorobenzidine | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4–Dichlorophenol | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Diethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,4–Dichlorophenol | Lab | < 20 µg/l | 8270 | 20 µg/l |
| Dimethyl phthalate | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 4,6–Dinitro–2–methylphenol | Lab | < 40 µg/l | 8270 | 40 µg/l |
| 2,4–Dinitrophenol | Lab | < 100 µg/l | 8270 | 100 µg/l |
| 2,4–Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| 2,6–Dinitrotoluene | Lab | < 10 µg/l | 8270 | 10 µg/l |
| Di–N–octyl phthalate | Lab | < 40 µg/l | 8270 | 40 µg/l |

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## FORM 4 - SAMPLING RESULTS
STATION 20

DATE AND TIME OF SAMPLE: 7 February 1994, 1143 hrs  TIME DISCHARGE STARTED: not applicable

| CONSTITUENT TESTED | TESTED BY: | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.05 | Analyzer | 0–14 |
| Total suspended solids | Lab | 44 mg/l | 160.2 | 5.0 mg/l |
| Conductivity | Lab | 49.9 ms/cm | Analyzer | 0–100 ms/cm |
| Salinity | Lab | 32.8 ppt | Analyzer | 0–40 ppt |
| Total recoverable petroleum hydrocarbons | Lab | < 1.0 mg/l | 418.1 | 1.0 mg/l |
| Total organic carbon | Lab | < 1.0 mg/l | 415.2 | 1.0 mg/l |
| FLOW | | not applicable | | |
| SIZE OF STORM | | 1.58 inches | | |

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## NON-STORM WATER DISCHARGES

The General Permit requires reporting of all unpermitted non-storm water discharges (discharges) to the appropriate Regional Board. If you answered "NO" in Item 3(b) of the Annual Report, you should report these discharges as an attachment to the Annual Report. Below is a brief description of what should be included in your report depending on if the discharges are associated with industrial activity.

Discharges Associated With Industrial Activity:
The General Permit is intended to prohibit discharges associated with industrial activity (e.g., vehicle/equipment wash water). If it is infeasible to immediately eliminate these discharges, you are required to report these discharges to the Regional Board. The report should identify and describe each discharge, explain why each discharge is infeasible to eliminate, include a time schedule for the elimination of each discharge (cannot exceed three years after your NOI submittal date), and include a justification for the time needed to eliminate the discharge. Regional Board staff may review your report and make modifications as appropriate.

Discharges Not Associated With Industrial Activity:
The General Permit was not intended to prohibit discharges that are not associated with industrial activity if the conditions provided by the General Permit Fact Sheet are met. Examples of discharges that may meet these conditions are landscape/lawn irrigation, air conditioning condensate, and fire hydrant testing. If the discharge does not meet the Fact Sheet conditions, the discharge is prohibited and must be reported as described above. If the discharge does meet the Fact Sheet conditions, the report should identify and describe the discharge, and explain briefly why the discharge meets the conditions. A permitting strategy for such discharges is being developed by the Regional Boards. Regional Board staff will review your report and notify you of any permitting requirements or discharge prohibitions as they are developed.

**The list below contains examples of some common non-storm water discharges:**

| | | |
|---|---|---|
| Boiler blow-down | Construction rinse down | Car washing |
| Floor washing | Non-contact cooling water | Tank drains |
| Boiler drains | Cooling tower back wash | Filter drains |
| Pavement washing | Evaporative cooling water | Window and building washing |
| Vehicle washing | Vehicle steam cleaning | Hydrostatic pressure vessel testing |
| Dust control water | Truck & Trailer washing | Aggregate pile cooling water |
| Ground water infiltration | Landscape/lawn irrigation | Fire Auxiliary (building sprinklers) |
| Foundation Drainage | Air compressor condensate | Water line cleaning |
| Collected rainwater | Air conditioning condensate | Fire Fighting (emergency only) |
| Well test pumping | Refrigeration unit condensate | Ground water discharges |
| Fire hydrant testing | Municipal water supply well development | |



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*1993-1994*

## *SUPPLEMENTAL QUESTIONNAIRE (OPTIONAL)*

We have received over 8000 NOIs for coverage under the STATEWIDE INDUSTRIAL GENERAL PERMIT. We have tried to make the program understandable and provide a workable means of implementing a complex set of new regulations. You may wish to spend a few minutes answering the following questions to tell us how we are doing.

You may send this form with your annual report. If you wish to submit it anonymously, please submit it separately.

1. Do you understand the GENERAL PERMIT and what it requires you to do?

   ____ Yes ____ No

2. Do you consider the GENERAL PERMIT an efficient and workable means to comply with the Clean Water Act and the Storm Water Permitting Regulations?

   ____ Yes ____ No

3. Have you had any contact (inspections, informational workshops, telephone inquiries) with staff of the Regional Water Boards or your local storm water management agency?

   ____ Yes ____ No
   If Yes, please indicate the type of contact made, and the date (if available) it was made. You may also wish to discuss the context in which the contact was made and if you were satisfied with the help or guidance received in response to your inquiry.

4. Did you (or your accounting office) understand the last ANNUAL FEE INVOICE?

   ____ Yes ____ No DID NOT RECEIVE INVOICE

5. Please use the space provided below (or an attachment) to suggest ways that we can improve and/or streamline our management of this program, or explain your responses made to the preceding questions.



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# ANNUAL REPORT

FOR
STORM WATER DISCHARGES ASSOCIATED
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**Reporting Period July 1, 1995 through June 30, 1996**

**An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year.** This document must be certified and signed, under penalty of perjury, by the appropriate official of you company. Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. **Retain a copy of the completed Annual Report for your records.**

If any information contained in Items A, B, and C below is incorrect, please cross out or highlight the incorrect information (do not white out or erase) and provide the correct information next to or above the incorrect information.

If you have any questions, please contact your Regional Board Storm Water Program Contact. The address of your Regional Board (where the Annual Report must be filed) along with the name and telephone number of the contact person is indicated below.

***REGIONAL BOARD INFORMATION:***

LOS ANGELES REGIONAL WATER BOARD
101 CENTRE PLAZA DR.
MONTEREY PARK, CA 91754-2156

Contact: JOSHUA WORKMAN
(213) 266-7500

***GENERAL INFORMATION:***

A. ***Facility WDID No:***
4B19S003628

B. ***Facility/Site:***
Contact Person:
DR. ROBERT KANTER
Phone:
(310)590-4156 Address: PORT OF LONG BEACH
925 HARBOR PLAZA
LONG BEACH, CA 90802

C. ***Owner/Operator:***
Contact Person:
DR. ROBERT KANTER
Phone:
(310)590-4156 Address: PORT OF LONG BEACH
925 HARBOR PLAZA
LONG BEACH, CA 90802

SIC Code 9621 Reg. and Admin. Programs
SIC Code
SIC Code
SIC Code
Regulated Activity: TRADE AND COMMERCE

LOGGED IN BY
TECHNICAL SUPPORT
Name: D Euscue
Date: 7-1-96

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# ANNUAL REPORT

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STORM WATER DISCHARGES ASSOCIATED
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## *SPECIFIC INFORMATION*

**STORM WATER POLLUTION PREVENTION PLAN**

1. Have you developed (and updated) a Storm Water Pollution Prevention Plan (SWPPP), as required in Section A of the General Permit?

   _X_ Yes ___ No  If No, attach an explanation and time schedule for SWPPP development.

2. Have you implemented all elements of your SWPPP?

   _X_ Yes ___ No  If No, attach an explanation and time schedule for SWPPP implementation.

**NON-STORM WATER DISCHARGES**

3. Section A.6 of the General Permit requires that non-storm water discharges be eliminated or permitted.

   a. Does your facility have any non-storm water discharges (see page 7 for examples)?

      _X_ No  Go to Question 4.

      ___ Yes  Please list: _____

      _____

   b. Have any of the non-storm water discharges been permitted by a State or local agency?

      ___ No ___ Yes  If yes, on a separate sheet, identify the non-storm water discharge, agency that permitted the non-storm water discharge, and the permit number.

   c. Attach a description for each non-storm water discharges listed in 3.a that has <u>not</u> been permitted. At a minimum, this description should answer the following:

      - What is the source of the non-storm water discharge?
      - What are the characteristics of the non-storm water discharge (odor, color, frequency, flow rate, potential pollutants, etc.)?
      - What areas of your facility does the non-storm water discharge contact?
      - Has the non-storm water discharge been previously reported to the Regional Board?
      - Why hasn't the non-storm water discharge been eliminated?
      - When is the non-storm water discharge scheduled to be eliminated?

   d. Does your SWPPP include Best Management Practices (BMPs) that address the non-storm water discharges described in 3.c?

      _X_ Yes ___ No  If No, revise you SWPPP and attach a brief description of the revisions.



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**MONITORING AND REPORTING PLAN**

4. Section B.5.a of the General Permit requires you to conduct an annual site inspection. Did you conduct an annual site inspection?

   _X_ Yes If Yes, use FORM 1 (page 9) to report findings or provide the following for each area inspected:

   - Date and time of inspection.
   - Name and title of inspector.
   - Summary of inspection findings. Evaluate if all sources of storm water pollutants have been identified in the SWPPP; if the BMPs identified in the SWPPP to address these sources of pollutants are in place and effective; and whether additional BMPs are needed. Discuss corrective actions that are necessary.

   ___ No If No, attach an explanation.

5. Section B.5.b of the General Permit requires you to conduct visual observations of all discharge locations at least twice during the dry season (May through September). How many dry season observations did you conduct?

   ___ None, attach an explanation why no dry season visual observations were conducted.

   ___ One, attach an explanation why only one dry season visual observation was conducted.

   ___ Two

   _X_ More than two

   For each dry season visual observation conducted, use FORM 2(page 10) to report observations or provide the following for each discharge location:

   - Date and time of observation.
   - Name and title of inspector.
   - Observations of non-storm water discharge or indications of prior non-storm water discharge. Describe the discharge characteristics, i.e. odor, color, etc., and possible source of discharge, and corrective action taken. If no action has been taken, discuss what and when actions will be taken to eliminate the non-storm water discharge. Report all non-storm water discharges in item 3 above.

6. Section B.5.c of the General Permit requires you to conduct visual observations of all discharge locations for at least one storm per month during the wet season (October through April). How many months during the wet season did you conduct visual observations? _12_. If you did not conduct visual observations in each month of the wet season, attach an explanation.

   For each wet season visual observation, use FORM 3 (page 11) to report observations or provide the following information for each discharge location:

   - Date and time of observation.
   - Name and title of inspector.
   - Storm water discharge characteristics observed. For example, was the discharge discolored, very turbid; did it have an odor, evidence of floating or suspended material; did it have a sheen; or any other unusual characteristics? If any were observed, discuss the corrective actions taken or to be taken.



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## SAMPLING AND ANALYSIS

7. a. Is your facility part of a Group Monitoring Plan? (Only facilities that have received prior approval are part of a group monitoring plan.)

___ Yes _X_ No

If No, go to Question 8.
If Yes, answer the following questions:

***Port of Long Beach conducts monitoring for itself and all of its tenants but is not considered part of a "group monitoring plan."***

b. What is the Group Monitoring Plan's name? _____

c. Is your facility designated to collect storm water samples?

___ Yes ___ No

If Yes, go to Question 9.
If No, go to Question 10.

8. a. Is your facility exempt from sample collection (Section B.9 of the General Permit)? (Only facilities that have received prior Self-certification approval are exempt from sampling. Facilities participating in a Group Monitoring Plan cannot be self-certified)

___ Yes _X_ No

***Port of Long Beach currently conducts the required storm water monitoring.***

If No, go to Question 9.

b. If Yes, which of the following apply (check one):

___ Submitted Self-certification to Regional Board. Date Submitted: _____
___ Received certification of local agency.
___ Received exemption by the Regional Board.

**Attach, as appropriate, the first page of either the submitted self-certification, the local agency certification letter, or the Regional Board exemption letter.**

9. Section B.5.d of the General Permit requires that storm water samples from at least two storms be collected and analyzed.

a. How many storms did you sample? _2_
If you did not sample any storms, or only sampled one storm, attach an explanation.

b. How many storm water discharge points are located at your facility? _125_
Did you sample from every discharge point?

___ Yes _X_ No

If you did not sample from every discharge point, attach an explanation why you did not or attach a justification as to why certain discharge points are substantially identical.



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**SAMPLING AND ANALYSIS (cont'd)**

***Due to the extent and complexity of this facility, it is impractical to inspect or monitor all stormwater discharge locations. A broad-based approach, approved by the RWQCB-LA, samples 20 stations in the harbor complex.***

c. For each storm sampled, provide the following information:

| | Number of Samples Taken | Number of Samples Analyzed and Reported | Constituents Tested and Reported |
|---|---|---|---|
| First Storm | | See December sampling results in this report. | |
| Second Storm | | See January sampling results in this report. | |
| Additional Storms | | | |

If all samples from the first and/or second storms were not analyzed, provide an explanation.

d. Provide a summary of your sampling and analysis results. You may use Form 4 (page 12) to report your findings. The summary should include the date and time of sample, constituents tested, who did the testing, the testing results, test method used, and test detection limit. Copies of the analytical results from the laboratory should also be attached. Include a completed Form 4, or equivalent, for each sample analyzed.

For facilities subject to Federal Storm Water Effluent Limitation Guidelines, separately report the Federal Guidelines and the corresponding monitoring results. ***See Form 4.***

If past years analytical results are available, on a separate sheet, compare and evaluate the analytical results from the 1994-95 testing period with the analytical results from past years (are the pollutant concentrations increasing or decreasing and why; if a reason is known?). ***See Attached Report***

e. For each storm sampled, provide the following information:

| | Was sample taken during the first 30 minutes? | Were there 3 days of dry weather before the storm? |
|---|---|---|
| First Storm | See report | See report |
| Second Storm | See report | See report |
| Additional Storms | | |

If you responded no to either of the above questions for the first or second storm, attach an explanation.

***Due to the extent and complexity of the Port, it is impractical to sample all stations in the first 30 minutes of a storm.***



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## STORM WATER POLLUTION PREVENTION PLAN EVALUATION

10. Based upon the comparison and analysis of analytical data, visual observations, etc. from the time you submitted your Notice of Intent to comply with the General Permit; is your Storm Water Pollution Prevention Plan effective in reducing pollutants in your facility's storm water discharge? Discuss specific areas or elements of the SWPPP that are not effective or need improvement. Provide a brief description of alternatives or proposed revisions to the SWPPP. ***See Attached Report***

11. Provide a written evaluation of your monitoring program in detecting pollutants in storm water discharge. Discuss areas of the monitoring program that are not effective or need improvement. Provide a brief description of proposed revisions to the monitoring program. ***See Attached Report***

12. The General Industrial Activities Storm Water Permit requires that:

    - a Storm Water Pollution Prevention Plan be developed and implemented (Questions 1 and 2)
    - non-storm water discharges be eliminated, reported to the Regional Board, or permitted (Question 3)
    - an annual site inspection be conducted to determine the effectiveness of BMP's in reducing and/or eliminating sources of storm water pollution (Question 4)
    - two dry weather visual observations be conducted (Question 5)
    - wet weather visual observations be made once each month during the wet season (Question 6)
    - unless specifically exempted, samples be collected and analyzed from at least two storms (Question 9)

    If you have not completed all of the above requirements, please make sure you have attached an explanation for each requirement you have not completed.

    Do you certify, based on your annual site inspection that, your facility is in compliance with the requirements of the General Industrial Activities Storm Water Permit?

    _X_ Yes ___ No

13. Attach an updated site map showing the areas of industrial activity; the areas where visual inspections were done; all storm water discharge locations; and all storm water sampling locations.

***Visual observations were conducted at all 125 discharge points. On maps previously submitted to the Board, the areas of visual observation coincide with the discharge points and areas of industrial activity. All storm water sampling locations are depicted and described in the attached report.***

***CERTIFICATION***

I am duly authorized to sign reports required by the GENERAL INDUSTRIAL ACTIVITIES STORM WATER PERMIT (see Provisions C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: *Geraldine Knatz, Ph.D.*
Signature: _____ Date: *6/3/96*
Title: *Director of Planning*



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# ANNUAL REPORT

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STORM WATER DISCHARGES ASSOCIATED
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## *NON-STORM WATER DISCHARGES*

**The list below contains examples of some common non-storm water discharges:**

| | | |
|---|---|---|
| Boiler blow-down | Construction rinse down | Car washing |
| Floor washing | Non-contact cooling water | Tank drains |
| Boiler drains | Cooling tower back wash | Filter drains |
| Pavement washing | Evaporative cooling water | Window and building washing |
| Vehicle washing | Vehicle steam cleaning | Hydrostatic pressure vessel testing |
| Dust control water | Truck & trailer washing | Aggregate pile cooling water |
| Ground water infiltration | Landscape/lawn irrigation | Fire auxiliary (building sprinklers) |
| Foundation drainage | Air compressor condensate | Water line cleaning |
| Collected rainwater | Air conditiong condensate | Fire fighting (emergency only) |
| Well Test pumping | Refrigeration unit condensate | Ground water discharges |
| Fire hydrant testing | Well water discharges | |

The General Permit requires reporting of all unpermitted non-storm water discharges (discharges) to the appropriate Regional Board. You should report these discharges as an attachment to the Annual Report (see item 3.c). Regional Board staff may review your report and make modifications as appropriate. When preparing your schedule for the elimination of each discharge, please remember that the General Permit requires the discharge to be eliminated within three years of NOI submittal date.

The General Permit was not intended to prohibit discharges that are not associated with industrial activity if the conditions provided by the General Permit Fact Sheet are met. Examples of discharges that may meet these conditions are landscape/lawn irrigation, air conditioning condensate, and fire hydrant testing. If the discharge meets the Fact Sheet conditions, the report should also explain briefly why the discharge meets the Fact Sheet conditions. A permitting strategy for such discharges is being developed by the Regional Boards. Regional Board staff will review your report and notify you of any permitting requirements or discharge prohibitions as they are developed.



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# ANNUAL REPORT

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WITH INDUSTRIAL ACTIVITIES

## *DESCRIPTION OF CONSTITUENTS TO BE MONITORED*

The General Industrial Permit requires you to analyze storm water samples for at least four constituents. These are pH, Total Suspended Solids (TSS), Specific Conductance (SC), and Total Organic Carbon (TOC). Oil and Grease (O&G) may be substituted for TOC. In addition, you must monitor for any other pollutants which you believe to be present in your storm water discharge as a result of industrial activity. There are no numeric limitations for the constituents you test for.

The four constituents which the Permit requires to be tested are considered *indicators*. In other words they are nonspecific tests that will provide enough information to indicate whether or not pollutants are present in your storm water discharge. The following briefly explains what these parameters mean:

ph is a numeric measure of the hydrogen-ion concentration. The neutral, or acceptable range can be defined as 6.5 to 6.5. At values less than 6.5, the water is considered acidic; above 8.5 it is considered alkaline or basic. An example of an acidic substance is vinegar and a alkaline or basic substance is liquid antacid. Pure rain fall tends to have a pH of less than 7. There may be sources of materials or industrial activities which could increase or decrease the pH of your storm water discharge. If the pH levels of your storm water discharge are high or low, you should conduct a thorough evaluation of all sources at your site.

**Total Suspended Solids (TSS)** is a measure of the undissolved solids that are present in your storm water discharge. Sources of TSS include sediment from erosion of exposed land, and dirt form impervious (i.e. paved) areas. Sediment by itself can be very toxic to aquatic life because it covers feeding and breeding grounds, and can smother organisms living on the bottom of a water body. Toxic chemicals and other pollutants also adhere to sediment particles. This provides a medium by which toxic or other pollutants end up in our water ways and ultimately in human and aquatic life. TSS levels vary in runoff from undisturbed land. It has been shown that TSS levels increase significantly due to land development.

**Specific Conductance (SC)** is a numerical expression of the ability of the water to carry an electric current. SC can be used to assess the degree of mineralization, or estimate the total dissolved solids concentration of a water sample. Because of air pollution, most rain water has a SC above zero. A high SC could affect the usability of waters for drinking and other commercial or industrial use.

**Total Organic Carbon (TOC)** is a measure of the total organic matter present in water. (All organic matter contains carbon) This test is sensitive and able to detect small concentrations of organic matter. Organic matter is naturally occurring in animals, plants, and man. Organic matter may also be man made (so called synthetic organic). Synthetic organic include pesticides, fuels, solvents, and paints. Natural organic matter utilizes the oxygen in a receiving water to biodegrade. Too much organic matter could place a significant oxygen demand on the water, and possibly impact its quality. Synthetic organics either do not biodegrade or biodegrade very slowly. Synthetic organics are a source of toxic chemicals that can have adverse affects at very low concentrations. Some of these chemicals bioaccumulate in aquatic life. If your levels of TOC are high, you should evaluate all sources of natural or synthetic organics you may use at you site.

**Oil and Grease (O&G)** is a measure of the amount of oil and grease present in your storm water discharge. At very low concentrations, O&G can cause a sheen (that floating"rainbow") on the surface of water (1 qt. of oil can pollute 250,000 gallons of water). O&G can adversely affect aquatic life and create unsightly floating material and film on water, thus making it undrinkable. Sources of O&G include maintenance shops, vehicles, machines and roadways.

If you have any questions regarding whether or not your constituent concentrations are too high, please contact your local Regional Board office.



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R0062014

VOL 17 000175

# FORM 1

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

**ANNUAL SITE INSPECTION FORM**

R0062015

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1995 - ...

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STORM WATER DISCH... ...OCIATED
WITH INDUSTRIAL ACTIVITIES

## FORM 1 - ANNUAL SITE INSPECTION FORM

Inspection Date: _____

| INSPECTED AREAS List all areas where pollutants may come in contact with storm water (i.e. exposed loading/unloading, access, storage, manufacturing or process activities occur, maintenance activities, etc.). | For each area, are the BMPs listed in the SWPPP in place? | | Are additional BMPs needed to control storm water pollution? | | DESCRIBE DEFICIENCIES AND CORRECTIVE ACTIONS |
|---|---|---|---|---|---|
| | YES | NO | YES | NO | |
| | | | | | |
| | | | | | |
| | | | | | |

See following pages.

Inspector's Name: Stacey E. Crouch

Title: Environmental Specialist Associate

Signature: Stacey E Crouch

Date: 7/28/96

R0062016

VOL 17

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 1 - ANNUAL SITE INSPECTION

| INSPECTED AREAS | BMPs IN PLACE | | ADDITIONAL BMPs | | DEFICIENCIES AND CORRECTIVE ACTIONS |
|---|---|---|---|---|---|
| | YES | NO | YES | NO | |
| A&A Oil Tools<br>1426 W. 12th Street | | | | | NO LONGER A TENANT. |
| AIMCOR<br>1270 Pier G Avenue<br>Inspection Date - 4/24/96<br>Inspection Time - 1:30 p.m. | X | | X | | Provide lids for all trash cans.<br>Cover hydraulic console.<br>Place drip pan under parked tractor/forklift. |
| ARCO CQC Kiln<br>Pier G Avenue<br>Inspection Date - 5/21/96<br>Inspection Time - 2:00 p.m. | X | | X | | Post good housekeeping reminders.<br>Pump out sumps along coke barn.<br>Fix leaking water pipe. |
| ARCO Products Company<br>Pier G Avenue<br>Inspection Date - 5/15/96<br>Inspection Time - 9:00 a.m. | X | | | X | None |
| Baker Commodities<br>Pier D, Berth D30<br>Inspection Date - 4/30/96<br>Inspection Time - 3:00 p.m. | X | | X | | Cover trash dumpsters.<br>Clean-up palm oil spill.<br>Place tarps over hoses stored outside containment.<br>Place soda ash container inside containment. |
| Boliden Sulex<br>1237 Pier G Avenue<br>Inspection Date - 5/7/96<br>Inspection Time - 2:00 p.m. | X | | X | | Sweep facility daily. |
| California United Terminals<br>300 Pier B Avenue<br>Inspection Date - 6/14/96<br>Inspection Time - 10:00 a.m. | X | | X | | Clean-up staining where "old" sweeper was stored. |
| Chemoil Refining Corp<br>1004 Pier F Avenue<br>Inspection Date - 6/11/96<br>Inspection Time - 8:45 a.m. | X | | | X | None. |
| City Paper and Metal<br>1452 W. 11 Street<br>Inspection Date - 5/2/96<br>Inspection Time - 2:00 p.m. | X | | | X | None. |
| Clean Coastal Waters<br>190 S. Pico Avenue<br>Inspection Date - 4/23/96<br>Inspection Time - 2:30 p.m. | X | | | X | None |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Cooper/T. Smith Stevedoring<br>1480 Pier F Avenue<br>Inspection Date - 5/7/96<br>Inspection Time - 10:00 a.m. | X | | X | | Train employees to promptly notify supervisors of spills. |
| Crescent Terminals<br>Pier F, Berth F206<br>Inspection Date - 5/3/96<br>Inspection Time - 9:00 a.m. | X | | | X | None. |
| Crowley Marine Services<br>Pier D, Berths D47-D49<br>Inspection Date - 5/9/96<br>Inspection Time - 3:00 a.m. | X | | | X | None. |
| Forest Terminals<br>Pier D, Berth D50<br>Inspection Date - 5/3/96<br>Inspection Time - 1:30 p.m. | X | | | X | None. |
| Fremont Forest<br>800 Pier T Avenue<br>Inspection Date - 5/9/96<br>Inspection Time - 1:30 a.m. | X | | X | | Post good housekeeping reminders.<br>Place additional drip pans under forklifts.<br>Place trash cans under roofed areas at the end of each shift. |
| Foss Environmental<br>Pier D, Berth D47<br>Inspection Date - 6/4/96<br>Inspection Time - 2:00 p.m. | X | | X | | Promptly clean up leaks in storage area.<br>Cover trash cans/dumpsters.<br>Cover pressure washer. |
| Foss Maritime<br>Pier D, Berth D35<br>Inspection Date - 5/13/96<br>Inspection Time - 2:00 p.m. | X | | X | | Post good housekeeping reminders.<br>Place batteries on pallets.<br>Place lids on trash/scrap metal dumpsters.<br>Place drip pans under leaking, parked vehicles/equipment. |
| G-P Gypsum Corp. (Domtar)<br>1401 Pier D St., Berth D46<br>Inspection Date - 5/1/96<br>Inspection Time - 1:30 p.m. | X | | X | | Conduct extra sweeping on wharf deck.<br>Promptly clean up leaks from old forklifts. |
| Hampton Tedder Electric<br>1120 Pier E Street<br>Inspection Date - 5/8/96<br>Inspection Time - 8:30 a.m. | X | | | X | None. |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Hanjin Shipping<br>1521 Pier C Street<br>Inspection Date - 5/23/96<br>Inspection Time - 8:30 a.m. | X | | X | | Post good housekeeping reminders.<br>Place lids on trash containers.<br>Cover scrap metal bins.<br>Label waste oil drums.<br>Clean up staining around containment areas and UTR parking.<br>Place drip pans under parked/leaking vehicles.<br>Sweep metal work area daily.<br>Train employees in spill prevention. |
| Hiuka America Corp<br>Cooper/T. Smith Stevedoring<br>Pier F, Berth F205<br>Inspection Date - 5/16/96<br>Inspection Time - 2:00 p.m. | X | | | X | None - NOT IN OPERATION. |
| International Transportation Service<br>1281 Pier J Avenue<br>Inspection Date - 5/10/96<br>Inspection Time - 2:00 p.m. | X | | X | | Clean up trash and used absorbent.<br>Clean up staining around waste oil storage closet.<br>Clean up and fix leak on fuel truck.<br>Move work table inside.<br>Train employees on spill prevention around fueling island.<br>Place batteries under canopy.<br>Place tarps under chassis during maintenance activities. |
| Island Express<br>900 Queensway Drive<br>Inspection Date - 5/2/96<br>Inspection Time - 9:30 a.m. | X | | | X | None. |
| Koch Carbon Inc.<br>Chevron Barn<br>Pier G Avenue<br>Inspection Date - 4/30/96<br>Inspection Time - 8:30 a.m. | X | | X | | Place lids on all trash cans.<br>Post good housekeeping reminders. |
| Koch Carbon Inc.<br>KCBX Facility<br>1020 Pier F Avenue<br>Inspection Date - 4/30/96<br>Inspection Time - 8:30 a.m. | X | | X | | Cover trash dumpster.<br>Place lids on all trash cans.<br>Post good housekeeping reminders. |
| Koch Carbon Inc.<br>Koch Barn<br>Pier G Avenue<br>Inspection Date - 4/30/96<br>Inspection Time - 8:30 a.m. | X | | X | | Post good housekeeping reminders.<br>Place lids on all trash cans. |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Long Beach Container Terminal<br>1171 Pier F Avenue<br>Inspection Date - 4/19/96<br>Inspection Time - 9:30 a.m. | X | | X | | Berm "gen set" storage area.<br>Post good housekeeping reminders.<br>Place lids on all trash cans and scrap metal bin.<br>Provide absorbent near the fueling island.<br>Place lube oil pump and all empty drums in containment.<br>Sweep up trash.<br>Place drip pan under vehicles during maintenance. |
| Lomita Gasoline Company<br>1348 W. 9th Street<br>Inspection Date - 5/1/96<br>Inspection Time - 9:00 a.m. | X | | | X | None. |
| L.G. Everist, Inc.<br>1605 Pier D Street<br>Inspection Date - 5/16/96<br>Inspection Time - 8:00 a.m.<br><br>• Please note that the inspection for this participant involved 9 separate facilities. | X | | X | | Clean up staining surrounding containment area and unpaved area.<br>Place all drums, buckets, batteries, and oil filters on pallets inside containment.<br>Place lids on all trash cans.<br>Place drip pans under leaking equipment/vehicles during maintenance.<br>Sweep welding work area daily.<br>Berm waste oil tank storage area. |
| Long Beach Iron Works<br>2100 W. Anaheim<br>Inspection Date - 5/16/96<br>Inspection Time - 10:30 a.m. | X | | X | | Promptly clean up leaks and stains. |
| MCC-Lucky Cement<br>Pier F, Berth F208<br>Inspection Date -<br>Inspection Time - | X | | | X | None - NOT IN OPERATION. |
| Maersk Pacific Ltd<br>570 Harbor Scenic Drive<br>Inspection Date - 4/23/96<br>Inspection Time - 9:30 a.m. | X | | X | | Post good housekeeping reminders.<br>Sweep metal work area daily.<br>Place tarps under "gen set" during maintenance.<br>Place bags of absorbent on fueling trucks.<br>Provide lids for all trash cans.<br>Place drip pan under lube oil cart and place it indoors at night.<br>Place covers on all dumpsters. |
| Metropolitan Stevedore<br>Pier G, Berths G212-G215<br>Inspection Date - 5/6/96<br>Inspection Time - 10:00 a.m. | X | | X | | Post good housekeeping reminders. |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Morton Salt<br>1050 Pier F Avenue<br>Inspection Date - 5/17/96<br>Inspection Time - 2:00 p.m. | X | | X | | Cover dumpsters.<br>Cover scrap metal.<br>Clean up oily residue near diesel storage area. |
| National Gypsum<br>1850 Pier B Street<br>Inspection Date - 5/30/96<br>Inspection Time - 8:00 a.m. | X | | | X | None. |
| Olympic Fruit & Vegetable<br>(Pacific Banana)<br>1120 Pier F Avenue<br>Inspection Date - 4/25/96<br>Inspection Time - 11:00 a.m. | X | | X | | Place drip pan under antique truck.<br>Cover scrap metal pile with a tarp. |
| Pacific Coast Cement<br>601 Pier D Avenue<br>Inspection Date - 5/13/96<br>Inspection Time - 10:30 a.m. | X | | X | | Post good housekeeping reminders.<br>Remove hose to control runoff from washing activities.<br>Provide lids for trash cans/dumpsters.<br>Tarp old equipment/scrap metal.<br>Place drip pans under forklifts.<br>Remove & properly dispose of used absorbent. |
| Pacific Container Terminal<br>1521 Harbor Scenic Drive<br>Inspection Date - 5/16/96<br>Inspection Time - 10:30 a.m. | X | | X | | Place lids on all trash cans. |
| Petro-Diamond Terminal Company<br>1920 Lugger Way<br>Inspection Date - 5/14/96<br>Inspection Time - 2:30 p.m. | X | | X | | Post good housekeeping reminders.<br>Place tarps over scrap metal bins. |
| Port of Long Beach<br>Maintenance<br>1400 W. Broadway<br>Inspection Date - 4/30/96<br>Inspection Time - 1:30 p.m. | X | | X | | Place lids on all trash cans.<br>Cover sand/gravel storage area daily.<br>Provide clean-up equipment near the sand/gravel area. |
| Port Petroleum<br>260 N. Pico Ave<br>Inspection Date - 5/20/96<br>Inspection Time - 8:30 a.m. | X | | X | | Label buckets of absorbent. |
| Powerine Oil Company<br>1405 Pier C Street<br>Inspection Date - 5/10/96<br>Inspection Time - 10:30 a.m. | X | | X | | Post good housekeeping reminders.<br>Cover old piping, valves, & tank mixers with tarps. |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Power Systems Associates<br>1125 Pier E Street<br>Inspection Date - 5/8/96<br>Inspection Time - 10:30 a.m. | X | | X | | Post good housekeeping reminders.<br>Prohibit vehicle washing.<br>Train employees in spill/leak prevention.<br>Place used absorbent in labeled DOT drum. |
| SRM Corporation<br>Queen's Wharf<br>555 Pico Avenue<br>Inspection Date -<br>Inspection Time - | | | | | None - TENANT REFUSES TO PARTICIPATE IN THE SWPPP PROGRAM. A LETTER IS TO FOLLOW. |
| Sea-Land Service Inc.<br>669 Harbor Plaza<br>Inspection Date - 5/23/96<br>Inspection Time - 10:30 a.m. | X | | X | | Sand-bag catch basin near UTR parking area during storm events. |
| Seal Beach Sportfishing<br>555 Pico Avenue<br>Inspection Date - 5/15/96<br>Inspection Time - 1:30 p.m. | X | | X | | Clean up material on east end of the dock. |
| SERRF<br>120 Henry Ford Avenue<br>Inspection Date - 5/21/96<br>Inspection Time - 10:00 a.m. | X | | X | | Prohibit wash water dumping into catch basin. |
| Spun Products Inc.<br>1800 W. 9th Street<br>Inspection Date - 4/26/96<br>Inspection Time - 2:00 p.m. | X | | | X | None |
| Superior Electric Advertising<br>1700 W. Anaheim Street<br>Inspection Date - 5/6/96<br>Inspection Time - 1:30 p.m. | X | | X | | Berm drum storage areas.<br>Post good housekeeping reminders. |
| Texaco Long Beach Marine Terminal<br>2050 Edison Way<br>Inspection Date - 5/10/96<br>Inspection Time - 8:30 p.m. | X | | | X | None |
| THUMS Long Beach Company<br>Pier J - various sites<br>Inspection Date - 5/14/96<br>Inspection Time - 9:00 a.m. | X | | X | | Cover all trash dumpsters at the J-3 site. |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 1 - ANNUAL SITE INSPECTION

| | | | | | |
|---|---|---|---|---|---|
| Tidelands Oil Production Company<br>Various sites<br>Inspection Date - 5/1/96<br>Inspection Time - 9:00 a.m. | X | | X | | Place drip pans under parked/stored vehicles.<br>Clean up oily stains<br>Post good housekeeping reminders.<br>Place oily equipment on drip pans or pallets.<br>Remove all oily 5 gal. buckets from outdoor storage area. |
| Toyota Motor Sales<br>785 Edison Avenue<br>Inspection Date - 5/13/96<br>Inspection Time - 8:30 a.m. | X | | X | | Place cover on scrap metal bin. |
| Ultramar Inc.<br>Ultramar Barn<br>Pier G Avenue<br>Inspection Date - 4/30/96<br>Inspection Time - 8:30 a.m. | X | | | X | None |
| Westway Trading Corporation<br>1395 Pier J Avenue<br>Inspection Date - 5/9/96<br>Inspection Time - 9:00 a.m. | X | | | X | None. |
| Weyerhaeuser Company<br>280 Pier T Avenue<br>Inspection Date - 5/7/96<br>Inspection Time - 8:00 a.m. | X | | | X | None. |

All site visits were conducted by the following Port of Long Beach Staff:

Stacey E. Crouch, Environmental Specialist Associate
Christina File, Administrative Intern
Theresa Manly, Environmental Specialist Assistant

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# FORM 2

State of California & State Water Resources Control Board
Annual Report
for
Storm Water Discharges Associated with Industrial Activities

RECORD OF DRY SEASON VISUAL OBSERVATIONS
SEPTEMBER 1995

VOL 17 0001184

R0062024

State of California
STATE WATER RESOURCES CONTROL BOARD

1995 - 1996
ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

## FORM 2 - RECORD OF DRY SEASON VISUAL OBSERVATIONS

- Dry season visual observations are used to detect the presence of non-storm water discharges.
- This form should be filled out for at least two dry season visual observations between May 1 and September 30 of each year.
- Non-storm water discharges that have not been eliminated must be reported in Item 3 (page 2) of the Annual Report.

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVED? YES / NO | DESCRIBE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|
| POLB | 1995-1996 | INDICATIONS OF PRIOR DISCHARGE? YES / NO | See following pages. | |

Comments/Corrective Actions Taken for above:

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVED? YES / NO | DESCRIBE OBSERVATIONS | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|
| | | INDICATIONS OF PRIOR DISCHARGE? YES / NO | | |

Comments/Corrective Actions Taken for above:

Inspector's Name: Dan Gross Title:

Signature: see attached report Date:

R0062025

VOL 17 - 000 - 085

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——JULY 20, 1995

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | NONE | CLEAR | DRY | 1" | |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | DRY | |
| 8 | | | DRY | DRY | |
| 9 | | | DRY | DRY | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | DRY | |
| 13 | | | DRY | DRY | SCREEN CLOGGED W/DEBRIS |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | DRY | FLAPPER BROKEN |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | NONE | CLEAR | DRY | 2" | |
| 30 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - JULY 20, 1995

7/20/95

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



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R0062026

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—JULY 20, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | NONE | CLEAR | DRY | 2" | |
| 33 | | | DRY | DRY | |
| 34 | | | DRY | | BLOCKED BY SHIPPING |
| 35 | NONE | CLEAR | DRY | DRIPPING | |
| 36 | | | DRY | DRY | |
| 37 | | | DRY | DRY | |
| 38 | | | DRY | | BLOCKED BY SHIPPING |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | | PARTIALLY SUBMERGED |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - JULY 20, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00187

R0062027

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——JULY 20, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | NONE | CLEAR | DRY | 6" | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRY | |
| 67 | | | DRY | DRY | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | DRY | |
| 81 | | | DRY | DRY | |
| 82 | | | DRY | DRY | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | | SUBMERGED |
| 85 | | | DRY | | SUBMERGED |
| 86 | | | DRY | | SUBMERGED |
| 87 | | | DRY | | SUBMERGED |
| 88 | | | DRY | | SUBMERGED |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - JULY 20, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000188

R0062028

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— JULY 20, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | NONE | CLEAR | DRY | DRIPPING | |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | NONE | CLEAR | DRY | DRIPPING | SCREEN CLOGGED WIDEBRIS |
| 97 | | | DRY | DRY | |
| 98 | NONE | CLEAR | DRY | DRIPPING | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED/NO PLUME |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | | | DRY | DRY | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | | PARTIALLY SUBMERGED/NO PLUME |
| 120 | | | DRY | | PARTIALLY SUBMERGED/NO PLUME |
| | | | | | |

OBSERVER__DAN GROSS DATE - JULY 20, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



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R0062029

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— JULY 20, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | | | DRY | | PARTIALLY SUBMERGED/NO PLUME |
| 122 | | | DRY | DRY | |
| 123 | | | DRY | | PARTIALLY SUBMERGED/NO PLUME |
| 124 | | | DRY | DRY | |
| 125 | NONE | CLEAR | DRY | DRIPPING | |

OBSERVER___DAN GROSS DATE - JULY 20, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 0001-90

R0062030

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——AUGUST 25, 1995

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | | | DRY | DRY | |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | DRY | |
| 8 | | | DRY | DRY | |
| 9 | | | DRY | DRY | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | DRY | |
| 13 | | | DRY | DRY | SCREEN CLOGGED W/DEBRIS |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | DRY | FLAPPER BROKEN |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | NONE | CLEAR | DRY | 1" | |
| 30 | | | DRY | DRY | |

OBSERVER DAN GROSS DATE - AUGUST 25, 1995

8/25/95

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4, 1/2



VOL 17 000191

R0062031

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—AUGUST 25, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | | | DRY | DRY | |
| 33 | | | DRY | DRY | |
| 34 | NONE | CLEAR | DRY | 1" | |
| 35 | | | DRY | DRY | |
| 36 | | | DRY | DRY | |
| 37 | NONE | CLEAR | DRY | DRIPPING | |
| 38 | | | DRY | | BLOCKED BY SHIPPING |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | | PARTIALLY SUBMERGED |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - AUGUST 25, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000192

R0062032

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——AUGUST 25, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRY | |
| 67 | NONE | CLEAR | DRY | DRIPPING | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | | BLOCKED BY SHIPPING |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | | BLOCKED BY SHIPPING |
| 80 | | | DRY | | BLOCKED BY SHIPPING |
| 81 | | | DRY | DRY | |
| 82 | | | DRY | DRY | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | DRY | |
| 85 | | | DRY | DRY | |
| 86 | | | DRY | DRY | |
| 87 | | | DRY | DRY | |
| 88 | | | DRY | DRY | |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - AUGUST 25, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000193

R0062033

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— AUGUST 25, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | NONE | CLEAR | DRY | 1" | |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | NONE | CLEAR | DRY | DRY | |
| 97 | | | DRY | DRY | |
| 98 | NONE | CLEAR | DRY | 2" | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED/NO PLUME |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | 6" | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | | BLOCKED BY SHIPPING |
| 120 | | | DRY | | BLOCKED BY SHIPPING |
| | | | | | |

OBSERVER__DAN GROSS DATE - AUGUST 25, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



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R0062034

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— AUGUST 25, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | | | DRY | DRY | |
| 122 | | | DRY | DRY | |
| 123 | | | DRY | | PARTIALLY SUBMERGED/NO PLUME |
| 124 | | | DRY | DRY | |
| 125 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - AUGUST 25, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000195

R0062035

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——SEPTEMBER 25, 1995

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | | | DRY | | SUBMERGED |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | | SUBMERGED |
| 8 | | | DRY | DRY | |
| 9 | | | DRY | DRY | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | DRY | |
| 13 | | | DRY | DRY | SCREEN CLOGGED W/DEBRIS |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | | | DRY | DRY | |
| 30 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - SEPTEMBER 25, 1995

9/25/95

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



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R0062036

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——SEPTEMBER 25, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | | | DRY | DRY | |
| 33 | | | DRY | DRY | |
| 34 | NONE | CLEAR | DRY | DRIPPING | |
| 35 | | | DRY | DRY | |
| 36 | NONE | CLEAR | DRY | 6" | |
| 37 | | | DRY | DRY | |
| 38 | | | DRY | | BLOCKED BY SHIPPING |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | | PARTIALLY SUBMERGED |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - SEPTEMBER 25, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000197

R0062037

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— SEPTEMBER 25, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRY | |
| 67 | NONE | CLEAR | DRY | DRIPPING | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | | BLOCKED BY SHIPPING |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | DRY | |
| 81 | | | DRY | DRY | |
| 82 | | | DRY | DRY | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | | SUBMERGED |
| 85 | | | DRY | | SUBMERGED |
| 86 | | | DRY | | SUBMERGED |
| 87 | | | DRY | | SUBMERGED |
| 88 | | | DRY | | SUBMERGED |
| 89 | | | DRY | DRY | |
| 90 | NONE | CLEAR | DRY | 2" | |

OBSERVER___DAN GROSS DATE - SEPTEMBER 25, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000198

R0062038

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— SEPTEMBER 25, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | | | DRY | DRY | |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | | | DRY | DRY | |
| 97 | | | DRY | DRY | |
| 98 | | | DRY | DRY | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED/NO PLUME |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | 2' | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | 2" | |
| 120 | | | DRY | | SUBMERGED |

OBSERVER__DAN GROSS DATE - SEPTEMBER 25, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000199

R0062039

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— SEPTEMBER 25, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | | | DRY | DRY | |
| 122 | | | DRY | DRY | |
| 123 | | | DRY | | PARTIALLY SUBMERGED/NO PLUME |
| 124 | NONE | CLEAR | DRY | DRIPPING | |
| 125 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - SEPTEMBER 25, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00002000

R0062040

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——OCTOBER 19, 1995

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | | | DRY | DRY | |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | | SUBMERGED |
| 8 | | | DRY | DRY | |
| 9 | | | DRY | DRY | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | NONE | CLEAR | DRY | 6" | |
| 13 | | | DRY | DRY | SCREEN CLOGGED W/DEBRIS |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | | | DRY | DRIPPING | |
| 30 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - OCTOBER 19, 1995

10/19/95

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000201

R0062041

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY----OCTOBER 19, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | NONE | CLEAR | DRY | 2" | |
| 33 | | | DRY | DRY | |
| 34 | NONE | CLEAR | DRY | DRIPPING | |
| 35 | NONE | CLEAR | DRY | DRIPPING | |
| 36 | | | DRY | DRY | |
| 37 | | | DRY | DRY | |
| 38 | NONE | CLEAR | DRY | 12" | |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | | PARTIALLY SUBMERGED |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - OCTOBER 19, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00002
R0062042

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— OCTOBER 19, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRY | |
| 67 | | | DRY | DRY | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | | BLOCKED BY SHIPPING |
| 81 | | | DRY | DRY | |
| 82 | | | DRY | DRY | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | DRY | |
| 85 | | | DRY | DRY | |
| 86 | | | DRY | DRY | |
| 87 | | | DRY | DRY | |
| 88 | | | DRY | | SUBMERGED |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | | | DRY | DRY | |
| | | | | | |

OBSERVER___DAN GROSS DATE - OCTOBER 19, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00002043

R0062043

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— OCTOBER 19, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | | | DRY | DRY | |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | NONE | CLEAR | DRY | DRIPPING | |
| 97 | | | DRY | DRY | |
| 98 | | | DRY | DRY | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED/NO PLUME |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | 2" | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | DRY | |
| 120 | NONE | CLEAR | DRY | 2" | |

OBSERVER___DAN GROSS DATE - OCTOBER 19, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00004

R0062044

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— OCTOBER 19, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | NONE | CLEAR | DRY | DRIPPING | |
| 122 | | | DRY | DRY | |
| 123 | NONE | CLEAR | DRY | 1" | |
| 124 | | | DRY | DRY | |
| 125 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - OCTOBER 19, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4, 1/2



VOL 17 000205

R0062045

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——NOVEMBER 20, 1995

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | | | DRY | | SUBMERGED |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | | SUBMERGED |
| 8 | | | DRY | DRY | |
| 9 | | | DRY | DRY | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | NONE | CLEAR | DRY | 8" | |
| 13 | NONE | CLEAR | DRY | 1" | SCREEN CLOGGED W/DEBRIS |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | NONE | CLEAR | DRY | 3" | |
| 30 | | | DRY | DRY | |

OBSERVER DAN GROSS DATE - NOVEMBER 20, 1995

11/20/95

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00062046

R0062046

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——NOVEMBER 20, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRIPPING | |
| 32 | NONE | CLEAR | DRY | 3" | |
| 33 | | | DRY | DRY | |
| 34 | NONE | CLEAR | DRY | 2" | |
| 35 | NONE | CLEAR | DRY | 1" | |
| 36 | | | DRY | DRY | |
| 37 | | | DRY | DRY | |
| 38 | NONE | CLEAR | DRY | 12" | |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | DRY | |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - NOVEMBER 20, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00207

R0062047

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— NOVEMBER 20, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRIPPING | |
| 67 | | | DRY | DRIPPING | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | DRY | |
| 81 | | | DRY | DRY | |
| 82 | NONE | CLEAR | DRY | 2" | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | DRY | |
| 85 | | | DRY | DRY | |
| 86 | | | DRY | DRY | |
| 87 | | | DRY | DRIPPING | |
| 88 | | | DRY | DRY | |
| 89 | NONE | CLEAR | DRY | 2" | |
| 90 | | | DRY | 3" | |
| | | | | | |

OBSERVER___DAN GROSS DATE - NOVEMBER 20, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00208

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PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— NOVEMBER 20, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | NONE | BROWN | DRY | 12"PIPE | DOUBLE PIPE/SAME NUMBER |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | | | DRY | DRY | |
| 97 | | | DRY | DRY | |
| 98 | | | DRY | DRY | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED/NO PLUME |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | 6" | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | | BLOCKED BY SHIPPING |
| 120 | NONE | CLEAR | DRY | 2" | |
| | | | | | |

OBSERVER__DAN GROSS DATE - NOVEMBER 20, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000209

R0062049

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— NOVEMBER 20, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | NONE | CLEAR | DRY | DRY | |
| 122 | | | DRY | DRY | |
| 123 | NONE | CLEAR | DRY | 1" | |
| 124 | | | DRY | DRY | |
| 125 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - NOVEMBER 20, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4, 1/2



VOL 17 00210

R0062050

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——DECEMBER 19, 1995

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | | | DRY | | SUBMERGED |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | | SUBMERGED |
| 8 | | | DRY | DRY | |
| 9 | NONE | CLEAR | DRY | DRIPPING | |
| 10 | NONE | CLEAR | DRY | DRIPPING | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | | |
| 13 | NONE | CLEAR | DRY | DRIPPING | SCREEN CLOGGED W/DEBRIS |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | | | DRY | DRY | |
| 30 | | | DRY | | SUBMERGED |

OBSERVER___DAN GROSS DATE - DECEMBER 19, 1995

12/19/95

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00021 1

R0062051

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——DECEMBER 19, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | NONE | BLACK | DRY | 12" | BOOM PRESENT |
| 33 | | | DRY | DRY | |
| 34 | NONE | CLEAR | DRY | DRIPPING | |
| 35 | | | DRY | DRY | |
| 36 | | | DRY | DRY | |
| 37 | NONE | CLEAR | DRY | DRIPPING | |
| 38 | | | DRY | | BLOCKED BY SHIPPING |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | NONE | CLEAR | DRY | DRIPPING | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | | SUBMERGED |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - DECEMBER 19, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00021-2

R0062052

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— DECEMBER 19, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRY | |
| 67 | NONE | CLEAR | DRY | DRIPPING | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | DRY | |
| 81 | | | DRY | DRY | |
| 82 | NONE | CLEAR | DRY | DRIPPING | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | DRY | |
| 85 | | | DRY | DRY | |
| 86 | | | DRY | DRY | |
| 87 | | | DRY | DRY | |
| 88 | | | DRY | DRY | |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | | | DRY | 1" | |

OBSERVER__DAN GROSS DATE - DECEMBER 19, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



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PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— DECEMBER 19, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | | | DRY | DRY | DOUBLE PIPE/SAME NUMBER |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | | | DRY | DRY | |
| 97 | | | DRY | DRY | |
| 98 | NONE | CLEAR | DRY | DRIPPING | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | NONE | LT BRWN | DRY | | SUBMERGED-CONSIDERABLE FLOW |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | 12" | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | | BLOCKED BY SHIPPING |
| 120 | NONE | CLEAR | DRY | 6" | |
| | | | | | |

OBSERVER___DAN GROSS DATE - DECEMBER 19, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00021-4

R0062054

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— DECEMBER 19, 1995

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | NONE | CLEAR | DRY | 6" | |
| 122 | | | DRY | DRY | |
| 123 | NONE | CLEAR | DRY | 2" | |
| 124 | NONE | CLEAR | DRY | DRIPPING | |
| 125 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - DECEMBER 19, 1995

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00215

R0062055

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——JANUARY 22, 1996

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | | | DRY | | SUBMERGED |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | | SUBMERGED |
| 8 | | | DRY | DRY | |
| 9 | NONE | CLEAR | DRY | DRIPPING | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | DRY | |
| 13 | NONE | BROWN | DRY | | FLOWING/PARTIALLY SUBMERGED |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | | SUBMERGED |
| 21A | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | | | DRY | DRY | |
| 30 | | | DRY | | SUBMERGED |

OBSERVER___DAN GROSS DATE - JANUARY 22, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00216

R0062056

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——JANUARY 22, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | NONE | BLACK | DRY | 6" | |
| 33 | NONE | CLEAR | DRY | 1" | |
| 34 | NONE | CLEAR | DRY | DRIPPING | |
| 35 | | | DRY | DRY | |
| 36 | NONE | BLACK | DRY | 4" | |
| 37 | NONE | CLEAR | DRY | DRIPPING | |
| 38 | NONE | CLEAR | DRY | 12" | |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | | SUBMERGED |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - JANUARY 22, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



R0062057

VOL 17 00021

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— JANUARY 22, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | NONE | CLEAR | DRY | DRIPPING | |
| 66 | NONE | CLEAR | DRY | DRIPPING | |
| 67 | NONE | CLEAR | DRY | DRIPPING | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | DRY | |
| 81 | | | DRY | DRY | |
| 82 | NONE | CLEAR | DRY | DRIPPING | |
| 83 | NONE | CLEAR | DRY | DRIPPING | |
| 84 | | | DRY | DRY | |
| 85 | | | DRY | DRY | |
| 86 | | | DRY | DRY | |
| 87 | NONE | CLEAR | DRY | DRIPPING | |
| 88 | | | DRY | | PARTIALLY SUBMERGED |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | NONE | CLEAR | DRY | 6" | |
| | | | | | |

OBSERVER___DAN GROSS DATE - JANUARY 22, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00218
R0062058

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— JANUARY 22, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | | | DRY | DRY | DOUBLE PIPE/SAME NUMBER |
| 93 | NONE | CLEAR | DRY | 2" | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | NONE | CLEAR | DRY | DRIPPING | |
| 97 | | | DRY | DRY | |
| 98 | NONE | CLEAR | DRY | DRIPPING | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 111A | | | DRY | DRY | |
| 112 | NONE | CLEAR | DRY | 1" | |
| 113 | | | DRY | DRY | |
| 114 | NONE | BROWN | DRY | | SUBMERGED-CONSIDERABLE FLOW |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | 6" | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | | BLOCKED BY SHIPPING |
| 119 | NONE | CLEAR | DRY | 2" | |
| 120 | NONE | CLEAR | DRY | 2" | |

OBSERVER___DAN GROSS DATE - JANUARY 22, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4, 1/2



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PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— JANUARY 22, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | NONE | CLEAR | DRY | 2" | |
| 122 | | | DRY | DRY | |
| 123 | NONE | CLEAR | DRY | DRIPPING | |
| 124 | NONE | CLEAR | DRY | DRIPPING | |
| 125 | NONE | CLEAR | DRY | 4" | |

OBSERVER___DAN GROSS DATE - JANUARY 22, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00220

R0062060

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——FEBRUARY 16, 1996

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | NONE | CLEAR | DRY | 3" | |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | DRY | |
| 8 | | | DRY | DRY | |
| 9 | NONE | CLEAR | DRY | DRIPPING | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | DRY | |
| 13 | | | DRY | DRY | |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 21A | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | NONE | CLEAR | DRY | 4" | |
| 25 | NONE | CLEAR | DRY | DRIPPING | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | NONE | CLEAR | DRY | 1" | |
| 30 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - FEBRUARY 16, 1996

2/16/96

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00021

R0062061

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——FEBRUARY 16, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | NONE | BLACK | DRY | 1" | |
| 33 | | | DRY | DRY | |
| 34 | | | DRY | DRY | |
| 35 | NONE | CLEAR | DRY | 1" | |
| 36 | | | DRY | DRY | |
| 37 | | | DRY | DRY | |
| 38 | NONE | CLEAR | DRY | 12" | |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | | BLOCKED BY SHIPPING |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | DRY | |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - FEBRUARY 16, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000222

R0062062

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— FEBRUARY 16, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRY | |
| 67 | | | DRY | DRY | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | | BLOCKED BY SHIPPING |
| 80 | | | DRY | | BLOCKED BY SHIPPING |
| 81 | | | DRY | DRY | |
| 82 | | | DRY | DRY | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | DRY | |
| 85 | | | DRY | DRY | |
| 86 | | | DRY | DRY | |
| 87 | | | DRY | DRY | |
| 88 | | | DRY | DRY | |
| 89 | | | DRY | DRY | |
| 90 | NONE | CLEAR | DRY | 2" | |

OBSERVER___DAN GROSS DATE - FEBRUARY 16, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



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PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— FEBRUARY 16, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | | | DRY | DRY | DOUBLE PIPE/SAME NUMBER |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | | | DRY | DRY | |
| 97 | | | DRY | DRY | |
| 98 | NONE | CLEAR | DRY | 1" | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 11A | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | DRY | |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | 4" | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | | BLOCKED BY SHIPPING |
| 120 | NONE | CLEAR | DRY | 2" | |

OBSERVER___DAN GROSS DATE - FEBRUARY 16, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000224

R0062064

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— FEBRUARY 22, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | NONE | CLEAR | DRY | 2" | |
| 122 | | | DRY | DRY | |
| 123 | | | DRY | DRY | |
| 124 | | | DRY | DRY | |
| 125 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - FEBRUARY 16, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000225

R0062065

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——MARCH 27, 1996

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | NONE | CLEAR | DRY | 2" | |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | DRY | |
| 8 | | | DRY | DRY | |
| 9 | NONE | CLEAR | DRY | DRIPPING | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | DRY | |
| 13 | | | DRY | DRY | |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 21A | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | DRY | |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | DRY | |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | NONE | CLEAR | DRY | 4" | |
| 30 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - MARCH 27, 1996

3/27/96

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000226

R0062066

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY---MARCH 27, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | NONE | CLEAR | DRY | 2" | |
| 33 | | | DRY | DRY | |
| 34 | | | DRY | DRY | |
| 35 | NONE | CLEAR | DRY | 3" | |
| 36 | | | DRY | DRY | |
| 37 | | | DRY | DRY | |
| 38 | | | DRY | | BLOCKED BY SHIPPING |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | DRY | |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - MARCH 27, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



R0062067

VOL 17 000227

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— MARCH 27, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | NONE | CLEAR | DRY | DRIPPING | |
| 66 | | | DRY | DRY | |
| 67 | NONE | CLEAR | DRY | DRIPPING | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | DRY | |
| 81 | | | DRY | DRY | |
| 82 | NONE | CLEAR | DRY | DRIPPING | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | DRY | |
| 85 | | | DRY | DRY | |
| 86 | | | DRY | DRY | |
| 87 | | | DRY | DRY | |
| 88 | | | DRY | | SUBMERGED |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | | | DRY | DRY | |
| | | | | | |

OBSERVER___DAN GROSS DATE - MARCH 27, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000228

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— MARCH 27, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | | | DRY | DRY | DOUBLE PIPE/SAME NUMBER |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | | | DRY | DRY | |
| 97 | | | DRY | DRY | |
| 98 | | | DRY | DRY | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 111A | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | DRIPPING | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | DRY | |
| 120 | NONE | CLEAR | DRY | DRIPPING | |
| | | | | | |

OBSERVER___DAN GROSS DATE - MARCH 27, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000229

R0062069

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— MARCH 27, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | NONE | CLEAR | DRY | DRIPPING | |
| 121A | | | DRY | DRY | |
| 121B | | | DRY | DRY | |
| 122 | | | DRY | DRY | |
| 123 | | | DRY | DRY | |
| 124 | | | DRY | DRY | |
| 125 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - MARCH 27, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00230

R0062070

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——APRIL 16, 1996

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | | | DRY | | PARTIALLY SUBMERGED |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | SUBMERGED/FLAPPER BROKEN |
| 7 | | | DRY | | PARTIALLY SUMERGED |
| 8 | | | DRY | DRY | |
| 9 | | | DRY | DRY | |
| 10 | | | DRY | DRY | |
| 11 | NONE | CLEAR | DRY | 2" | |
| 12 | | | DRY | DRY | |
| 13 | | | DRY | | PARTIALLY SUBMERGED |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | | PARTIALLY SUBMERGED |
| 21A | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | | SUBMERGED |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | | BLOCKED BY SHIPPING |
| 27 | | | DRY | | BLOCKED BY SHIPPING |
| 28 | | | DRY | DRY | |
| 29 | | | DRY | DRY | |
| 30 | | | DRY | | SUBMERGED |

OBSERVER___DAN GROSS DATE - APRIL 16, 1996

4/16/96

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000231

R0062071

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——APRIL 16, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | | | DRY | | PARTIALLY SUBMERGED |
| 33 | | | DRY | DRY | |
| 34 | | | DRY | DRY | |
| 35 | | | DRY | DRY | |
| 36 | | | DRY | DRY | |
| 37 | | | DRY | DRY | |
| 38 | | | DRY | | BLOCKED BY SHIPPING |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | | BLOCKED BY SHIPPING |
| 42 | | | DRY | | BLOCKED BY SHIPPING |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | | SUBMERGED |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - APRIL 16, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00232

R0062072

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— APRIL 16, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRY | |
| 67 | | | DRY | DRY | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | DRY | |
| 81 | | | DRY | DRY | |
| 82 | | | DRY | DRY | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | | SUBMERGED |
| 85 | | | DRY | | SUBMERGED |
| 86 | | | DRY | | SUBMERGED |
| 87 | | | DRY | | SUBMERGED |
| 88 | | | DRY | | SUBMERGED |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | | | DRY | DRY | |
| | | | | | |

OBSERVER___DAN GROSS DATE - APRIL 16, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000233

R0062073

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— APRIL 16, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | | | DRY | DRY | DOUBLE PIPE/SAME NUMBER |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | | | DRY | DRY | |
| 97 | | | DRY | DRY | |
| 98 | | | DRY | DRY | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 11A | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | CLEAR | DRY | 4" | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRY | |
| 119 | | | DRY | | BLOCKED BY SHIPPING |
| 120 | NONE | CLEAR | DRY | 2" | |
| | | | | | |

OBSERVER___DAN GROSS DATE - APRIL 16, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000234

R0062074

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— APRIL 16, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | NONE | CLEAR | DRY | 2" | |
| 121A | | | DRY | DRY | |
| 121B | | | DRY | DRY | |
| 122 | | | DRY | DRY | |
| 123 | NONE | CLEAR | DRY | DRIPPING | |
| 124 | | | DRY | DRY | |
| 125 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - APRIL 16, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000235

R0062075

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——MAY 10, 1996

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | NONE | CLEAR | DRY | DRIPPING | |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | DRY | |
| 7 | | | DRY | DRY | |
| 8 | | | DRY | DRY | |
| 9 | | | DRY | DRY | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | DRY | |
| 13 | | | DRY | DRY | |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 21A | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | NONE | CLEAR | DRY | 1" | |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | | BLOCKED BY SHIPPING |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | NONE | CLEAR | DRY | 1" | |
| 30 | | | DRY | DRY | |
| | | | | | |

OBSERVER DAN GROSS DATE - MAY 10, 1996

5/10/96

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 00236

R0062076

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——MAY 10, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | NONE | CLEAR | DRY | 4" | |
| 33 | | | DRY | DRY | |
| 34 | NONE | CLEAR | DRY | DRIPPING | |
| 35 | | | DRY | DRY | |
| 36 | NONE | CLEAR | DRY | 6" | |
| 37 | | | DRY | DRY | |
| 38 | | | DRY | | BLOCKED BY SHIPPING |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | | BLOCKED BY SHIPPING |
| 42 | | | DRY | | BLOCKED BY SHIPPING |
| 43 | | | DRY | | BLOCKED BY SHIPPING |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | DRY | |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - MAY 10, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4, 1/2



VOL 17 000237

R0062077

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— MAY 10, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | NONE | CLEAR | DRY | .25" | |
| 66 | NONE | CLEAR | DRY | .25" | |
| 67 | NONE | CLEAR | DRY | DRIPPING | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | DRY | |
| 80 | | | DRY | DRY | |
| 81 | | | DRY | DRY | |
| 82 | | | DRY | DRY | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | | SUBMERGED |
| 85 | | | DRY | | SUBMERGED |
| 86 | | | DRY | | SUBMERGED |
| 87 | | | DRY | | SUBMERGED |
| 88 | | | DRY | | SUBMERGED |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | | | DRY | DRY | |
| | | | | | |

OBSERVER___DAN GROSS DATE - MAY 10, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



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R0062078

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— MAY 10, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | NONE | CLEAR | DRY | DRIPPING | DOUBLE PIPESAME NUMBER |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | NONE | CLEAR | DRY | DRIPPING | |
| 97 | | | DRY | DRY | |
| 98 | NONE | CLEAR | DRY | 3" | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 11A | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | | | DRY | | SUBMERGED |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | | BLOCKED BY SHIPPING |
| 119 | | | DRY | | BLOCKED BY SHIPPING |
| 120 | NONE | CLEAR | DRY | | SUBMERGED |
| | | | | | |

OBSERVER__DAN GROSS DATE - MAY 10, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000239

R0062079

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY—— MAY 10, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | NONE | CLEAR | DRY | | PARTIALLY SUBMERGED |
| 121A | | | DRY | | MISSING OR BLOCKED BY CONST |
| 121B | | | DRY | DRY | |
| 122 | | | DRY | DRY | |
| 123 | | | DRY | DRY | |
| 124 | | | DRY | DRY | |
| 125 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - MAY 10, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000240

R0062080

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY——JUNE 15, 1996

| OUTFALL # | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 1 | | | DRY | DRY | |
| 2 | | | DRY | DRY | |
| 3 | | | DRY | DRY | |
| 4 | NONE | CLEAR | DRY | DRIPPING | |
| 5 | | | DRY | DRY | |
| 6 | | | DRY | | PARTIALLY SUBMERGED |
| 7 | | | DRY | DRY | |
| 8 | | | DRY | DRY | |
| 9 | | | DRY | DRY | |
| 10 | | | DRY | DRY | |
| 11 | | | DRY | DRY | |
| 12 | | | DRY | DRY | |
| 13 | | | DRY | DRY | |
| 14 | | | DRY | DRY | |
| 15 | | | DRY | DRY | |
| 16 | | | DRY | DRY | |
| 17 | | | DRY | DRY | |
| 18 | | | DRY | DRY | |
| 19 | | | DRY | DRY | |
| 20 | | | DRY | DRY | |
| 21 | | | DRY | DRY | |
| 21A | | | DRY | DRY | |
| 22 | | | DRY | DRY | |
| 23 | | | DRY | DRY | |
| 24 | | | DRY | | PARTIALLY SUBMERGED |
| 25 | | | DRY | DRY | |
| 26 | | | DRY | | BLOCKED BY SHIPPING |
| 27 | | | DRY | DRY | |
| 28 | | | DRY | DRY | |
| 29 | NONE | CLEAR | DRY | DRIPPING | |
| 30 | | | DRY | | PARTIALLY SUBMERGED |

OBSERVER___DAN GROSS DATE - JUNE 15, 1996

6/15/96

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000241

R0062081

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT
DATES OF SURVEY——JUNE 15, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 31 | | | DRY | DRY | |
| 32 | NONE | CLEAR | DRY | 4" | |
| 33 | | | DRY | DRY | |
| 34 | NONE | CLEAR | DRY | DRIPPING | |
| 35 | | | DRY | DRY | |
| 36 | | | DRY | | BLOCKED BY SHIPPING |
| 37 | | | DRY | DRY | |
| 38 | | | DRY | | BLOCKED BY SHIPPING |
| 39 | | | DRY | DRY | |
| 40 | | | DRY | DRY | |
| 41 | | | DRY | DRY | |
| 42 | | | DRY | DRY | |
| 43 | | | DRY | DRY | |
| 44 | | | DRY | DRY | |
| 45 | | | DRY | DRY | |
| 46 | | | DRY | DRY | |
| 47 | | | DRY | DRY | |
| 48 | | | DRY | DRY | |
| 49 | | | DRY | DRY | |
| 50 | | | DRY | DRY | |
| 51 | | | DRY | DRY | |
| 52 | | | DRY | DRY | |
| 53 | | | DRY | DRY | |
| 54 | | | DRY | DRY | |
| 55 | | | DRY | | SUBMERGED |
| 56 | | | DRY | DRY | |
| 57 | | | DRY | DRY | |
| 58 | | | DRY | DRY | |
| 59 | | | DRY | DRY | |
| 60 | | | DRY | DRY | |

OBSERVER___DAN GROSS DATE - JUNE 15, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000242

R0062082

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— JUNE 15, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 61 | | | DRY | DRY | |
| 62 | | | DRY | DRY | |
| 63 | | | DRY | DRY | |
| 64 | | | DRY | DRY | |
| 65 | | | DRY | DRY | |
| 66 | | | DRY | DRY | |
| 67 | | | DRY | DRY | |
| 68 | | | DRY | DRY | |
| 69 | | | DRY | DRY | |
| 70 | | | DRY | DRY | |
| 71 | | | DRY | DRY | |
| 72 | | | DRY | DRY | |
| 73 | | | DRY | DRY | |
| 74 | | | DRY | DRY | |
| 75 | | | DRY | DRY | |
| 76 | | | DRY | DRY | |
| 77 | | | DRY | DRY | |
| 78 | | | DRY | DRY | |
| 79 | | | DRY | | BLOCKED BY SHIPPING |
| 80 | | | DRY | | BLOCKED BY SHIPPING |
| 81 | | | DRY | | BLOCKED BY SHIPPING |
| 82 | | | DRY | DRY | |
| 83 | | | DRY | DRY | |
| 84 | | | DRY | | SUBMERGED |
| 85 | | | DRY | | SUBMERGED |
| 86 | | | DRY | | SUBMERGED |
| 87 | | | DRY | | SUBMERGED |
| 88 | | | DRY | | SUBMERGED |
| 89 | | | DRY | | BLOCKED BY SHIPPING |
| 90 | CLEAR | NONE | DRY | DRIPPING | |

OBSERVER__DAN GROSS DATE - JUNE 15, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000243

R0062083

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— JUNE 15, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 91 | | | DRY | DRY | |
| 92 | NONE | CLEAR | DRY | 4" | DOUBLE PIPESAME NUMBER |
| 93 | | | DRY | DRY | |
| 94 | | | DRY | DRY | |
| 95 | | | DRY | DRY | |
| 96 | | | DRY | DRY | |
| 97 | | | DRY | DRY | |
| 98 | | | DRY | DRY | |
| 99 | | | DRY | DRY | |
| 100 | | | DRY | DRY | |
| 101 | | | DRY | DRY | |
| 102 | | | DRY | DRY | |
| 103 | | | DRY | DRY | |
| 104 | | | DRY | DRY | |
| 105 | | | DRY | DRY | |
| 106 | | | DRY | DRY | |
| 107 | | | DRY | DRY | |
| 108 | | | DRY | DRY | |
| 109 | | | DRY | DRY | |
| 110 | | | DRY | DRY | |
| 111 | | | DRY | DRY | |
| 11A | | | DRY | DRY | |
| 112 | | | DRY | DRY | |
| 113 | | | DRY | DRY | |
| 114 | | | DRY | | SUBMERGED |
| 115 | | | DRY | DRY | HAS A BARRIER |
| 116 | NONE | BROWN | DRY | 1/3 OF PIPE RUNNING | |
| 117 | | | DRY | DRY | |
| 118 | | | DRY | DRIPPING | |
| 119 | | | DRY | | PARTIALLY SUBMERGED |
| 120 | | | DRY | DRY | |
| | | | | | |

OBSERVER___DAN GROSS DATE - JUNE 15, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



ATTACHMENT
VOL 17
000244
R0062084

PORT OF LONG BEACH

NON POINT SOURCE PROGRAM-MONTHLY VISUAL INSPECTION REPORT

DATES OF SURVEY—— JUNE 15, 1996

| OUTFALL | CHARACTERISTICS | | WEATHER | QUANTITY | COMMENTS |
|---|---|---|---|---|---|
| | SHEEN | COLOR | RAIN/DRY | | |
| 121 | | | DRY | | PARTIALLY SUBMERGED |
| 121A | | | DRY | DRY | |
| 121B | | | DRY | DRY | |
| 122 | | | DRY | DRY | |
| 123 | | | DRY | DRY | |
| 124 | | | DRY | DRY | |
| 125 | | | DRY | DRY | |

OBSERVER__DAN GROSS DATE - JUNE 15, 1996

NOTE: "QUANTITY" IS THE APPROXIMATE SIZE OF THE OBSERVED FLOW - I.E. DRIP, 2" WIDE OR FILLS PIPE 1/4,1/2



VOL 17 000245

R0062085

VOL 17

000246

# FORM 3

State of California & State Water Resources Control Board
Annual Report
for
Storm Water Discharges Associated with Industrial Activities

RECORD OF WET SEASON VISUAL OBSERVATIONS
DECEMBER 1995

R0062086

State of California
STATE WATER RESOURCES CONTROL BOARD

1995-19505

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

- Wet season observations are required to be done during the first hour of discharge for at least one storm per month between October 1 and April 30.

Month: _____ Approximate time storm water discharge began: _____

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS (CIRCLE ALL THAT APPLY) | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| POLB | Dec 1995 | Floating Materials? | Suspended materials? | **See following pages.** | |
| | | Odors? | Oil/grease sheen? | | |
| | | Discolorations? | Cloudiness? | | |

Comments/Corrective Actions Taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS (CIRCLE ALL THAT APPLY) | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| | | Floating Materials? | Suspended materials? | | |
| | | Odors? | Oil/grease sheen? | | |
| | | Discolorations? | Cloudiness? | | |

Comments/Corrective Actions Taken for above: _____

Inspector's Name: John Hardin Title: Senior Scientist

Signature: John Hardin Date: 25 June 96

R0062087

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 1A | 13Dec95 1547 | Floating Materials | No | Suspended materials | No | None | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Oil sheen in area - unknown origin. No sample taken*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 2A | 13Dec95 1622 | Floating Materials | No | Suspended materials | Yes | Flow | |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Brown/silt/clay discharge*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 3A | 13Dec95 1608 | Floating Materials | No | Suspended materials | No | Small trickle | |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *Oil sheen on surface - unknown origin*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 4A | 13Dec95 1536 | Floating Materials | No | Suspended materials | No | None | not applicable |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | No | Cloudiness | No | | |

Comments/corrective actions taken for above: *No sample taken - no discharge*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 5A | 13Dec95 1520 | Floating Materials | No | Suspended materials | No | | |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Yellowbrown - cloudy*

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 6A | 13Dec95 1706 | Floating Materials | No | Suspended materials | No | Trickle | |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Brown/green color - turbid*

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 7A | 13Dec95 1514 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | | not applicable |

Comments/corrective actions taken for above: *Site inaccessible - tug in the way - no sample taken*

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 8A | 13Dec95 1509 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | | |

Comments/corrective actions taken for above: *Site inaccessible - tug in the way - no sample taken. Returned at 1652 to find site still inaccessible due to tug.*

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 9A | 13Dec95 1456 | Floating Materials | No | Suspended materials | No | Trickle | |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Cloudy - yellow*

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 10A | 13Dec95 1442 | Floating Materials | No | Suspended materials | Yes | Slow drain | |
| | | Odors | Yes | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Suspended materials - cloudy yellow color - odor = sewage odor*

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 11A | 13Dec95 1835 | Floating Materials No<br>Odors No<br>Discolorations Yes | Suspended materials No<br>Oil/grease sheen No<br>Cloudiness Yes | Trickle | |

Comments/corrective actions taken for above: *Brown color*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 12A | 13Dec95 1855 | Floating Materials No<br>Odors Yes<br>Discolorations No | Suspended materials No<br>Oil/grease sheen No<br>Cloudiness No | Small drip | |

Comments/corrective actions taken for above: *Small drip - no sample taken. Sweet odor*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 12B | 13Dec95 1851 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | | not applicable |

Comments/corrective actions taken for above: *No flow - no sample taken.*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 13A | 13Dec95 1842 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | | not applicable |

Comments/corrective actions taken for above: *No flow - no sample taken.*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 14A | 13Dec95 1810 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | None | not applicable |

Comments/corrective actions taken for above: *No flow - no sample taken.*

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 15A | 13Dec95 1755 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | | not applicable |

Comments/corrective actions taken for above: *Fuel barge blocking access - slight drip from discharge pipe - no sample taken*

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 16A | 13Dec95 1808 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | | not applicable |

Comments/corrective actions taken for above: *Slight drip - access unavailable, fuel barge blocking pipe - no sample taken*

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 17A | 13Dec95 1744 | Floating Materials<br>Odors<br>Discolorations | No<br>No<br>Yes | Suspended materials<br>Oil/grease sheen<br>Cloudiness | No<br>No<br>Yes | Drip | |

Comments/corrective actions taken for above: *Yellow tinge, slightly cloudy*

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 18A | 13Dec95 1735 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | None | not applicable |

Comments/corrective actions taken for above: *No flow - no sample taken*

Month: December 1995

Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 19A | 13Dec95 1728 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | None | not applicable |

Comments/corrective actions taken for above: *No flow - no sample taken*

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 20A | 13Dec95 1700 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | Slight drip | not applicable |

Comments/corrective actions taken for above: *Slight drip discharge - no sample taken*

Month: December 1995 — Approximate time storm water discharge began: 1400 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 3RW | 13Dec95 1905 | Floating Materials<br>Odors<br>Discolorations | No<br>No<br>No | Suspended materials<br>Oil/grease sheen<br>Cloudiness | No<br>No<br>No | | not applicable |

Comments/corrective actions taken for above: *Receiving water*

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# FORM 3

State of California & State Water Resources Control Board
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for
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RECORD OF WET SEASON VISUAL OBSERVATIONS
JANUARY 1996

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State of California
STATE WATER RESOURCES CONTROL BOARD

1995-1996

# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

- Wet season observations are required to be done during the first hour of discharge for at least one storm per month between October 1 and April 30.

Month: _____ Approximate time storm water discharge began: _____

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS (CIRCLE ALL THAT APPLY) | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| POLB | Jan 1996 | Floating Materials? | Suspended materials? | See following pages. | |
| | | Odors? | Oil/grease sheen? | | |
| | | Discolorations? | Cloudiness? | | |

Comments/Corrective Actions Taken for above: _____

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS (CIRCLE ALL THAT APPLY) | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| | | Floating Materials? | Suspended materials? | | |
| | | Odors? | Oil/grease sheen? | | |
| | | Discolorations? | Cloudiness? | | |

Comments/Corrective Actions Taken for above: _____

Inspector's Name: John Hardin Title: Senior Scientist

Signature: _____ Date: 26 June 96

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1996

Approximate time storm water discharge began: >0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 1A | 31Jan96 1124 | Floating Materials<br>Odors<br>Discolorations | Yes<br>No<br>Yes | Suspended materials<br>Oil/grease sheen<br>Cloudiness | Yes<br>No<br>Yes | Steady flow | Storm drain |

Comments/corrective actions taken for above: *Sample taken from surface of harbor - pipe 3/4 submerged - but flow strong enough to create plume and upwell at edges of pipe - plume about 50' x 50' - brown color*

Month: January 1996

Approximate time storm water discharge began: >0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 2A | 31Jan96 1058 | Floating Materials<br>Odors<br>Discolorations | No<br>No<br>Yes | Suspended materials<br>Oil/grease sheen<br>Cloudiness | Yes<br>No<br>No | Steady flow | Storm drain |

Comments/corrective actions taken for above: *Brown - plume adjacent to discharge 200 x 100 ft.*

Month: January 1996

Approximate time storm water discharge began: >0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 3A | 31Jan96 1048 | Floating Materials<br>Odors<br>Discolorations | No<br>No<br>Yes | Suspended materials<br>Oil/grease sheen<br>Cloudiness | No<br>No<br>No | Steady flow | Storm drain |

Comments/corrective actions taken for above: *Yellow color*

Month: January 1996

Approximate time storm water discharge began: 0830 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 4A | 31Jan96 1025 | Floating Materials<br>Odors<br>Discolorations | No<br>No<br>Yes | Suspended materials<br>Oil/grease sheen<br>Cloudiness | No<br>No<br>Yes | Small steady flow | Storm drain |

Comments/corrective actions taken for above: *Cloudy yellow*

Month: January 1996

Approximate time storm water discharge began: >0900 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 5A | 31Jan96 1139 | Floating Materials<br>Odors<br>Discolorations | No<br>No<br>Yes | Suspended materials<br>Oil/grease sheen<br>Cloudiness | Yes<br>No<br>Yes | Strong flow | Storm drain |

Comments/corrective actions taken for above: *Dark brown/brey color, turbid heavy rain*

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1996

Approximate time storm water discharge began: 0700 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 6A | 31Jan96 0931 | Floating Materials | No | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Brown/Red color - discoloring harbor = 100' x 100'*

Month: January 1996

Approximate time storm water discharge began: >1000 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 7A | 31Jan96 1150 | Floating Materials | No | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Dark brown color, turbid*

Month: January 1996

Approximate time storm water discharge began: 1100 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 8A | 31Jan96 1159 | Floating Materials | No | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Dark brown, color - turbid*
still inaccessible due to tug.

Month: January 1996

Approximate time storm water discharge began: 0700 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 9A | 31Jan96 1008 | Floating Materials | No | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Cloudy yellow - with turbidity*

Month: January 1996

Approximate time storm water discharge began: >0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 10A | 31Jan96 0948 | Floating Materials | No | Suspended materials | No | Steady small flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | No | | |

Comments/corrective actions taken for above: *Yellow color*

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1996 — Approximate time storm water discharge began: 0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 11A | 31Jan96 1300 | Floating Materials | No | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Dark brown color - turbid*

Month: January 1996 — Approximate time storm water discharge began: 0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 12A | 31Jan96 1320 | Floating Materials | No | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | No | | |

Comments/corrective actions taken for above: *Grey color - particulates*

Month: January 1996 — Approximate time storm water discharge began: 0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 12B | 31Jan96 1308 | Floating Materials | Yes | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Brown color - turbid - styrofoam particles*

Month: January 1996 — Approximate time storm water discharge began: 0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 13A | 31Jan96 1315 | Floating Materials | No | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Brown color - turbid - particulates*

Month: January 1996 — Approximate time storm water discharge began: 0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 14A | 31Jan96 1255 | Floating Materials | No | Suspended materials | Yes | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Dark grey color - turbid*

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1996 — Approximate time storm water discharge began: 0700 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 15A | 31Jan96 0800 | Floating Materials | No | Suspended materials | Yes | Steady drip | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | No | | |

Comments/corrective actions taken for above: *Gray color*

Month: January 1996 — Approximate time storm water discharge began: 0700 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 16A | 31Jan96 0841 | Floating Materials | No | Suspended materials | No | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | Yes | | |

Comments/corrective actions taken for above: *Yellow color, no odor*

Month: January 1996 — Approximate time storm water discharge began: 0700 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 17A | 31Jan96 0856 | Floating Materials | No | Suspended materials | No | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | No | | |

Comments/corrective actions taken for above: *Slight yellow color*

Month: January 1996 — Approximate time storm water discharge began: >0900 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 18A | 31Jan96 1245 | Floating Materials | No | Suspended materials | No | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | No | | |

Comments/corrective actions taken for above: *Light gray color*

Month: January 1996 — Approximate time storm water discharge began: >0800 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 19A | 31Jan96 0915 | Floating Materials | No | Suspended materials | No | Steady flow | Storm drain |
| | | Odors | No | Oil/grease sheen | No | | |
| | | Discolorations | Yes | Cloudiness | No | | |

Comments/corrective actions taken for above: *Slight yellow color*

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## FORM 3 - RECORD OF WET SEASON VISUAL OBSERVATIONS

Month: January 1996 — Approximate time storm water discharge began: >1100 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|---|---|
| Station 20A | 31Jan96 1212 | Floating Materials<br>Odors<br>Discolorations | Yes<br>No<br>Yes | Suspended materials<br>Oil/grease sheen<br>Cloudiness | Yes<br>No<br>Yes | Steady flow | Storm drain |

Comments/corrective actions taken for above: *Brown color - plume in harbor - turbid*

Month: January 1996 — Approximate time storm water discharge began: >1100 hrs

| DISCHARGE LOCATION | DATE/ TIME | DISCHARGE OBSERVATIONS | | DESCRIBE DISCHARGE | DESCRIBE SOURCE OF DISCHARGE |
|---|---|---|---|---|---|
| Station 3RW | 31Jan96 1435 | Floating Materials<br>Odors<br>Discolorations | Suspended materials<br>Oil/grease sheen<br>Cloudiness | not applicable | not applicable |

Comments/corrective actions taken for above: *Water brown in color - turbid*

VOL 17 000259
R0062099

VOL 17 000260

# FORM 4

State of California & State Water Resources Control Board
Annual Report
for
Storm Water Discharges Associated with Industrial Activities

SAMPLING RESULTS
DECEMBER 1995

R0062100

State of California
STATE WATER RESOURCES CONTROL BOARD

*1995-1996*

# ANNUAL REPORT

FOR

STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

## FORM 4 - SAMPLING RESULTS

DISCHARGE POINT:_____

DATE AND TIME OF SAMPLE:_____ TIME DISCHARGE STARTED:_____

| CONSTITUENT TESTED | TESTED BY: LAB/SELF[1][3] | RESULTS [2][3] | TEST METHOD USED[4] | DETECTION LIMIT |
|---|---|---|---|---|
| pH | | See following pages. | | |
| TOTAL SUSPENDED SOLIDS | | | | |
| SPECIFIC CONDUCTANCE | | umhos/cm | | |
| OIL & GREASE | | mg/l | | |
| TOTAL ORGANIC CARBON | | mg/l | | |
| ADDITIONAL POLLUTANTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| FLOW [5] | | gallons | | |
| SIZE OF STORM (IF AVAILABLE) | | inches | | |

(1) If testing was done by a certified laboratory, indicate "lab"; otherwise, indicate "self".
(2) If analytical results indicate a value less than the detection limit (or non detect), show the value as less than the numerical value of the detection limit.
(3) If you did not analyze for a particular constituent, do not report "0". Instead leave the appropriate box blank.
(4) Indicate the test method used to determine result. In cases where analysis was conducted in the field, using portable analyzers (portable pH meters, portable EC meters, etc.), indicate with an "A"
(5) Dischargers subject to the Santa Clara County General Permit are required to provide estimates or calculations of the volume of storm water discharged from each point. Describe, on a separate sheet, how the flow measurement was calculated.

Name of person collecting sample: Eric Lindsay Title: Technical Coordinator

If analysis conducted by certified laboratory, enter name of laboratory: West Coast Analytical Service, Inc.

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R0062101

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

## FORM 4 - SAMPLING RESULTS
## STATION 2A

DATE AND TIME OF SAMPLE: 13 December 1995;1622 — TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.5 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 110 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 1.3 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.7 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 4 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 61.0 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0036 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0064 | EPA 200.8 | 0.0005 |
| Barium | Lab | 0.224 | EPA 200.8 | 0.0005 |
| Beryllium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0032 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.028 | EPA 200.8 | 0.007 |
| Cobalt | Lab | 0.0075 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.114 | EPA 200.8 | 0.0004 |
| Lead | Lab | 0.102 | EPA 200.8 | 0.0002 |
| Mercury | Lab | 0.0003 | EPA 200.8 | 0.0001 |
| Molybdenum | Lab | 0.0098 | EPA 200.8 | 0.0001 |
| Nickel | Lab | 0.052 | EPA 200.8 | 0.0002 |
| Selenium | Lab | 0.004 | EPA 200.8 | 0.001 |
| Silver | Lab | 0.0003 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.041 | EPA 200.8 | 0.0003 |
| Zinc | Lab | 1.11 | EPA 200.8 | 0.01 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Ethylbenzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | 0.8 | EPA 602 | 0.2 |
| Total xylenes | Lab | 1 | EPA 602 | 0.4 |
| FLOW | | ~150 gpm | | |
| SIZE OF STORM | | 0.63 inches | | |

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R0062102

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

## FORM 4 - SAMPLING RESULTS
## STATION 2A - FIELD DUPLICATE

DATE AND TIME OF SAMPLE: 13 December 1995;1622 TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.48 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 100 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 0.80 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.4 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 4 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 64.2 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0036 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0063 | EPA 200.8 | 0.0005 |
| Barium | Lab | 0.209 | EPA 200.8 | 0.0005 |
| Beryllium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0032 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.028 | EPA 200.8 | 0.007 |
| Cobalt | Lab | 0.0075 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.115 | EPA 200.8 | 0.0004 |
| Lead | Lab | 0.1 | EPA 200.8 | 0.0002 |
| Mercury | Lab | 0.0003 | EPA 200.8 | 0.0001 |
| Molybdenum | Lab | 0.0097 | EPA 200.8 | 0.0001 |
| Nickel | Lab | 0.052 | EPA 200.8 | 0.0002 |
| Selenium | Lab | 0.004 | EPA 200.8 | 0.001 |
| Silver | Lab | 0.0003 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.042 | EPA 200.8 | 0.0003 |
| Zinc | Lab | 1.09 | EPA 200.8 | 0.01 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Ethylbenzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | 0.8 | EPA 602 | 0.2 |
| Total xylenes | Lab | 1 | EPA 602 | 0.4 |
| FLOW | | ~150 gpm | | |
| SIZE OF STORM | | 0.63 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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FORM 4 - SAMPLING RESULTS
STATION 3A

DATE AND TIME OF SAMPLE: 13 December 1995;1608 TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.82 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 46 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 36.2 | ISE | 0.1 |
| Salinity (ppt) | Lab | 25.4 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.4 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 5.9 | ASTM D2579 M | 0.1 |
| FLOW | | ~2 L/min | | |
| SIZE OF STORM | | 0.63 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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FORM 4 - SAMPLING RESULTS
STATION 3RW

DATE AND TIME OF SAMPLE: 13 December 1995;1905 TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.05 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 77 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 44.7 | ISE | 0.1 |
| Salinity (ppt) | Lab | 32.0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 2 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 1.2 | ASTM D2579 M | 0.1 |
| Total organic carbon (mg/L) (Field Duplicate) | Lab | 1.8 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.001 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | <0.06* | EPA 200.8 | 0.08 |
| Barium | Lab | 0.007 | EPA 200.8 | 0.0005 |
| Beryllium | Lab | <0.01 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.007 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.02 | EPA 200.8 | 0.007 |
| Cobalt | Lab | <0.002 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.07 | EPA 200.8 | 0.0004 |
| Lead | Lab | <0.001 | EPA 200.8 | 0.0002 |
| Mercury | Lab | <0.004 | EPA 200.8 | 0.0001 |
| Molybdenum | Lab | 0.013 | EPA 200.8 | 0.0001 |
| Nickel | Lab | <0.01 | EPA 200.8 | 0.0002 |
| Selenium | Lab | <0.07 | EPA 200.8 | 0.001 |
| Silver | Lab | <0.001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | <0.3 | EPA 200.8 | 0.0003 |
| Zinc | Lab | <0.03 | EPA 200.8 | 0.01 |
| FLOW | | N/A | | |
| SIZE OF STORM | | 0.63 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION SA

DATE AND TIME OF SAMPLE: 13 December 1995;1520 TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.5 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 20 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 0.71 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.3 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 3 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 25.2 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.002 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0025 | EPA 200.8 | 0.0005 |
| Barium | Lab | 0.126 | EPA 200.8 | 0.0005 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0015 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.007 | EPA 200.8 | 0.007 |
| Cobalt | Lab | 0.002 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.053 | EPA 200.8 | 0.0004 |
| Lead | Lab | 0.025 | EPA 200.8 | 0.0002 |
| Mercury | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Molybdenum | Lab | 0.0091 | EPA 200.8 | 0.0001 |
| Nickel | Lab | 0.021 | EPA 200.8 | 0.0002 |
| Selenium | Lab | 0.002 | EPA 200.8 | 0.001 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.018 | EPA 200.8 | 0.0003 |
| Zinc | Lab | 1.09 | EPA 200.8 | 0.01 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Ethylbenzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | 0.8 | EPA 602 | 0.2 |
| Total xylenes | Lab | 1 | EPA 602 | 0.4 |
| Semi-Volatile Organics (µg/L) | | | | |
| 1,2,4-Trichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 2,4,5-Trichlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4,6-Trichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dimethylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dinitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2,6-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chloronaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chlorophenol | Lab | <1 | EPA 625/8270 | 1 |

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FORM 4 - SAMPLING RESULTS
STATION 6A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| 2-Methylnaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 2-Nitrophenol | Lab | <1 | EPA 625/8270 | 1 |
| 3,3'-Dichlorobenzidine | Lab | <1 | EPA 625/8270 | 1 |
| 3-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 3-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4,6-Dinitro-2-Methylphenol | Lab | <5 | EPA 625/8270 | 5 |
| 4-Bromophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloro-3-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloroaniline | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chlorophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4-Nitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| Acenaphthene | Lab | <1 | EPA 625/8270 | 1 |
| Acenaphthylene | Lab | <1 | EPA 625/8270 | 1 |
| Aniline | Lab | <1 | EPA 625/8270 | 1 |
| Anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Azobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Benzidine | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(b & k)fluoranthenes | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(g,h,i)perylene | Lab | <1 | EPA 625/8270 | 1 |
| Benzoic acid | Lab | <5 | EPA 625/8270 | 5 |
| Benzyl alcohol | Lab | <5 | EPA 625/8270 | 5 |
| Bis(2-chloroethoxy)methane | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroethyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroisopropyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-ethylhexyl)phthalate | Lab | 2 | EPA 625/8270 | 1 |
| Butyl benzyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Chrysene | Lab | <1 | EPA 625/8270 | 1 |
| D i-n-butyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-octyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzo(a,h)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzofuran | Lab | <1 | EPA 625/8270 | 1 |
| Diethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dimethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Fluoranthene | Lab | <1 | EPA 625/8270 | 1 |
| Fluorene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobutadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorocyclopentadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachloroethane | Lab | <1 | EPA 625/8270 | 1 |

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1995-1996

FORM 4 - SAMPLING RESULTS
STATION 5A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Indeno(1,2,3-cd)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Isophorone | Lab | <1 | EPA 625/8270 | 1 |
| N-Nitrosodiphenylamine ** | Lab | <1 | EPA 625/8270 | 1 |
| N-Nitrosodipropylamine | Lab | <1 | EPA 625/8270 | 1 |
| Naphthalene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Pentachlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| Phenanthrene | Lab | <1 | EPA 625/8270 | 1 |
| Phenol | Lab | <1 | EPA 625/8270 | 1 |
| Pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Pyridine | Lab | <1 | EPA 625/8270 | 1 |
| FLOW | | ~2 L/min | | |
| SIZE OF STORM | | 0.63 Inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 6A

DATE AND TIME OF SAMPLE: 13 December 1995;1706

TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 9.7 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 40 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 0.32 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.32 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 5.6 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 50.7 | ASTM D2579-M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0022 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0046 | EPA 200.8 | 0.0005 |
| Barium | Lab | 0.22 | EPA 200.8 | 0.0005 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0013 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.013 | EPA 200.8 | 0.007 |
| Cobalt | Lab | 0.0041 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.055 | EPA 200.8 | 0.0004 |
| Lead | Lab | 0.04 | EPA 200.8 | 0.0002 |
| Mercury | Lab | 0.0001 | EPA 200.8 | 0.0001 |
| Molybdenum | Lab | 0.0067 | EPA 200.8 | 0.0001 |
| Nickel | Lab | 0.023 | EPA 200.8 | 0.0002 |
| Selenium | Lab | 0.001 | EPA 200.8 | 0.001 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.041 | EPA 200.8 | 0.0003 |
| Zinc | Lab | 0.49 | EPA 200.8 | 0.01 |
| Volatile Organics (µg/L) | | | | |
| 1,1,1-Trichloroethane | Lab | <1 | 624/8260 | 1 |
| 1,1,2,2-Tetrachloroethane | Lab | <1 | 624/8260 | 1 |
| 1,1,2-Trichloroethane | Lab | <1 | 624/8260 | 1 |
| 1,1-Dichloroethane | Lab | <1 | 624/8260 | 1 |
| 1,1-Dichloroethylene | Lab | <1 | 624/8260 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | 624/8260 | 1 |
| 1,2-Dichloroethane | Lab | <1 | 624/8260 | 1 |
| 1,2-Dichloropropane | Lab | <1 | 624/8260 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | 624/8260 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | 624/8260 | 1 |
| 2-Butanone (mek) | Lab | <5 | 624/8260 | 5 |
| 2-Chloroethyl vinyl ether | Lab | <2 | 624/8260 | 2 |
| 2-Hexanone | Lab | <5 | 624/8260 | 5 |
| 2-Nitropropane | Lab | <2 | 624/8260 | 2 |
| 4-Methyl-2-pentanone (mibk) | Lab | <5 | 624/8260 | 5 |
| Acetone | Lab | 20 | 624/8260 | 1 |
| Benzene | Lab | <1 | 624/8260 | 1 |
| Bromodichloromethane | Lab | <1 | 624/8260 | 1 |

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ANNUAL REPORT FOR
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1995-1996

FORM 4 - SAMPLING RESULTS
STATION 6A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Bromoform | Lab | <1 | 624/8260 | 1 |
| Bromomethane | Lab | <5 | 624/8260 | 5 |
| Carbon disulfide | Lab | <5 | 624/8260 | 5 |
| Carbon tetrachloride | Lab | <1 | 624/8260 | 1 |
| Chlorobenzene | Lab | <1 | 624/8260 | 1 |
| Chloroethane | Lab | <5 | 624/8260 | 5 |
| Chloroform | Lab | 3 | 624/8260 | 1 |
| Chloromethane | Lab | <5 | 624/8260 | 5 |
| Chlorotoluene | Lab | <1 | 624/8260 | 1 |
| Cis-1,2-dichloroethylene | Lab | <1 | 624/8260 | 1 |
| Cis-1,3-dichloropropene | Lab | <1 | 624/8260 | 1 |
| Cyclohexane | Lab | <1 | 624/8260 | 1 |
| Dibromochloromethane | Lab | <1 | 624/8260 | 1 |
| Ethyl acetate | Lab | <2 | 624/8260 | 2 |
| Ethyl ether | Lab | <2 | 624/8260 | 2 |
| Ethylbenzene | Lab | <1 | 624/8260 | 1 |
| Ethylene dibromide | Lab | <1 | 624/8260 | 1 |
| Freon-tf | Lab | <1 | 624/8260 | 1 |
| Methylene chloride | Lab | <5 | 624/8260 | 5 |
| Styrene | Lab | <1 | 624/8260 | 1 |
| Tetrachloroethylene | Lab | <1 | 624/8260 | 1 |
| Tetrahydrofuran | Lab | <5 | 624/8260 | 5 |
| Toluene | Lab | <1 | 624/8260 | 1 |
| Total xylenes | Lab | <1 | 624/8260 | 1 |
| Trans-1,2-dichloroethylene | Lab | <1 | 624/8260 | 1 |
| Trans-1,3-dichloropropene | Lab | <1 | 624/8260 | 1 |
| Trichloroethylene | Lab | <1 | 624/8260 | 1 |
| Trichlorofluoromethane | Lab | <1 | 624/8260 | 1 |
| Vinyl acetate | Lab | <5 | 624/8260 | 5 |
| Vinyl chloride | Lab | <5 | 624/8260 | 5 |
| FLOW | | ~2 gpm | | |
| SIZE OF STORM | | 0.63 inches | | |

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ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 6A - FIELD DUPLICATE

DATE AND TIME OF SAMPLE: 19 September 1995;1706 TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Volatile Organics (µg/L) | | | | |
| 1,1,1-Trichloroethane | Lab | <1 | 624/8260 | 1 |
| 1,1,2,2-Tetrachloroethane | Lab | <1 | 624/8260 | 1 |
| 1,1,2-Trichloroethane | Lab | <1 | 624/8260 | 1 |
| 1,1-Dichloroethane | Lab | <1 | 624/8260 | 1 |
| 1,1-Dichloroethylene | Lab | <1 | 624/8260 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | 624/8260 | 1 |
| 1,2-Dichloroethane | Lab | <1 | 624/8260 | 1 |
| 1,2-Dichloropropene | Lab | <1 | 624/8260 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | 624/8260 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | 624/8260 | 1 |
| 2-Butanone (mek) | Lab | <3 | 624/8260 | 5 |
| 2-Chloroethyl vinyl ether | Lab | <2 | 624/8260 | 2 |
| 2-Hexanone | Lab | <5 | 624/8260 | 5 |
| 2-Nitropropane | Lab | <2 | 624/8260 | 2 |
| 4-Methyl-2-pentanone (mibk) | Lab | <5 | 624/8260 | 5 |
| Acetone | Lab | 20 | 624/8260 | 1 |
| Benzene | Lab | <1 | 624/8260 | 1 |
| Bromodichloromethane | Lab | <1 | 624/8260 | 1 |
| Bromoform | Lab | <1 | 624/8260 | 1 |
| Bromomethane | Lab | <5 | 624/8260 | 5 |
| Carbon disulfide | Lab | <5 | 624/8260 | 5 |
| Carbon tetrachloride | Lab | <1 | 624/8260 | 1 |
| Chlorobenzene | Lab | <1 | 624/8260 | 1 |
| Chloroethane | Lab | <5 | 624/8260 | 5 |
| Chloroform | Lab | <1 | 624/8260 | 1 |
| Chloromethane | Lab | <5 | 624/8260 | 5 |
| Chlorotoluene | Lab | <1 | 624/8260 | 1 |
| Cis-1,2-dichloroethylene | Lab | <1 | 624/8260 | 1 |
| Cis-1,3-dichloropropene | Lab | <1 | 624/8260 | 1 |
| Cyclohexane | Lab | <1 | 624/8260 | 1 |
| Dibromochloromethane | Lab | <1 | 624/8260 | 1 |
| Ethyl acetate | Lab | <2 | 624/8260 | 2 |
| Ethyl ether | Lab | <2 | 624/8260 | 2 |
| Ethylbenzene | Lab | <1 | 624/8260 | 1 |
| Ethylene dibromide | Lab | <1 | 624/8260 | 1 |
| Freon-tf | Lab | <1 | 624/8260 | 1 |
| Methylene chloride | Lab | <5 | 624/8260 | 5 |
| Styrene | Lab | <1 | 624/8260 | 1 |
| Tetrachloroethylene | Lab | <1 | 624/8260 | 1 |
| Tetrahydrofuran | Lab | <5 | 624/8260 | 5 |
| Toluene | Lab | <1 | 624/8260 | 1 |
| Total xylenes | Lab | <1 | 624/8260 | 1 |
| Trans-1,2-dichloroethylene | Lab | <1 | 624/8260 | 1 |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 6A - FIELD DUPLICATE

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Trans-1,3-dichloropropene | Lab | <1 | 624/8260 | 1 |
| Trichloroethylene | Lab | <1 | 624/8260 | 1 |
| Trichlorofluoromethane | Lab | <1 | 624/8260 | 1 |
| Vinyl acetate | Lab | <5 | 624/8260 | 5 |
| Vinyl chloride | Lab | <5 | 624/8260 | 5 |
| FLOW | | ~2 gpm | | |
| SIZE OF STORM | | 0.63 inches | | |

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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
QA SPIKE

DATE AND TIME OF SAMPLE: 23 December 1995 — TIME DISCHARGE STARTED: N/A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Metals (mg/L) | | | | |
| Antimony | Lab | <0.001 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | <0.003 | EPA 200.8 | 0.0005 |
| Barium | Lab | <0.005 | EPA 200.8 | 0.0005 |
| Beryllium | Lab | <0.01 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | <0.007 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.02 | EPA 200.8 | 0.007 |
| Cobalt | Lab | <0.002 | EPA 200.8 | 0.0001 |
| Copper | Lab | 1.08 | EPA 200.8 | 0.0004 |
| Lead | Lab | 0.049 | EPA 200.8 | 0.0002 |
| Mercury | Lab | <0.004 | EPA 200.8 | 0.0001 |
| Molybdenum | Lab | <0.005 | EPA 200.8 | 0.0001 |
| Nickel | Lab | <0.01 | EPA 200.8 | 0.0002 |
| Selenium | Lab | <0.07 | EPA 200.8 | 0.001 |
| Silver | Lab | <0.001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | <0.01 | EPA 200.8 | 0.0003 |
| Zinc | Lab | <0.03 | EPA 200.8 | 0.01 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | 58 | EPA 602 | 0.2 |
| Ethylbenzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylenes | Lab | 46 | EPA 602 | 0.4 |
| Semi-Volatile Organics (µg/L) | | | | |
| 1,2,4-Trichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 2,4,5-Trichlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4,6-Trichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dimethylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dinitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2,6-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chloronaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Methylnaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 2-Nitrophenol | Lab | <1 | EPA 625/8270 | 1 |
| 3,3'-Dichlorobenzidine | Lab | <1 | EPA 625/8270 | 1 |
| 3-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 3-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |

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1995-1996

FORM 4 - SAMPLING RESULTS
QA SPIKE

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| 4,6-Dinitro-2-Methylphenol | Lab | <5 | EPA 625/8270 | 5 |
| 4-Bromophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloro-3-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloroaniline | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chlorophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4-Nitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| Acenaphthene | Lab | <1 | EPA 625/8270 | 1 |
| Acenaphthylene | Lab | <1 | EPA 625/8270 | 1 |
| Aniline | Lab | <1 | EPA 625/8270 | 1 |
| Anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Azobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Benzidine | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(b & k)fluoranthenes | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(g,h,i)perylene | Lab | <1 | EPA 625/8270 | 1 |
| Benzoic acid | Lab | <5 | EPA 625/8270 | 5 |
| Benzyl alcohol | Lab | <5 | EPA 625/8270 | 5 |
| Bis(2-chloroethoxy)methane | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroethyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroisopropyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-ethylhexyl)phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Butyl benzyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Chrysene | Lab | <1 | EPA 625/8270 | 1 |
| D i-n-butyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-octyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzo(a,h)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzofuran | Lab | <1 | EPA 625/8270 | 1 |
| Diethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dimethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Fluoranthene | Lab | <1 | EPA 625/8270 | 1 |
| Fluorene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobutadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorocyclopentadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachloroethane | Lab | <1 | EPA 625/8270 | 1 |
| Indeno(1,2,3-cd)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Isophorone | Lab | <1 | EPA 625/8270 | 1 |
| N-Nitrosodiphenylamine ** | Lab | <1 | EPA 625/8270 | 1 |
| N-Nitrosodipropylamine | Lab | <1 | EPA 625/8270 | 1 |
| Naphthalene | Lab | 18 | EPA 625/8270 | 1 |
| Nitrobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Pentachlorophenol | Lab | <5 | EPA 625/8270 | 5 |

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ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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FORM 4 - SAMPLING RESULTS
QA SPIKE

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Phenanthrene | Lab | 18 | EPA 625/8270 | 1 |
| Phenol | Lab | <1 | EPA 625/8270 | 1 |
| Pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Pyridine | Lab | <1 | EPA 625/8270 | 1 |
| FLOW | | N/A | | |
| SIZE OF STORM | | N/A | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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## FORM 4 - SAMPLING RESULTS
## STATION 9A

DATE AND TIME OF SAMPLE: 19 December 1995;1456 TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.62 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 21 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 0.56 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.2 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 2 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 39.1 | ASTM D2579 M | 0.1 |
| **Metals (mg/L)** | | | | |
| Antimony | Lab | 0.0036 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0035 | EPA 200.8 | 0.0005 |
| Barium | Lab | 0.077 | EPA 200.8 | 0.0005 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0013 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.007 | EPA 200.8 | 0.007 |
| Cobalt | Lab | 0.0022 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.082 | EPA 200.8 | 0.0004 |
| Lead | Lab | 0.053 | EPA 200.8 | 0.0002 |
| Mercury | Lab | 0.0003 | EPA 200.8 | 0.0001 |
| Molybdenum | Lab | 0.012 | EPA 200.8 | 0.0001 |
| Nickel | Lab | 0.018 | EPA 200.8 | 0.0002 |
| Selenium | Lab | 0.003 | EPA 200.8 | 0.001 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.018 | EPA 200.8 | 0.0003 |
| Zinc | Lab | 0.4 | EPA 200.8 | 0.01 |
| **BTEX (µg/L)** | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Ethylbenzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylenes | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | 2 L/min | | |
| SIZE OF STORM | | 0.63 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

## FORM 4 - SAMPLING RESULTS
## STATION 10A

DATE AND TIME OF SAMPLE: 13 December 1995;1442

TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.45 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 7.2 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 4.33 | ISE | 0.1 |
| Salinity (ppt) | Lab | 2.5 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 3 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 30.1 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0014 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0065 | EPA 200.8 | 0.0005 |
| Barium | Lab | 0.262 | EPA 200.8 | 0.0005 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0021 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.009 | EPA 200.8 | 0.007 |
| Cobalt | Lab | 0.0015 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.038 | EPA 200.8 | 0.0004 |
| Lead | Lab | 0.01 | EPA 200.8 | 0.0002 |
| Mercury | Lab | 0.0004 | EPA 200.8 | 0.0001 |
| Molybdenum | Lab | 0.0078 | EPA 200.8 | 0.0001 |
| Nickel | Lab | 0.017 | EPA 200.8 | 0.0002 |
| Selenium | Lab | 0.02 | EPA 200.8 | 0.001 |
| Silver | Lab | 0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.019 | EPA 200.8 | 0.0003 |
| Zinc | Lab | 0.56 | EPA 200.8 | 0.01 |
| FLOW | | 0.5 gal/min | | |
| SIZE OF STORM | | 0.63 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

## FORM 4 - SAMPLING RESULTS
## STATION 11A

DATE AND TIME OF SAMPLE: 13 December 1995,1835 TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.5 | ISE | 0.1 |
| pH (Field Duplicate) | Lab | 7.5 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 62 | EPA 160.2 | 5.0 |
| Total Suspended Solids (mg/L) (Field Duplicate) | Lab | 84 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 0.3 | ISE | 0.1 |
| Conductivity (mS/cm) (Field Duplicate) | Lab | 0.4 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.1 | ISE | 0.1 |
| Salinity (ppt) (Field Duplicate) | Lab | 0.1 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 9.2 | EPA 418.1 | 0.4 |
| Total recoverable petroleum hydrocarbons (mg/L) (Field Duplicate) | Lab | 9.8 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 64.7 | ASTM D2579 M | 0.1 |
| MBAS (mg/L) | Lab | <5 | 425.1 | 5 |
| MBAS (mg/L) (Field Duplicate) | Lab | 5 | 425.1 | 5 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Ethylbenzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | 1.4 | EPA 602 | 0.2 |
| Total xylenes | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | ~12 L/hr | | |
| SIZE OF STORM | | 0.53 inches | | |

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R0062118

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 17A

DATE AND TIME OF SAMPLE: 13 December 1995;1744 TIME DISCHARGE STARTED: ~1400 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.9 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 0.4 | EPA 160.2 | 5.0 |
| Conductivity (mS/cm) | Lab | 0.4 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.1 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 3 | EPA 418.1 | 0.4 |
| Total organic carbon (mg/L) | Lab | 26.7 | ASTM D2579 M | 0.1 |
| FLOW | | ~2 L/hr | | |
| SIZE OF STORM | | 0.63 inches | | |

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000279

R0062119

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

VOL 17

000280

# FORM 4

**State of California & State Water Resources Control Board**
**Annual Report**
**for**
**Storm Water Discharges Associated with Industrial Activities**

**SAMPLING RESULTS**
**JANUARY 1996**

R0062120

State of California
STATE WATER RESOURCES CONTROL BOARD

*1995-1996*
# ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITY

## FORM 4 - SAMPLING RESULTS

DISCHARGE POINT:_____

DATE AND TIME OF SAMPLE:_____ TIME DISCHARGE STARTED:_____

| CONSTITUENT TESTED | TESTED BY: LAB/SELF[1] | RESULTS [2][3] | TEST METHOD USED[4] | DETECTION LIMIT |
|---|---|---|---|---|
| pH | | | | |
| TOTAL SUSPENDED SOLIDS | | | | |
| SPECIFIC CONDUCTANCE | | umhos/cm | | |
| OIL & GREASE | | mg/l | | |
| TOTAL ORGANIC CARBON | | mg/l | | |
| ADDITIONAL POLLUTANTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| FLOW [5] | | gallons | | |
| SIZE OF STORM (IF AVAILABLE) | | inches | | |

See following pages.

(1) If testing was done by a certified laboratory, indicate "lab"; otherwise, indicate "self".
(2) If analytical results indicate a value less than the detection limit (or non detect), show the value as less than the numerical value of the detection limit.
(3) If you did not analyze for a particular constituent, do not report "0". Instead leave the appropriate box blank.
(4) Indicate the test method used to determine result. In cases where analysis was conducted in the field, using portable analyzers (portable pH meters, portable EC meters, etc.), indicate with an "A"
(5) Dischargers subject to the Santa Clara County General Permit are required to provide estimates or calculations of the volume of storm water discharged from each point. Describe, on a separate sheet, how the flow measurement was calculated.

Name of person collecting sample: Eric Lindsay Title: Technical Coordinator

If analysis conducted by certified laboratory, enter name of laboratory: West Coast Analytical Service, Inc.

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 10A

DATE AND TIME OF SAMPLE: 31 January 1996; 0848 TIME DISCHARGE STARTED: >0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.6 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 12 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.65 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.4 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 11 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.001 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0021 | EPA 200.8 | 0.0002 |
| Barium | Lab | 0.072 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0022 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0004 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0293 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0052 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0037 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0049 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.011 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.462 | EPA 200.8 | 0.006 |
| FLOW | | 15 L/m.n. | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062122

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 11A - FIELD DUPLICATE

DATE AND TIME OF SAMPLE: 31 January 1996/ 1300

TIME DISCHARGE STARTED: 0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Surfactants (MBAS) | Lab | 0.19 | 425.1 | 0.05 |
| FLOW | | 71,000 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062123

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 11A

DATE AND TIME OF SAMPLE: 31 January 1996; 1300 TIME DISCHARGE STARTED: 0900 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.7 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 130 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.05 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 4.1 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 34.4 | ASTM D2579 M | 0.1 |
| Surfactants (MBAS) | Lab | 0.2 | 425.1 | 0.05 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 86 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | 71,000 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 12A

DATE AND TIME OF SAMPLE: 31 January 1996; 1320

TIME DISCHARGE STARTED: 0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.1 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 410 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.02 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 1 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 35.7 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0115 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0008 | EPA 200.8 | 0.0001 |
| Barium | Lab | 0.069 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0017 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.008 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0011 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0453 | EPA 200.8 | 0.0008 |
| Lead | Lab | 0.0712 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0011 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0051 | EPA 200.8 | 0.0035 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.011 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.485 | EPA 200.8 | 0.005 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 88 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | 500 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 12B

DATE AND TIME OF SAMPLE: 31 January 1996; 1308 — TIME DISCHARGE STARTED: 0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.8 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 200 | EPA 160.2 | 1 |
| Total Suspended Solids (mg/L) | Lab | 210 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.06 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 2 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 36.3 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0015 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0032 | EPA 200.8 | 0.0001 |
| Barium | Lab | 0.259 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0021 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.016 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0059 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0456 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0573 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0018 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0126 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.021 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.465 | EPA 200.8 | 0.006 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 89 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| Total Petroleum Hydrocarbons | | | | |
| Diesel fuel | Lab | <0.5 | 8015M | 0.5 |
| Gasoline | Lab | <0.5 | 8015M | 0.5 |
| Heavy hydrocarbons | Lab | <5 | 8015M | 5 |
| Hexadecane | Lab | 72 | 8015M | 0 |
| Kerosene | Lab | <0.5 | 8015M | 0.5 |
| Mineral spirits | Lab | <0.5 | 8015M | 0.5 |
| FLOW | | 71,000 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062126

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FORM 4 - SAMPLING RESULTS
STATION 13A

DATE AND TIME OF SAMPLE: 31 January 1996; 1315 TIME DISCHARGE STARTED: 0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.7 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 230 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.06 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 30.9 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0011 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0035 | EPA 200.8 | 0.0001 |
| Barium | Lab | 0.244 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0015 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.014 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0051 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.3414 | EPA 200.8 | 0.0008 |
| Lead | Lab | 0.0427 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0014 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0129 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.024 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.548 | EPA 200.8 | 0.006 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 86 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | 500 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 14A

DATE AND TIME OF SAMPLE: 31 January 1996; 1255 TIME DISCHARGE STARTED: 0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.4 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 360 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.06 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 225.8 | ASTM D2579 M | 0.1 |
| Total Petroleum Hydrocarbons | | | | |
| Diesel fuel | Lab | <0.5 | 8015M | 0.5 |
| Gasoline | Lab | <0.5 | 8015M | 0.5 |
| Heavy hydrocarbons | Lab | <5 | 8015M | 5 |
| Hexadecane | Lab | 71 | 8015M | 0 |
| Kerosene | Lab | <0.5 | 8015M | 0.5 |
| Mineral spirits | Lab | <0.5 | 8015M | 0.5 |
| FLOW | | 500 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 18A

DATE AND TIME OF SAMPLE: 31 January 1996; 0600

TIME DISCHARGE STARTED: 0700 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.5 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 60 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.79 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.04 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 8.4 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 36.6 | ASTM D2579 M | 0.1 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 97 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| Total Petroleum Hydrocarbons | | | | |
| Diesel fuel | Lab | 10 | 8015M | 0.5 |
| Gasoline | Lab | <0.5 | 8015M | 0.5 |
| Heavy hydrocarbons | Lab | <5 | 8015M | 5 |
| Hexadecane | Lab | 84 | 8015M | 0 |
| Kerosene | Lab | <0.5 | 8015M | 0.5 |
| Mineral spirits | Lab | <0.5 | 8015M | 0.5 |
| FLOW | | ~4 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 16A

DATE AND TIME OF SAMPLE: 31 January 1996; 0841 TIME DISCHARGE STARTED: 0700 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.8 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 12 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 37.5 | ISE | 0.1 |
| Salinity (ppt) | Lab | 26.8 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 13.1 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0194 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | <0.02 | EPA 200.8 | 0.02 |
| Barium | Lab | 0.128 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0021 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.006 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.8016 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0201 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0044 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0037 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0566 | EPA 200.8 | 0.0005 |
| Selenium | Lab | 0.012 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | <0.01 | EPA 200.8 | 0.01 |
| Zinc | Lab | 0.291 | EPA 200.8 | 0.006 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 90 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | 10 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 17A - FIELD DUPLICATE

DATE AND TIME OF SAMPLE: 31 January 1996; 0856

TIME DISCHARGE STARTED: 0700 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 10 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.14 | ISE | 0.1 |
| Salinity (pot) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 11.7 | ASTM D2579 M | 0.1 |
| FLOW | | 10 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 17A

DATE AND TIME OF SAMPLE: 31 January 1996; 0856 TIME DISCHARGE STARTED: 0700 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 10 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.29 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 11.3 | ASTM D2579 M | 0.1 |
| FLC.: | | 10 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 18A

DATE AND TIME OF SAMPLE: 31 January 1996; 1245

TIME DISCHARGE STARTED: >0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.6 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 62 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.05 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 0.6 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 22.1 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0007 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0017 | EPA 200.8 | 0.0001 |
| Barium | Lab | 0.026 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0014 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0009 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0216 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.036 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0019 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0048 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.01 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.215 | EPA 200.8 | 0.006 |
| BTEX (ug/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 87 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | 300 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 19A

DATE AND TIME OF SAMPLE: 31 January 1996; 0915 TIME DISCHARGE STARTED: >0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 6 | ISE | 0.1 |
| Conductivity (mS/cm) | Lab | 0.13 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 10.3 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0009 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0035 | EPA 200.8 | 0.0004 |
| Barium | Lab | 0.01 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0301 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0092 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0043 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.003 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.009 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.035 | EPA 200.8 | 0.006 |
| FLOW | | 50 L/min | | |
| SIZE OF STORM | | 1.29 inches | | |

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FORM 4 - SAMPLING RESULTS
STATION 1A

DATE AND TIME OF SAMPLE: 31 January 1996; 1124 — TIME DISCHARGE STARTED: >0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.3 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 70 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 5.62 | ISE | 0.1 |
| Salinity (ppt) | Lab | 3 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 21.6 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0016 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.007 | EPA 200.8 | 0.001 |
| Barium | Lab | 0.065 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0016 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.007 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0016 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0481 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0373 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0045 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0276 | EPA 200.8 | 0.0005 |
| Selenium | Lab | 0.019 | EPA 200.8 | 0.002 |
| Silver | Lab | 0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.01 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.283 | EPA 200.8 | 0.005 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 91 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| Volatile Organics (µg/L) | | | | |
| Acetone | Lab | <5 | EPA 624/8260 | 5 |
| Benzene | Lab | <1 | EPA 624/8260 | 1 |
| Bromodichloromethane | Lab | <1 | EPA 624/8260 | 1 |
| Bromofluorobenzene | Lab | 94 | EPA 624/8260 | 0 |
| Bromoform | Lab | <1 | EPA 624/8260 | 1 |
| Bromomethane | Lab | <5 | EPA 624/8260 | 5 |
| Carbon disulfide | Lab | <5 | EPA 624/8260 | 5 |
| Carbon tetrachloride | Lab | <1 | EPA 624/8260 | 1 |
| Chlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| Chloroethane | Lab | <5 | EPA 624/8260 | 5 |
| Chloroform | Lab | <1 | EPA 624/8260 | 1 |
| Chloromethane | Lab | <5 | EPA 624/8260 | 5 |
| Cis-1,2-dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Cis-1,3-dichloropropene | Lab | <1 | EPA 624/8260 | 1 |
| Cyclohexane | Lab | <1 | EPA 624/8260 | 1 |
| Dibromochloromethane | Lab | <1 | EPA 624/8260 | 1 |
| Ethyl acetate | Lab | <2 | EPA 624/8260 | 2 |
| Ethyl ether | Lab | <2 | EPA 624/8260 | 2 |
| Ethylbenzene | Lab | <1 | EPA 624/8260 | 1 |
| Ethylene dibromide | Lab | <1 | EPA 624/8260 | 1 |

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FORM 4 - SAMPLING RESULTS
STATION 1A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Freon-tf | Lab | <1 | EPA 624/8260 | 1 |
| Methylene chloride | Lab | <5 | EPA 624/8260 | 5 |
| Styrene | Lab | <1 | EPA 624/8260 | 1 |
| Tetrachloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Tetrahydrofuran | Lab | <5 | EPA 624/8260 | 5 |
| Toluene | Lab | <1 | EPA 624/8260 | 1 |
| Toluene-d8 | Lab | 99 | EPA 624/8260 | 0 |
| Total xylenes | Lab | <1 | EPA 624/8260 | 1 |
| Trans-1,2-dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Trans-1,3-dichloropropene | Lab | <1 | EPA 624/8260 | 1 |
| Trichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Trichlorofluoromethane | Lab | <1 | EPA 624/8260 | 1 |
| Vinyl acetate | Lab | <5 | EPA 624/8260 | 5 |
| Vinyl chloride | Lab | <5 | EPA 624/8260 | 5 |
| 1,1,1-Trichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1,2,2-Tetrachloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1,2-Trichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1-Dichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1-Dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichloroethane-d4 | Lab | 101 | EPA 624/8260 | 0 |
| 1,2-Dichloropropane | Lab | <1 | EPA 624/8260 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 2-Butanone (mek) | Lab | <5 | EPA 624/8260 | 5 |
| 2-Chloroethyl-vinyl-ether | Lab | <2 | EPA 624/8260 | 2 |
| 2-Hexanone | Lab | <5 | EPA 624/8260 | 5 |
| 2-Nitropropane | Lab | <2 | EPA 624/8260 | 2 |
| 4-Methyl-2-pentanone (mibk) | Lab | <5 | EPA 624/8260 | 5 |
| Total Petroleum Hydrocarbons | | | | |
| Diesel fuel | Lab | <0.5 | 8015M | 0.5 |
| Gasoline | Lab | <0.5 | 8015M | 0.5 |
| Heavy hydrocarbons | Lab | <5 | 8015M | 5 |
| Hexadecane | Lab | 87 | 8015M | 0 |
| Kerosene | Lab | <0.5 | 8015M | 0.5 |
| Mineral spirits | Lab | <0.5 | 8015M | 0.5 |
| FLOW | | submerged | | |
| SIZE OF STORM | | 1.29 inches | | |

VOL 17 000296

R0062136

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 29A

DATE AND TIME OF SAMPLE: 31 January 1996; 1212

TIME DISCHARGE STARTED: >1100 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.5 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 420 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.08 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 1 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 34.3 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0014 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0117 | EPA 200.8 | 0.0001 |
| Barium | Lab | 0.555 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0006 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0016 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.035 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0103 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0577 | EPA 200.8 | 0.0008 |
| Lead | Lab | 0.07 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0022 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0258 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | 0.0003 | EPA 200.8 | 0.0001 |
| Thallium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.058 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.445 | EPA 200.8 | 0.006 |
| FLOW | | 500 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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000297

R0062137

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 2A - FIELD DUPLICATE

DATE AND TIME OF SAMPLE: 31 January 1996; 1058 TIME DISCHARGE STARTED: >0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.6 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 130 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 1.15 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.5 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 1 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 44.7 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.001/, | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0068 | EPA 200.8 | 0.0002 |
| Barium | Lab | 0.175 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0021 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.01 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.004 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0551 | EPA 200.8 | 0.0008 |
| Lead | Lab | 0.0597 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0068 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0218 | EPA 200.8 | 0.0005 |
| Selenium | Lab | 0.003 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.02 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.438 | EPA 200.8 | 0.006 |
| BTEX (ug/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 94 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | 0.6 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | 10 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 2A

DATE AND TIME OF SAMPLE: 31 January 1996; 1058

TIME DISCHARGE STARTED: >0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.6 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 140 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 1.15 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.5 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 1 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 42.2 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0017 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0071 | EPA 200.8 | 0.0002 |
| Barium | Lab | 0.173 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0021 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.011 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.004 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0579 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0591 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0071 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0223 | EPA 200.8 | 0.0005 |
| Selenium | Lab | 0.004 | EPA 200.8 | 0.002 |
| Silver | Lab | 0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.02 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.449 | EPA 200.8 | 0.006 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 94 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | 0.6 | EPA 602 | 0.5 |
| FLOW | | 10 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062139

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 3A

DATE AND TIME OF SAMPLE: 31 January 1996; 1048

TIME DISCHARGE STARTED: >0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.1 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 4 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 1.81 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.9 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 4.3 | ASTM D2579 M | 0.1 |
| FLOW | | 5 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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000300

R0062140

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 3RW

DATE AND TIME OF SAMPLE: 31 January 1996; 1435 TIME DISCHARGE STARTED: >1100 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.8 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 50 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 34.4 | ISE | 0.1 |
| Salinity (ppt) | Lab | 24.6 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 0.8 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 7.8 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0119 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0039 | EPA 200.8 | 0.0004 |
| Barium | Lab | 0.019 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0009 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0079 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0032 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.011 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0106 | EPA 200.8 | 0.0005 |
| Silver | Lab | 0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | <0.02 | EPA 200.8 | 0.02 |
| Zinc | Lab | 0.041 | EPA 200.8 | 0.006 |
| FLOW | | NA | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062141

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 4A - FIELD DUPLICATE

DATE AND TIME OF SAMPLE: 31 January 1996; 1025

TIME DISCHARGE STARTED: 0830 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Semi-Volatile Organics (µg/L) | | | | |
| Acenaphthene | Lab | <1 | EPA 625/8270 | 1 |
| Acenaphthylene | Lab | <1 | EPA 625/8270 | 1 |
| Aniline | Lab | <1 | EPA 625/8270 | 1 |
| Anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Azobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Benzidine | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(b & k)fluoranthenes | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(g,h,i)perylene | Lab | <1 | EPA 625/8270 | 1 |
| Benzoic acid | Lab | <5 | EPA 625/8270 | 5 |
| Benzyl alcohol | Lab | <5 | EPA 625/8270 | 5 |
| Bis(2-chloroethoxy)methane | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroethyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroisopropyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-ethylhexyl)phthalate | Lab | 4 | EPA 625/8270 | 1 |
| Butyl benzyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Chrysene | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-butyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-octyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzo(a,h)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzofuran | Lab | <1 | EPA 625/8270 | 1 |
| Diethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dimethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Fluoranthene | Lab | <1 | EPA 625/8270 | 1 |
| Fluorene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobutadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorocyclopentadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachloroethane | Lab | <1 | EPA 625/8270 | 1 |
| Indeno(1,2,3-cd)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Isophorone | Lab | <1 | EPA 625/8270 | 1 |
| N-nitrosodiphenylamine ** | Lab | <1 | EPA 625/8270 | 1 |
| N-nitrosodipropylamine | Lab | <1 | EPA 625/8270 | 1 |
| Naphthalene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene-d5 | Lab | 101.601 | EPA 625/8270 | 1 |
| Pentachlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| Phenanthrene | Lab | <1 | EPA 625/8270 | 1 |
| Phenol | Lab | <1 | EPA 625/8270 | 1 |
| Phenol-d5 | Lab | 88.796 | EPA 625/8270 | 1 |
| Pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Pyridine | Lab | <1 | EPA 625/8270 | 1 |
| Terphenyl-d14 | Lab | 116.621 | EPA 625/8270 | 1 |
| 1,2,4-Trichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 2,4,5-Trichlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4,6-Tribromophenol | Lab | 115.875 | EPA 625/8270 | 1 |
| 2,4,6-Trichlorophenol | Lab | <1 | EPA 625/8270 | 1 |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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FORM 4 - SAMPLING RESULTS
STATION 4A - FIELD DUPLICATE

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| 2,4-Dichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dimethylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dinitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2,6-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chloronaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Fluorobiphenyl | Lab | 91.532 | EPA 625/8270 | - |
| 2-Fluorophenol | Lab | 74.699 | EPA 625/8270 | - |
| 2-Methylnaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 2-Nitrophenol | Lab | <1 | EPA 625/8270 | 1 |
| 3,3'-Dichlorobenzidine | Lab | <1 | EPA 625/8270 | 1 |
| 3-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 3-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4,6-Dinitro-2-methylphenol | Lab | <5 | EPA 625/8270 | 5 |
| 4-Bromophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloro-3-methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloroaniline | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chlorophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4-Nitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| FLOW | | 2 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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000303

R0062143

**CALIFORNIA STATE WATER RESOURCES CONTROL BOARD**
**ANNUAL REPORT FOR**
**STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY**
**1995-1996**

**FORM 4 - SAMPLING RESULTS**
**STATION 4A**

DATE AND TIME OF SAMPLE: 31 January [illegible]; 1625

TIME DISCHARGE STARTED: 0830 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.6 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 80 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 10.97 | ISE | 0.1 |
| Salinity (ppt) | Lab | 6.2 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 20.4 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0023 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.018 | EPA 200.8 | 0.003 |
| Barium | Lab | 0.112 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0005 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0019 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0242 | EPA 200.8 | 0.0005 |
| Lead | Lab | 0.0165 | EPA 200.8 | 0.0001 |
| Mercury | Lab | 0.0003 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0075 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.008 | EPA 200.8 | 0.0005 |
| Selenium | Lab | 0.037 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.009 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.168 | EPA 200.8 | 0.005 |
| Semi-Volatile Organics (µg/L) | | | | |
| Acenaphthene | Lab | <1 | EPA 625/8270 | 1 |
| Acenaphthylene | Lab | <1 | EPA 625/8270 | 1 |
| Aniline | Lab | <1 | EPA 625/8270 | 1 |
| Anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Azobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Benzidine | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(b & k)fluoranthenes | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(g,h,i)perylene | Lab | <1 | EPA 625/8270 | 1 |
| Benzoic acid | Lab | <5 | EPA 625/8270 | 5 |
| Benzyl alcohol | Lab | <5 | EPA 625/8270 | 5 |
| Bis(2-chloroethoxy)methane | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroethyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroisopropyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-ethylhexyl)phthalate | Lab | 4 | EPA 625/8270 | 1 |
| Butyl benzyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Chrysene | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-butyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-octyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzo(a,h)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzofuran | Lab | <1 | EPA 625/8270 | 1 |
| Diethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dimethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Fluoranthene | Lab | <1 | EPA 625/8270 | 1 |
| Fluorene | Lab | <1 | EPA 625/8270 | 1 |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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FORM 4 - SAMPLING RESULTS
STATION 4A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Hexachlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobutadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorocyclopentadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachloroethane | Lab | <1 | EPA 625/8270 | 1 |
| Indeno(1,2,3-cd)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Isophorone | Lab | <1 | EPA 625/8270 | 1 |
| N-nitrosodiphenylamine ** | Lab | <1 | EPA 625/8270 | 1 |
| N-nitrosodipropylamine | Lab | <1 | EPA 625/8270 | 1 |
| Naphthalene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene-d5 | Lab | 105.805 | EPA 625/8270 | - |
| Pentachlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| Phenanthrene | Lab | <1 | EPA 625/8270 | 1 |
| Phenol | Lab | <1 | EPA 625/8270 | 1 |
| Phenol-d5 | Lab | 97.431 | EPA 625/8270 | - |
| Pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Pyridine | Lab | <1 | EPA 625/8270 | 1 |
| Terphenyl-d14 | Lab | 129.589 | EPA 625/8270 | - |
| 1,2,4-Trichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 2,4,5-Trichlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4,6-Tribromophenol | Lab | 121.952 | EPA 625/8270 | - |
| 2,4,6-Trichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dimethylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dinitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2,6-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chloronaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Fluorobiphenyl | Lab | 100.397 | EPA 625/8270 | - |
| 2-Fluorophenol | Lab | 85.542 | EPA 625/8270 | - |
| 2-Methylnaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 2-Nitrophenol | Lab | <1 | EPA 625/8270 | 1 |
| 3,3'-Dichlorobenzidine | Lab | <1 | EPA 625/8270 | 1 |
| 3-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 3-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4,6-Dinitro-2-methylphenol | Lab | <5 | EPA 625/8270 | 5 |
| 4-Bromophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloro-3-methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloroaniline | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chlorophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4-Nitrophenol | Lab | <5 | EPA 625/8270 | 5 |

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ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 4A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Total Petroleum Hydrocarbons | | | | |
| Diesel fuel | Lab | <0.5 | 8015M | 0.5 |
| Gasoline | Lab | <0.5 | 8015M | 0.5 |
| Heavy hydrocarbons | Lab | <5 | 8015M | 5 |
| Hexadecane | Lab | 80 | 8015M | 0 |
| Kerosene | Lab | <0.5 | 8015M | 0.5 |
| Mineral spirits | Lab | <0.5 | 8015M | 0.5 |
| FLOW | | 2 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062146

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ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
SECTION 6A

DATE AND TIME OF SAMPLE: 31 January 1996; 1139

TIME DISCHARGE STARTED: >0800 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.1 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 160 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.17 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 48.6 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0028 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0073 | EPA 200.8 | 0.0001 |
| Barium | Lab | 0.279 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0027 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.025 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0055 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.109 | EPA 200.8 | 0.0008 |
| Lead | Lab | 0.14 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0042 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0235 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | 0.0004 | EPA 200.8 | 0.0001 |
| Thallium | Lab | 0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.043 | EPA 200.8 | 0.005 |
| Zinc | Lab | 1.26 | EPA 200.8 | 0.008 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 93 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| Semi-Volatile Organics (µg/L) | | | | |
| Acenaphthene | Lab | <1 | EPA 625/8270 | 1 |
| Acenaphthylene | Lab | <1 | EPA 625/8270 | 1 |
| Aniline | Lab | <1 | EPA 625/8270 | 1 |
| Anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Azobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Benzidine | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(b & k)fluoranthenes | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(g,h,i)perylene | Lab | <1 | EPA 625/8270 | 1 |
| Benzoic acid | Lab | 9 | EPA 625/8270 | 5 |
| Benzyl alcohol | Lab | <5 | EPA 625/8270 | 5 |
| Bis(2-chloroethoxy)methane | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroethyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroisopropyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-ethylhexyl)phthalate | Lab | 5 | EPA 625/8270 | 1 |
| Butyl benzyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Chrysene | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-butyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-octyl phthalate | Lab | <1 | EPA 625/8270 | 1 |

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1995-1996

FORM 4 - SAMPLING RESULTS
STATION 5A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Dibenzo(a,h)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzofuran | Lab | <1 | EPA 625/8270 | 1 |
| Diethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dimethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Fluoranthene | Lab | <1 | EPA 625/8270 | 1 |
| Fluorene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobutadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorocyclopentadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachloroethane | Lab | <1 | EPA 625/8270 | 1 |
| Indeno(1,2,3-cd)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Isophorone | Lab | <1 | EPA 625/8270 | 1 |
| N-nitrosodiphenylamine ** | Lab | <1 | EPA 625/8270 | 1 |
| N-nitrosodipropylamine | Lab | <1 | EPA 625/8270 | 1 |
| Naphthalene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene-d5 | Lab | 105.38 | EPA 625/8270 | . |
| Pentachlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| Phenanthrene | Lab | <1 | EPA 625/8270 | 1 |
| Phenol | Lab | 2 | EPA 625/8270 | 1 |
| Phenol-d5 | Lab | 105.43 | EPA 625/8270 | . |
| Pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Pyridine | Lab | <1 | EPA 625/8270 | 1 |
| Terphenyl-d14 | Lab | 124.709 | EPA 625/8270 | . |
| 1,2,4-Trichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 2,4,5-Trichlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4,6-Tribromophenol | Lab | 120.579 | EPA 625/8270 | . |
| 2,4,6-Trichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dimethylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dinitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2,6-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chloronaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Fluorobiphenyl | Lab | 101.702 | EPA 625/8270 | . |
| 2-Fluorophenol | Lab | 97.1 | EPA 625/8270 | . |
| 2-Methylnaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 2-Nitrophenol | Lab | <1 | EPA 625/8270 | 1 |
| 3,3'-Dichlorobenzidine | Lab | <1 | EPA 625/8270 | 1 |
| 3-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 3-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4,6-Dinitro-2-methylphenol | Lab | <5 | EPA 625/8270 | 5 |
| 4-Bromophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloro-3-methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloroaniline | Lab | <1 | EPA 625/8270 | 1 |

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FORM 4 - SAMPLING RESULTS
STATION 5A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| 4-Chlorophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4-Nitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| FLOW | | 500 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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FORM 4 - SAMPLING RESULTS
STATION 6A - FIELD DUPLICATE

DATE AND TIME OF SAMPLE: 31 January 1996; 0931

TIME DISCHARGE STARTED: 0700 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| **Metals (mg/L)** | | | | |
| Antimony | Lab | 0.0006 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0427 | EPA 200.8 | 0.0001 |
| Barium | Lab | 1.54 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0072 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0022 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.254 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0891 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.177 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.122 | EPA 200.8 | 0.0001 |
| Mercury | Lab | 0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0019 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.158 | EPA 200.8 | 0.0005 |
| Selenium | Lab | 0.006 | EPA 200.8 | 0.002 |
| Silver | Lab | 0.0004 | EPA 200.8 | 0.0001 |
| Thallium | Lab | 0.0026 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.509 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.652 | EPA 200.8 | 0.006 |
| **Volatile Organics (µg/L)** | | | | |
| Acetone | Lab | <5 | EPA 624/8260 | 5 |
| Benzene | Lab | <1 | EPA 624/8260 | 1 |
| Bromodichloromethane | Lab | <1 | EPA 624/8260 | 1 |
| Bromofluorobenzene | Lab | 94 | EPA 624/8260 | 0 |
| Bromoform | Lab | <1 | EPA 624/8260 | 1 |
| Bromomethane | Lab | <5 | EPA 624/8260 | 5 |
| Carbon disulfide | Lab | <5 | EPA 624/8260 | 5 |
| Carbon tetrachloride | Lab | <1 | EPA 624/8260 | 1 |
| Chlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| Chloroethane | Lab | <5 | EPA 624/8260 | 5 |
| Chloroform | Lab | <1 | EPA 624/8260 | 1 |
| Chloromethane | Lab | <5 | EPA 624/8260 | 5 |
| Cis-1,2-dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Cis-1,3-dichloropropene | Lab | <1 | EPA 624/8260 | 1 |
| Cyclohexane | Lab | <1 | EPA 624/8260 | 1 |
| Dibromochloromethane | Lab | <1 | EPA 624/8260 | 1 |
| Ethyl acetate | Lab | <2 | EPA 624/8260 | 2 |
| Ethyl ether | Lab | <2 | EPA 624/8260 | 2 |
| Ethylbenzene | Lab | <1 | EPA 624/8260 | 1 |
| Ethylene dibromide | Lab | <1 | EPA 624/8260 | 1 |
| Freon-tf | Lab | <1 | EPA 624/8260 | 1 |
| Methylene chloride | Lab | <5 | EPA 624/8260 | 5 |
| Styrene | Lab | <1 | EPA 624/8260 | 1 |
| Tetrachloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Tetrahydrofuran | Lab | <5 | EPA 624/8260 | 5 |
| Toluene | Lab | 2 | EPA 624/8260 | 1 |
| Toluene-d8 | Lab | 101 | EPA 624/8260 | 0 |
| Total xylenes | Lab | 2 | EPA 624/8260 | 1 |
| Trans-1,2-dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Trans-1,3-dichloropropene | Lab | <1 | EPA 624/8260 | 1 |
| Trichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Trichlorofluoromethane | Lab | <1 | EPA 624/8260 | 1 |
| Vinyl acetate | Lab | <5 | EPA 624/8260 | 5 |

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FORM 4 - SAMPLING RESULTS
STATION 6A - FIELD DUPLICATE

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Vinyl chloride | Lab | <5 | EPA 624/8260 | 5 |
| 1,1,1-Trichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1,2,2-Tetrachloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1,2-Trichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1-Dichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1-Dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichloroethane-d4 | Lab | 101 | EPA 624/8260 | 0 |
| 1,2-Dichloropropane | Lab | <1 | EPA 624/8260 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 2-Butanone (mek) | Lab | <5 | EPA 624/8260 | 5 |
| 2-Chloroethyl-vinyl-ether | Lab | <2 | EPA 624/8260 | 2 |
| 2-Hexanone | Lab | <5 | EPA 624/8260 | 5 |
| 2-Nitropropane | Lab | <2 | EPA 624/8260 | 2 |
| 4-Methyl-2-pentanone (mibk) | Lab | <5 | EPA 624/8260 | 5 |
| FLOW | | 250 L/min. | | |
| SIZE OF STORM | | 1.29 Inches | | |

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
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FORM 4 - SAMPLING RESULTS
STATION 6A

DATE AND TIME OF SAMPLE: 31 January 1996; 0931 TIME DISCHARGE STARTED: 0700 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.1 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 550 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.54 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.2 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | <0.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 46.5 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0086 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0385 | EPA 200.8 | 0.0002 |
| Barium | Lab | 1.53 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0072 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0022 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.248 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0894 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.176 | EPA 200.8 | 0.0005 |
| Lead | Lab | 0.12 | EPA 200.8 | 0.0001 |
| Mercury | Lab | 0.0003 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0018 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.156 | EPA 200.8 | 0.0005 |
| Selenium | Lab | 0.006 | EPA 200.8 | 0.002 |
| Silver | Lab | 0.0005 | EPA 200.8 | 0.0001 |
| Thallium | Lab | 0.0025 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.495 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.652 | EPA 200.8 | 0.006 |
| Volatile Organics (µg/L) | | | | |
| Acetone | Lab | <5 | EPA 624/8260 | 5 |
| Benzene | Lab | <1 | EPA 624/8260 | 1 |
| Bromodichloromethane | Lab | <1 | EPA 624/8260 | 1 |
| Bromofluorobenzene | Lab | 90 | EPA 624/8260 | 0 |
| Bromoform | Lab | <1 | EPA 624/8260 | 1 |
| Bromomethane | Lab | <5 | EPA 624/8260 | 5 |
| Carbon disulfide | Lab | 10 | EPA 624/8260 | 5 |
| Carbon tetrachloride | Lab | <1 | EPA 624/8260 | 1 |
| Chlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| Chloroethane | Lab | <5 | EPA 624/8260 | 5 |
| Chloroform | Lab | <1 | EPA 624/8260 | 1 |
| Chloromethane | Lab | <5 | EPA 624/8260 | 5 |
| Cis-1,2-dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Cis-1,3-dichloropropene | Lab | <1 | EPA 624/8260 | 1 |
| Cyclohexane | Lab | <1 | EPA 624/8260 | 1 |
| Dibromochloromethane | Lab | <1 | EPA 624/8260 | 1 |
| Ethyl acetate | Lab | <2 | EPA 624/8260 | 2 |
| Ethyl ether | Lab | <2 | EPA 624/8260 | 2 |
| Ethylbenzene | Lab | <1 | EPA 624/8260 | 1 |
| Ethylene dibromide | Lab | <1 | EPA 624/8260 | 1 |
| Freon-tf | Lab | <1 | EPA 624/8260 | 1 |
| Methylene chloride | Lab | <5 | EPA 624/8260 | 5 |
| Styrene | Lab | <1 | EPA 624/8260 | 1 |
| Tetrachloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Tetrahydrofuran | Lab | <5 | EPA 624/8260 | 5 |
| Toluene | Lab | 2 | EPA 624/8260 | 1 |

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FORM 4 - SAMPLING RESULTS
STATION 6A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Toluene-d8 | Lab | 102 | EPA 624/8260 | 0 |
| Total xylenes | Lab | 2 | EPA 624/8260 | 1 |
| Trans-1,2-dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Trans-1,3-dichloropropene | Lab | <1 | EPA 624/8260 | 1 |
| Trichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| Trichlorofluoromethane | Lab | <1 | EPA 624/8260 | 1 |
| Vinyl acetate | Lab | <5 | EPA 624/8260 | 5 |
| Vinyl chloride | Lab | <5 | EPA 624/8260 | 5 |
| 1,1,1-Trichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1,2,2-Tetrachloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1,2-Trichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1-Dichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,1-Dichloroethylene | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichloroethane | Lab | <1 | EPA 624/8260 | 1 |
| 1,2-Dichloroethane-d4 | Lab | 101 | EPA 624/8260 | 1 |
| 1,2-Dichloropropane | Lab | <1 | EPA 624/8260 | 0 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 624/8260 | 1 |
| 2-Butanone (mek) | Lab | <5 | EPA 624/8260 | 1 |
| 2-Chloroethyl-vinyl-ether | Lab | <2 | EPA 624/8260 | 5 |
| 2-Hexanone | Lab | <5 | EPA 624/8260 | 2 |
| 2-Nitropropane | Lab | <2 | EPA 624/8260 | 5 |
| 4-Methyl-2-pentanone (mibk) | Lab | <5 | EPA 624/8260 | 2 |
| FLOW | | 250 L/min. | | 5 |
| SIZE OF STORM | | 1.29 inches | | |

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R0062153

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 7A

DATE AND TIME OF SAMPLE: 31 January 1996; 1150

TIME DISCHARGE STARTED: >1000 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.2 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 1200 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.92 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.4 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 8 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 97.5 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0025 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0204 | EPA 200.8 | 0.0001 |
| Barium | Lab | 1.49 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0012 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.005 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.083 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0255 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.155 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.216 | EPA 200.8 | 0.0001 |
| Mercury | Lab | 0.0003 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0044 | EPA 200.8 | 0.0204 |
| Nickel | Lab | 0.0516 | EPA 200.8 | 0.0005 |
| Selenium | Lab | 0.003 | EPA 200.8 | 0.002 |
| Silver | Lab | 0.0004 | EPA 200.8 | 0.0001 |
| Thallium | Lab | 0.0005 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.13 | EPA 200.8 | 0.005 |
| Zinc | Lab | 1.06 | EPA 200.8 | 0.006 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 91 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| FLOW | | 300 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

VOL 17

000314

R0062154

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 8A

DATE AND TIME OF SAMPLE: 31 January 1996; 1159 TIME DISCHARGE STARTED: 1100 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 8.5 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 430 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.15 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 3.3 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 59.1 | ASTM D2579 M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.002 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0113 | EPA 200.8 | 0.0001 |
| Barium | Lab | 0.762 | EPA 200.8 | 0.001 |
| Beryllium | Lab | 0.0005 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0018 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.038 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0113 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.111 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.114 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0022 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0343 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | 0.0003 | EPA 200.8 | 0.0001 |
| Thallium | Lab | 0.0002 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.058 | EPA 200.8 | 0.005 |
| Zinc | Lab | 0.826 | EPA 200.8 | 0.008 |
| FLOW | | 300 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062155

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 6A - FIELD DUPLICATE

DATE AND TIME OF SAMPLE: 31 January 1996; 1006

TIME DISCHARGE STARTED: 0700 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Total Petroleum Hydrocarbons | | | | |
| Diesel fuel | Lab | <0.5 | 8015M | 0.5 |
| Gasoline | Lab | <0.5 | 8015M | 0.5 |
| Heavy hydrocarbons | Lab | <5 | 8015M | 5 |
| Hexadecane | Lab | 93 | 8015M | 0 |
| Kerosene | Lab | <0.5 | 8015M | 0.5 |
| Mineral spirits | Lab | <0.5 | 8015M | 0.5 |
| FLOW | | 20 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062156

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
STATION 9A

DATE AND TIME OF SAMPLE: 31 January 1996; 1008 TIME DISCHARGE STARTED: 0700 hrs

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| pH | Lab | 7.8 | ISE | 0.1 |
| Total Suspended Solids (mg/L) | Lab | 80 | EPA 160.2 | 1 |
| Conductivity (mS/cm) | Lab | 0.61 | ISE | 0.1 |
| Salinity (ppt) | Lab | 0.2 | ISE | 0.1 |
| Total recoverable petroleum hydrocarbons (mg/L) | Lab | 13 | EPA 418.1 | 0.3 |
| Total Organic Carbon (mg/L) | Lab | 36 | ASTM D2579M | 0.1 |
| Metals (mg/L) | | | | |
| Antimony | Lab | 0.0036 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | 0.0035 | EPA 200.8 | 0.0001 |
| Barium | Lab | 0.103 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | 0.0073 | EPA 200.8 | 0.0001 |
| Chromium | Lab | 0.006 | EPA 200.8 | 0.005 |
| Cobalt | Lab | 0.0025 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.0412 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0444 | EPA 200.8 | 0.0001 |
| Mercury | Lab | 0.0003 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | 0.0796 | EPA 200.8 | 0.0004 |
| Nickel | Lab | 0.0127 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | 0.011 | EPA 200.8 | 0.005 |
| Zinc | Lab | 1.98 | EPA 200.8 | 0.008 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | <0.2 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 86 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | <0.4 | EPA 602 | 0.4 |
| Total Petroleum Hydrocarbons | | | | |
| Diesel fuel | Lab | <0.5 | 8015M | 0.5 |
| Gasoline | Lab | <0.5 | 8015M | 0.5 |
| Heavy hydrocarbons | Lab | <5 | 8015M | 5 |
| Hexadecane | Lab | 79 | 8015M | 0 |
| Kerosene | Lab | <0.5 | 8015M | 0.5 |
| Mineral spirits | Lab | <0.5 | 8015M | 0.5 |
| FLOW | | 20 L/min. | | |
| SIZE OF STORM | | 1.29 inches | | |

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R0062157

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
QA SPIKE - REPLICATE QA1

DATE AND TIME OF SAMPLE: 31 January 1996 TIME DISCHARGE STARTED: N/A

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Metals (mg/L) | | | | |
| Antimony | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Barium | Lab | <0.001 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Cobalt | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Copper | Lab | 0.998 | EPA 200.8 | 0.0008 |
| Lead | Lab | 0.0513 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | <0.0004 | EPA 200.8 | 0.0004 |
| Nickel | Lab | <0.0005 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Zinc | Lab | <0.006 | EPA 200.8 | 0.006 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | 44 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 98 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | 48 | EPA 602 | 0.4 |
| Semi-Volatile Organics (µg/L) | | | | |
| Acenaphthene | Lab | <1 | EPA 625/8270 | 1 |
| Acenaphthylene | Lab | <1 | EPA 625/8270 | 1 |
| Aniline | Lab | <1 | EPA 625/8270 | 1 |
| Anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Azobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Benzidine | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(a)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(b & k)fluoranthenes | Lab | <1 | EPA 625/8270 | 1 |
| Benzo(g,h,i)perylene | Lab | <1 | EPA 625/8270 | 1 |
| Benzoic acid | Lab | <5 | EPA 625/8270 | 5 |
| Benzyl alcohol | Lab | <5 | EPA 625/8270 | 5 |
| Bis(2-chloroethoxy)methane | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroethyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-chloroisopropyl)ether | Lab | <1 | EPA 625/8270 | 1 |
| Bis(2-ethylhexyl)phthalate | Lab | 1 | EPA 625/8270 | 1 |
| Butyl benzyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Chrysene | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-butyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Di-n-octyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzo(a,h)anthracene | Lab | <1 | EPA 625/8270 | 1 |
| Dibenzofuran | Lab | <1 | EPA 625/8270 | 1 |
| Diethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Dimethyl phthalate | Lab | <1 | EPA 625/8270 | 1 |
| Fluoranthene | Lab | <1 | EPA 625/8270 | 1 |
| Fluorene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorobenzene | Lab | <1 | EPA 625/8270 | 1 |

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00318
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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
QA SPIKE - REPLICATE QA1

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Hexachlorobutadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachlorocyclopentadiene | Lab | <1 | EPA 625/8270 | 1 |
| Hexachloroethane | Lab | <1 | EPA 625/8270 | 1 |
| Indeno(1,2,3-cd)pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Isophorone | Lab | <1 | EPA 625/8270 | 1 |
| N-nitrosodiphenylamine ** | Lab | <1 | EPA 625/8270 | 1 |
| N-nitrosodipropylamine | Lab | <1 | EPA 625/8270 | 1 |
| Naphthalene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene | Lab | <1 | EPA 625/8270 | 1 |
| Nitrobenzene-d5 | Lab | 103.692 | EPA 625/8270 | . |
| Pentachlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| Phenanthrene | Lab | <1 | EPA 625/8270 | 1 |
| Phenol | Lab | <1 | EPA 625/8270 | 1 |
| Phenol-d5 | Lab | 81.725 | EPA 625/8270 | . |
| Pyrene | Lab | <1 | EPA 625/8270 | 1 |
| Pyridine | Lab | <1 | EPA 625/8270 | 1 |
| Terphenyl-d14 | Lab | 123.46 | EPA 625/8270 | . |
| 1,2,4-Trichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,2-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,3-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 1,4-Dichlorobenzene | Lab | <1 | EPA 625/8270 | 1 |
| 2,4,5-Trichlorophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4,6-Tribromophenol | Lab | 90.714 | EPA 625/8270 | . |
| 2,4,6-Trichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dichlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dimethylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2,4-Dinitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| 2,4-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2,6-Dinitrotoluene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chloronaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Chlorophenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Fluorobiphenyl | Lab | 103.747 | EPA 625/8270 | . |
| 2-Fluorophenol | Lab | 51.228 | EPA 625/8270 | . |
| 2-Methylnaphthalene | Lab | <1 | EPA 625/8270 | 1 |
| 2-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 2-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 2-Nitrophenol | Lab | <1 | EPA 625/8270 | 1 |
| 3,3'-Dichlorobenzidine | Lab | <1 | EPA 625/8270 | 1 |
| 3-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 3-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4,6-Dinitro-2-methylphenol | Lab | <5 | EPA 625/8270 | 5 |
| 4-Bromophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloro-3-methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chloroaniline | Lab | <1 | EPA 625/8270 | 1 |
| 4-Chlorophenyl phenyl ether | Lab | <1 | EPA 625/8270 | 1 |
| 4-Methylphenol | Lab | <1 | EPA 625/8270 | 1 |
| 4-Nitroaniline | Lab | <5 | EPA 625/8270 | 5 |
| 4-Nitrophenol | Lab | <5 | EPA 625/8270 | 5 |
| FLOW | | | | |
| SIZE OF STORM | | | | |

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R0062159

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ANNUAL REPORT FOR
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
1995-1996

FORM 4 - SAMPLING RESULTS
QA SPIKE - REPLICATE QA2

DATE AND TIME OF SAMPLE: 31 January 1996

TIME DISCHARGE STARTED: NA

| CONSTITUENT TESTED | TESTED BY | RESULTS | TEST METHOD USED | DETECTION LIMIT |
|---|---|---|---|---|
| Metals (mg/L) | | | | |
| Antimony | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Arsenic | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Barium | Lab | <0.001 | EPA 200.8 | 0.001 |
| Beryllium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Cadmium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Chromium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Cobalt | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Copper | Lab | 1.01 | EPA 200.8 | 0.0006 |
| Lead | Lab | 0.0506 | EPA 200.8 | 0.0001 |
| Mercury | Lab | <0.0002 | EPA 200.8 | 0.0002 |
| Molybdenum | Lab | <0.0004 | EPA 200.8 | 0.0004 |
| Nickel | Lab | <0.0005 | EPA 200.8 | 0.0005 |
| Selenium | Lab | <0.002 | EPA 200.8 | 0.002 |
| Silver | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Thallium | Lab | <0.0001 | EPA 200.8 | 0.0001 |
| Vanadium | Lab | <0.005 | EPA 200.8 | 0.005 |
| Zinc | Lab | <0.006 | EPA 200.8 | 0.006 |
| BTEX (µg/L) | | | | |
| Benzene | Lab | 46 | EPA 602 | 0.2 |
| Bromofluorobenzene | Lab | 93 | EPA 602 | 0 |
| Ethyl benzene | Lab | <0.3 | EPA 602 | 0.3 |
| Toluene | Lab | <0.2 | EPA 602 | 0.2 |
| Total xylene | Lab | 47 | EPA 602 | 0.4 |
| FLOW | | | | |
| SIZE OF STORM | | | | |

VOL 17

000320

R0062160

The Port of Long Beach
"America's most Modern Port"
P. O. BOX 570 · LONG BEACH, CA 90801-0570 · TELEPHONE: (310) 437-0041 · FAX: (310) 437-3231 · TELEX: 65-6482 PORTOBEACH LGB

June 28, 1996

RECEIVED
96 JUL -1 AM 11:40
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Joshua Workman
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: Annual Report

Reference: General Permit for Storm Water Discharges Associated with Industrial Activities - No. 4B19S003628

Dear Mr. Workman:

Attached is the Annual Report for Storm Water Discharge Monitoring in the Port of Long Beach for the period July 1, 1995 to June 30, 1996. The report summarizes the Port's visual monitoring program, site inspections, sampling results, and certifies the Port's compliance with the General Permit.

If you have any questions, please contact Stacey Crouch, Project Manager, at (310) 590-4160.

Sincerely,

Geraldine Knatz

Geraldine Knatz, Ph.D.
Director of Planning

SEC:s

Attachment

PRESIDENT'S "E" AND "E-STAR" AWARDS FOR EXCELLENCE IN EXPORT

VOL 17 000321 L

R0062161

# LOS ANGELES COUNTY
# DEPARTMENT OF PUBLIC WORKS




NPDES PERMIT NO. CA0061654

## ANNUAL REPORT - SIXTH YEAR
## July 1, 1995 to June 30, 1996

ENCLOSURE B-1

EVIDENCE OF PROGRESS FOR EARLY ACTION AND ADDITIONAL BMPs FOR ILLEGAL DISCHARGES AND DISPOSAL PRACTICES (PHASES III)

Book 3 of 6
(June 27, 1996)

VOL 17
000322
F

# CITY OF LONG BEACH

DEPARTMENT OF PUBLIC WORKS

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (310) 570-6383

May 30, 1996

RECEIVED
JUN 04 1996
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION

Mr. Gary Hildebrand
Supervising Civil Engineer III
County of Los Angeles
Department of Public Works
900 South Fremont Avenue, Annex 2nd Floor
P.O. Box 1460
Alhambra, CA 91802-1460

**SUBJECT:** **LOS ANGELES COUNTY NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT NO. CA0061654 PHASE III CO-PERMITTEE SUBMITTAL**

**Attention:** **Frank Kuo, AICP**

Dear Mr. Hildebrand:

In compliance with the provisions of the area-wide NPDES Permit, and as a Co-Permittee under the permit, the following document is submitted as specified in the third year activities plan for Phase III cities:

**City of Long Beach**
**Evidence of Progress of Implementation of BMPs**

The City of Long Beach believes that this submittal fully meets the requirements and submittal schedule set forth in the workplan.

If you have any questions, please contact Barbara Muñoz, Senior Civil Engineer at (310) 570-7454.

Sincerely,

Richard Schacht
Division Engineer

Enclosures

cc: Raymond T. Holland, Director of Public Works
Edward T. Putz, City Engineer
Lisa Peskay Malmsten, Deputy City Attorney

RS:BM:ptr/21-11c

AIRPORT BUREAU
4100 DONALD DOUGLAS DR.
90808 (310) 570-2600
FAX (310) 570-2601

ENERGY RECOVERY BUREAU
120 HENRY FORD AVE.
90802 (310) 570-1186
FAX (310) 570-1230

ENGINEERING BUREAU
333 W. OCEAN BLVD., 9th FLOOR
90802 (310) 570-6383
FAX (310) 570-6012

INTEGRATED RESOURCES BUREAU
2929 EAST WILLOW ST.
90806 (310) 570-2850
FAX (310) 570-2861
TDD (310) 570-2863

PUBLIC SERVICE BUREAU
1601 SAN FRANCISCO AVE.
90813 (310) 570-2700
FAX (310) 570-2782
TDD (310) 570-2779

VOL 17

000323

R0062163

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: PUBLIC EDUCATION AND OUTREACH PROGRAM

This BMP involves educating the public regarding the nature of urban runoff pollution and the behavioral modifications and actions that can be made by individuals to prevent it.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- ■ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to inform city residents, commercial/industrial establishments and school children about the environmental problem of runoff pollution and the means to prevent this form of water pollution.

The public education program is integral to the successful implementation of many other BMPs in the City's Stormwater/Urban Runoff Management Program. To the extent possible, this program coordinates with ongoing educational efforts in the City in order to reach the largest audience in an efficient and cost-effective manner. The program also functions as a tool for the effective implementation of related BMPs.

## GENERAL PROGRESS:

The first year activities included: (1) identify a city NPDES education program coordinator; (2) establish a steering committee composed of representatives of city agencies who are already involved in pollution prevention and/or public education, or represent non-municipal stakeholders in the community;(3) inventory existing city publications, brochures, events and other media forms; (4) develop a program logo and mascot; (5) survey city employees to establish a baseline by which to measure education program success; (6) prepare and/or modify public education/information materials that will be disseminated through existing City venues to reach the target groups identified; (7) coordinate press releases, mayoral participation, and other forms of publicity for kicking-off related BMPs, such as catch basin stenciling. All the first-year activities were accomplished.



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R0062164

## GENERAL PROGRESS (contd.):

A critical component of this program is the ease with which the program can be identified through a symbol or slogan. The city's public education steering committee developed a logo to accompany all publications and communications about the storm water program (see top lefthand corner of this report). Also, a mascot was created to be used at public venues and for education targeted primarily to schoolchildren. A pelican was chosen for the program mascot. This character clearly represents marine environments, and, because of past history (near extinction in California), is already perceived as being especially sensitive to ocean pollution.

The public education program includes several target groups, such as residents, commercial and industrial establishments, and school-age children which are addressed separately below. The target group consisting of city managers and employees is covered under the Municipal Training BMP. The public education program assessment is based on the comprehensiveness of the educational effort. This is accomplished by tracking the number of events/presentations, including attendance and quantity of informational material distributed.

The following is a summary of the actions that were carried out for the specific target groups:

General Public/Residents

The City, on an ongoing basis, publishes newsletters, brochures, and fact sheets which reach all sectors of the City. Many of these publications are general enough for the insertion of articles, columns, or questionnaires on various runoff pollution related issues. Some are specifically tailored to pollution prevention issues that are directly related to urban runoff, e.g., proper household hazardous waste disposal, used motor oil recycling, and water conservation, green waste program. In addition, the City sponsors or participates in public events on a regular basis, such as Coastal Awareness Day, the Los Angeles County Fair and Beach Clean Up days. These events (venues) provide excellent opportunities for the dissemination of information regarding urban runoff pollution.

Long Beach makes a consistent effort at promoting recycling used oil. The curbside collection program is well advertised as part of the household recycling program, and several educational pamphlets used by the city discuss proper disposal and recycling of used motor oil; oil recycling is specified in the Marina Environmental Policies, published in the Long Beach Marina Rules and Regulations. Here's a run down on some of the materials distributed this past year for curbside recycling: 150,000 utility inserts, 150,000 publications, 12 ads, and hundreds of flyers.



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R0062165

## GENERAL PROGRESS (contd.)

The Intergrated Resources Bureau combined forces with the City's Nature Center to offer several classes through the Parks, Recreation and Marine Department. Here's a list of classes that are offered: Composting - "Turn Your Yard Leaves into Gold"; Vermipost - "Worms and You"; Nature's Recyclers -"Closing The Loop"; Plant It Earth; and Reduce-Reuse - Recycle (a Resource Management Series).

In addition to printed materials, a successful public campaign drive took place last year to kick off the commencement of the City's Stenciling Program. The City decided to exercise this program to its fullest extent. The City chose to employ community volunteers to perform the stenciling work instead of hiring a contractor to do the work. What better way to educate the community than to get them involved in painting the warning symbols on the catch basins. The City orchestrated the stenciling program with it's public education program by issuing press releases which described the program's purpose, by conducting special events and by distributing informational flyers.

A campaign "kick-off" event was held on Earth Day, April 22, 1995. The Department of Public Works partnered with the Department of Parks, Recreation and Marine to sponsor a Beach Clean Up and Catch Basin Stenciling event. At the event, in front of a crowd of volunteers and some dignitaries, the City's Mayor stenciled the first catch basin. Prior to this event, a press release was prepared for distribution to all the local newspapers, radio stations and the local cable company. Flyers were mailed to all the schools in the Long Beach Unified School District and to all the homeowners and business associations in the city.

The City's Engineering Bureau conducted nine stenciling events at different city parks throughout the community, one in each city council district. Each City Council member was notified about the stencil event within their council district. Some council members rolled up their sleeves and joined the stenciling work force in their district. Thus far, we had over 370 volunteers paint more than 4000 catch basins!! Participants were very enthusiastic about the project. We had some individuals volunteer more than once. We also received a lot of positive feedback from the non-participants. For a list of community groups that participated in Catch Basin Stenciling Program, refer to the evidence of progress report for that specific BMP.

Industrial and Commercial Establishments

An extensive educational site visit model program will be developed by the County under the new permit. The City expects to participate in this development process. Establishing and implementing a city educational program for industrial/commercial establishments has been postponed and will take place after the countywide model program is developed.



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## GENERAL PROGRESS (contd.)

Schoolchildren

There are many environmental outreach programs for City schoolchildren, including outreach by the City Water Department related to Water Conservation, and by Integrated Resources Bureau and the Nature Center.

The Intergrated Resources Bureau combined forces with the City's Nature Center to staff the Travelling Recycling Education Center (TREC). TREC visits all the Long Beach School District's 4th graders to teach them about recycling, urban run-off, and resource conservation.

Another program which took off this past year is the Moveable Musuem. This program was developed by Surfrider Foundation and co-sponsored by L.A. County Natural History Musuem and the City's Nature Center. Upon request, the Moveable Musuem visits the Long Beach School District schools and teaches the children about the environment. Three programs are offered. One program is called "Protect our Watery World" which gives an exploration of how our actions at home can help aquatic wildlife.

In addition, the City's Parks and Recreation Department Nature Center runs school tours and teacher workshops that are specifically related to ocean pollution prevention. The Nature Center's "Adopt-A-Gutter" Program, is a very effective method of reaching schoolchildren as well as entire neighborhoods regarding the runoff pollution prevention issue.

## SCHEDULE:

Continue existing program and refine it to fit, as necessary, the countywide model program which will soon be developed.



VOL 17 000327

R0062167

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: MUNICIPAL STAFF TRAINING

This BMP involves establishing a municipal staff awareness and training program embracing all applicable facets of City activities relating to storm water concerns.

## APPLICABLE PROGRAM AREA(S):

- RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- CONSTRUCTION
- ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective of this BMP is to educate municipal management and staff about the causes of stormwater pollution and the BMPs being implemented by the City of Long Beach for stormwater pollution control/prevention. By increasing awareness and understanding of the problems and offering suggested changes to alter the behavioral actions which lead to stormwater pollution, the City will come closer to its objective of decreasing the amount of pollutants entering the storm drain system.

## GENERAL PROGRESS:

City staff are composed of individuals from a broad spectrum of the City's economic and cultural sectors. Many of them will be responsible for implementing the BMPs. Consequently, at the outset of the Education Program, a survey was conducted to establish a baseline for the level of understanding City employees have of urban runoff pollution and methods to prevent it. The survey questionnaire was included with the paycheck distribution packet. After a few years, after the Education Program has been fully launched, the employee survey will be repeated to determine whether the education efforts have been successful.

Disseminating information to City employees has begun. Several articles have been published in the City's Employee Newsletter and the first issue of "The Flowline", which is a newsletter for city management, was published. Many City employees



VOL 17 000328

## GENERAL PROGRESS (contd.):

participated in hosting the Los Angeles County Fair informational booth. In order to participate, the employees were educated about the storm water quality program and its purpose.

The education of appropriate staff members to recognize how construction operations can contribute to runoff pollution and to recognize stormwater quality violations on construction sites has begun. Several city staff members attended the day-long seminar conducted by APWA regarding NPDES Construction permits and were trained to recognize stormwater quality violations such as vehicle management, on-site debris handling and other matters pertinent to NPDES program. An internal city training program will be developed from materials obtained at the seminar as well as from the countywide model program which is soon to be developed. The development of city inspectors' checklists to include stormwater pollution prevention elements has been postponed until the countywide model checklist is developed.

In coordination with the countywide model program for public agencies, the City's current information dissemination system will be expanded to include information relating to stormwater pollution prevention techniques and good housekeeping practices. City employees will be given information on how their actions and activities at work and home can contribute pollutants to storm drain system and what actions can reduce stormwater pollution. The City also plans to hold training workshops for employees whose jobs are directly related to Stormwater BMPs to explain each applicable BMP, its purpose, and its implementation.

## SCHEDULE:

Development and implementation of employee training workshops will follow the implementation schedule outlined in the new permit which is soon to be adopted.

Continue existing program.



VOL 17 000329

R0062169

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: PUBLIC REPORTING OF ILLEGAL DISCHARGES AND/OR ILLEGAL DUMPING

This BMP involves promoting, publicizing, and facilitating public reporting of illegal discharges and/or dumping which includes utilizing the County 24-hour hotline.

## APPLICABLE PROGRAM AREA(S):

- RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- CONSTRUCTION
- ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing or mitigating illegal discharges and dumping into the storm drain system.

In order to facilitate and coordinate public reporting, the Los Angeles County Department of Public Works has implemented a 24-hour telephone Hotline. The storm drain Hotline is a "1-800" number which citizens can call to report suspected illegal discharges and dumping to the storm drain system. The Hotline number is 1-800-303-0003.

Long Beach has been a partner in the Hotline since September 1993 and has published the Hotline number in a Department of Public Works flood control flier which is mailed to all Long Beach utility customers (approximately 180,000) on an annual basis. The County Hotline number has also been published in brochures, informational flyers and pamphlets. In addition to the County Hotline, spills and/or dumping incidents are reported directly to the City via the Police Department or the Public Services Bureau.

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of this BMP are: (1) the public reporting system will deter illegal and illicit dumping of materials into the storm drain system; (2) the reporting will allow for quick responses to dumping incidents which will minimize the extent and amount of contamination to the storm drain system.



VOL 17 000330

R0062170

## GENERAL PROGRESS (contd.):

The number of calls received from the County dispatchers was approximately 23. This is a slight increase from the calls received the previous year. The number of direct calls received by 911 dispatchers and the Long Beach Public Service Bureau operators is 1500 phone calls. Of the 1500 phone calls, 220 were calls regarding hazardous waste. Most of the calls were relating to cleaning the debris out of the catch basins. Compared to the previous year, there has definitely been an increase in reporting. This may be attributed to the City's extensive public education program which was implemented this past year. A response reporting system has yet to be developed; therefore, an examination of the City's response has not been conducted.

## SCHEDULE:

Develop a city response reporting system.

Continue existing program.



VOL 17 00331

R0062171

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: HOUSEHOLD HAZARDOUS WASTE COLLECTION

This BMP involves the collection and proper disposal of household hazardous wastes, such as pesticides, paints, lubricants, and solvents.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing household hazardous wastes from entering the storm drain system through illegal dumping, illegal discharges, or contaminated runoff.

The City of Long Beach participates in the Household Hazardous Waste Roundup Program sponsored by the County of Los Angeles. The roundup is completely run and managed by the County. The role of the City of Long Beach is to advertise and inform residents on the roundup dates and locations, and when necessary, provide personnel to direct traffic at the roundup.

Several County roundup events are held each year at various locations. Long Beach City hosted a county roundup event for each of the past six years. The City very actively advertises the roundup event. A four-language brochure is mailed out with all utility bills to inform customers of the city-hosted events. To assist the City in spreading the word, the local newspapers advertise the events. Flyers are also distributed at many retail stores especially to all the major paint and hardware stores. County records show that Long Beach hosted events are among the highest attended in the County.

The City of Long Beach also promotes source reduction as a way of minimizing household hazardous waste. Promotion methods include distribution of source reduction guides, alternative product lists, and public education and information events. Many of the published items are multi-lingual, which makes the information more accessible to the entire Long Beach community.



VOL 17 00032

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of the household hazardous waste collection program is that the material collected through the program is properly disposed of and is thus unavailable to be illegally or illicitly disposed of in the storm drain system.

The quantity of hazardous material collected, and properly disposed of, include: 4,700 gallons of oil; 15,000 gallons of paint; about 450 car batteries; and about 400 drums of miscellaneous waste. This past year 3,300 people participated.

## SCHEDULE:

Continue existing program.



VOL 17 000333

R0062173

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: LITTER RECEPTACLES

This BMP involves the placement and servicing of receptacles used for control of litter and refuse.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing litter and refuse from collecting in the storm drain system.

The City of Long Beach controls incidental litter through the placement and servicing of litter receptacles. Litter receptacles are generally located in business areas, bus stops, parks, the marinas, the beach front, and at public facilities where people tend to congregate. Approximately 2500 litter receptacles are located throughout the city.

The City also encourages business associations to place additional litter receptacles in major retail areas. These receptacles are paid for by the associations and serviced by the City's Refuse Division.

The City has developed a Neighborhood Improvement Strategy program. Through this program, the city provides residents with litter receptacles for placement at locations in their neighborhood where litter accumulates. The residents service the receptacles by dumping them into their residential container which is then serviced by the city.

The City is host to many special events throughout the year. The City requires event sponsors to provide an adequate number of litter receptacles and that they be serviced. Special event litter receptacles are serviced by the City or by contract haulers.



VOL 17 000334

## GENERAL PROGRESS (contd.):

By providing receptacles, people are given an alternative to littering which they will generally use. As evidence, areas around litter receptacles appear reasonably clean and litter-free.

The assumption used in evaluating the effectiveness of litter receptacles is that refuse placed in the receptacles is refuse which may have otherwise collected in the storm drain system.

Use and service of the litter receptacles are adequate. This past year, the 450 receptacles placed on residential and commercial streets collected over 290 tons of trash and were serviced on a weekly basis. The City's use of field supervisors and refuse investigators works well to make sure receptacles do not overfill. Disposal patterns have been recognized which the Refuse Division uses to properly size receptacles for weekly service. With supervisors in the field, needs for larger or repairing receptacles is reasonably quick.

## SCHEDULE

Develop a reporting system to monitor the amount of waste collected in the parks, marinas, and beaches.

Continue existing program.



VOL 17 000335

R0062175

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: CLEAN SWEEP OPERATION PROGRAM

This BMP involves a one-time collection of refuse to city residents, free of charge.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the accumulation of trash and debris, which may eventually wash into the storm drain system.

The City annually conducts Clean Sweep Operations for city residents in the spring. Clean Sweep events are scheduled with the Refuse Division by city councilpersons for their district. The City consists of nine council districts; thus, nine events are conducted. Residents are requested to set out allowable refuse for a free, one-time collection. This is an opportunity for residents to dispose of old furniture, tree trimmings, yard waste, appliances and other bulky items for free.

A notice is mailed out with utility bills to advertise the event. The schedule of Clean Sweep events is usually publicized in local newspapers or community newsletters. Flyers are also sent to neighborhood associations. Some communities take advantage of these free pick-ups to conduct neighborhood cleanup activities to remove litter and debris from their streets and alleys.

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of the Clean Sweep program is that litter and debris collected and disposed of through this program is material which may have otherwise washed into the storm drain system, or contributed contaminants to stormwater runoff. The program assessment is based on showing how much material is being properly disposed of.



VOL 17 00336

## GENERAL PROGRESS (contd.):

The clean sweep program is a great community program. It seems to serve as a "spring cleaning" event for residents. Those communities which take advantage of this opportunity by conducting neighborhood cleaning campaigns definitely impact storm water quality. Community clean-ups remove refuse from areas which are not otherwise maintained.

This past year, the amount of debris and litter collected was 770 tons.

## SCHEDULE:

Continue existing program.



VOL 17 000337

R0062177

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: HOUSEHOLD RECYCLING

This BMP includes collecting glass, plastic, newspaper, corrugated cardboard, aluminum and steel cans.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the collection of refuse in the storm drain system.

Curbside collection of recyclables is available to all single family residences and multi-family dwellings with ten or fewer units. Participants in the household recycling program separate recyclables from their refuse, and deposit the recyclable materials into a separate container. Recyclables are collected weekly, on the same schedule as regular refuse collection. It is collected by a firm under contract to the City of Long Beach.

Recyclables are set out in plastic open containers provided by the city. Items collected include corrugated cardboard, newspaper, glass, aluminum and steel cans, and plastic (#1-4). All items are mixed in the same container, except newspaper and cardboard, which are to be bundled. Residents are asked to rinse containers before placing them in the recycling bin.

Multi-family residences larger than ten units are not required to have a recycling program. The city fully supports any efforts by multi-family units to start their own program by providing educational material and advice, when requested. Permitted waste haulers are required to offer recycling services upon request.



VOL 17 000338

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of the household recycling program are: (1) material collected is material which may otherwise have been illegally disposed of in the storm drain system; (2) material collected is material which may otherwise have been improperly stored outdoors in a way that would contribute contaminants to stormwater runoff. The program assessment is based on showing how much material is being properly collected.

The City's household recycling program is adequate. Implementation of a curbside collection program exercises this program to the fullest extent practical to the majority of Long Beach residents. This past year, the quantity of material collected include: 5,825 tons of newspaper; 1,446 tons of corrugated cardboard; and a combined total of 4,718 tons of aluminum/metal cans, glass bottles, and plastics.

## SCHEDULE:

Continue existing program.



VOL 17
000339
R0062179

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: SPECIAL COLLECTION PROGRAM

This BMP involves providing a service to residents for collection of bulky items for disposal.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the accumulation and improper disposal of refuse. The City of Long Beach offers a special collection service for Long Beach residents. Residents can request special collection of bulky items such as furniture, appliances, tires, yard waste, or tree trimmings for disposal. Residents are charged a nominal fee of $6.00 for each special collection. This program provides a year-round service to pick up items which might otherwise be improperly stored or disposed of.

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of the special collection program are: (1) items collected are items which may otherwise have been illegally dumped; (2) items collected are items which may otherwise have been improperly stored outdoors in a way that would contribute contaminants to stormwater runoff. The program assessment is based on showing how much material is being properly disposed of.

The special collection program is generally adequate. The city received approximately 8,320 calls this past year, with furniture and yard waste being the most common items collected. The amount of waste collected was 2300 tons.

## SCHEDULE:

Continue existing program.



VOL 17 000340




DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: USED OIL RECYCLING PROGRAM

This BMP involves collecting and recycling used motor oil.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the improper disposal of used motor oil into the storm drain system.

The City of Long Beach has a curbside collection program for used motor oil. This collection program is for single family residences and multi-family dwellings with ten or fewer units. Residents are supplied with special oil storage containers designed to prevent spillage during curbside collection. Oil is collected by the contracted recycling service used for the household recycling program. Oil is collected on the same schedule as the other recyclables, on a weekly basis, using the same collection vehicle.

The City also has a separate used oil collection program for the marinas. The City maintains a storage tank where marina residents can deposit their motor oil. The tank is emptied as needed by an outside contractor.

The City has encouraged development of a network of state certified drop-off centers where used oil can be taken for recycling. The certified drop-off centers are completely managed and maintained by the business owners. These drop-off centers supplement the City's programs by providing a place where persons not able to participate in the curbside program can take their oil. The city does not collect or maintain records of the oil collected at drop-off centers.



VOL 17 000341

R0062181

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of the used oil recycling program is that oil collected and disposed of properly is oil which may have otherwise been illegally or illicitly disposed of in the storm drain system. The program assessment is based on showing how much used oil is being diverted by this collection program.

This past year, the amount of used-oil collected through curbside collection was 43,779 gallons. The amount collected from the marina was not available at this time of writing.

The City's used-oil recycling program is a comprehensive program of outstanding quality. Especially notable is the curbside collection program, which is rare for used oil recycling. Using curbside collection and supplying residents with containers is practicing this program to the maximum extent. Combined with the oil collection program in at the marinas and the certified drop-off centers, the City of Long Beach offers a very comprehensive collection program to its community.

## SCHEDULE:

Continue existing program.



VOL 17 000342

R0062182

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: GREEN WASTE PROGRAM

This BMP involves composting and proper disposal of green waste.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the collection and decomposition of organic material (green waste) in the storm drain system.

There are three aspects to the green waste program: proper disposal of green waste, household composting, and city grounds keeping practices.

- Proper disposal of green - The city requires property owners to tie all tree limbs, shrubs, trimmings, and other green waste of a similar nature in compact bundles for disposal. Materials likely to become airborne upon disposal are required to be securely wrapped. The city encourages proper disposal through its Special Collection program and Clean Sweep Operation program.
- Household composting - The city sponsors and/or participates in seminars on composting and distributes literature explaining methods of green waste composting. Monthly composting education classes are offered through the Parks, Recreation and Marine Department.
- City grounds keeping - In city parks, grass clippings are left on the turf for natural decomposition and re-incorporation. Traffic islands are cut with mulching mowers which grind lawn clippings and then leave them in place. About fifty percent of the city tree trimmings are transported to a recycling facility and the other half is hauled to a proper disposal facility.



VOL 17 000343

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of the green waste program is that keeping the storm drain system free of organic matter will improve the quality of stormwater and urban runoff on the system. The program assessment is based on examining how comprehensive and effective the program is at keeping organic matter out of the storm drain system. The methods for assessing this BMP include:

- Evaluating promotion and participation in the residential composting program
- Evaluating landscape maintenance in terms of mulching, lawn trimming and irrigation, and collection of trimmings

The green waste program has been evaluated and found to be generally adequate. Through city ordinances the program includes measures to keep green waste out of the storm drain system. The composting education classes are effective. The classes are advertised in the quarterly Parks & Recreation Schedule. This past year, attendance at quarterly classes typically varied between 7 and 19. This indicates that there is consistent and on-going interest in home composting. Stormwater quality issues have been incorporated into the composting education classes.

This past year, the amount of waste collected from the special collection program was 2300 tons which includes yard waste. Through the clean sweep operation, the amount of debris and yard waste collected was 770 tons.

The refinement of the City's grounds keeping procedures will begin after the development of the countywide model program for Landscape and Recreational Facilities Management.

## SCHEDULE:

The schedule for refining the City's grounds keeping procedures will follow the implementation schedule outlined in the new permit which is soon to be adopted.

Continue existing program.



VOL 17 000344

R0062184

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: FACILITY INSPECTIONS

This BMP will involve conducting "site visits" at industrial or commercial businesses which have potential for contributing pollutants to stormwater runoff or the storm drain system.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by minimizing the contribution of pollutants from industrial and commercial businesses which may eventually wash into the storm drain system.

The scope for this BMP has changed since the last reporting period due to the new permit negotiations. This BMP will involve educational site visits rather than inspections.

As reported previously, the city conducts a variety of inspection programs of businesses within the city. The Hazardous Waste Operations Division conducts annual inspections of approximately 700 hazardous waste generating businesses. The Fire Department conducts several programs, including: hazardous materials inspections of about 1700 facilities; code enforcement inspections; and new construction inspections. The Health Department conducts routine inspections on approximately 1,150 food preparation facilities twice per year.

The program is, in its present state, a combination of several inspection programs. As they currently now stand, specific inspection items are not established to educate the businesses about storm water quality or look for potential stormwater quality concerns. However, many of the inspection items do incidentally address stormwater concerns. For example, proper storage of some hazardous materials often require that they be stored in a covered area with containment for safety and public health reasons; at the same time, keeping hazardous materials covered also provides stormwater quality benefits.



VOL 17 000345

## GENERAL PROGRESS:

The program assessment was based on the extent of which existing inspections cover stormwater quality issues. It was determined that the city's facility inspection program needed to be modified to include a focus on storm water quality. The methods for assessing this BMP included:

- Modifying the content of city inspection programs
- Examine city efforts towards educating the business owner on appropriate "housekeeping" practices

There is sufficient number and variety of inspection programs performed by the city to adequately cover industrial and commercial businesses. Some existing inspection programs will be better suited than others to address storm water issues. What needs to be developed is an educational program addressing storm water issues for the various types of facilities along with suggested BMPs to be implemented.

The new permit which is soon to be adopted outlines the minimum requirements that should be included in the Industrial/Commercial Educational Program. One requirement is the use of a checklist of specific storm water BMPs for each industrial/commercial SIC group. This list will be developed by the County and used on a countywide basis. The modification of the City's exiting inspection programs will begin after the approval of the new permit since it specifies the minimum program requirements.

## SCHEDULE:

The schedule for modifying the City's existing inspection programs and implementing the educational site visits will follow the implementation schedule outlined in the new permit which is soon to be adopted.



VOL 17 000346

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: MONITORING POLLUTION IN PUBLIC WATERS

This BMP involves the bacteriological testing of public waters.

## APPLICABLE PROGRAM AREA(S):

- ☐ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- ☐ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

To improve the quality of stormwater runoff by monitoring the receiving waters of the storm drain system runoff.

The city monitors for evidence of pollution in public water contact sport areas. This covers beaches, the marina, Alamitos Bay, and the harbor. Water samples are taken from various locations and tested for the presence of coliform bacteria. Testing is done once a month at a minimum. Testing frequency is increased during storms or if contamination from a spill or dumping incident is suspected. In the instance of a coliform test result indicating an unacceptably high concentration of coliform bacteria, a second water sample is taken from the area. Typically, four tests need to show a high concentration before the water body is closed and investigation of the cause taken. This testing procedure is consistent with the testing protocols of Los Angeles County and other surrounding cities.

Results of bacteriological tests are maintained by the Bureau of Environmental Health and are reported monthly to the Los Angeles Regional Water Quality Control Board, the Long Beach Parks and Recreation Department, and the Long Beach Marine Bureau.

Health investigations are conducted as a result of high bacteria concentrations, or other indications of pollution, such as oil in the water, or in response to complaints. Initial investigations done by the health department will typically determine the type and cause of the pollution. Once the initial investigation is done, it is determined which Long Beach agency is best suited to further investigate and resolve the incident. For example, the Environmental Crimes unit for a dumping incident, or the Water Department for sewage leaks. The appropriate department will then complete the investigation.



VOL 17 000347

R0062187

## GENERAL PROGRAM:

The assumptions used in evaluating the effectiveness of the public water monitoring program are: (1) that the quality of public waters is indicative of the quality of water in the storm drain system which drains into the public water; and (2) that the routine monitoring can help detect and eliminate inappropriate discharges to the storm drain system.

Testing on a monthly basis is generally adequate. The testing frequency is supplemented by emergency testing following potential spills or during storms when the storm drain system is flushed. No beaches were closed this past year.

## SCHEDULE:

Continue the existing program to the maximum extent practicable.



VOL 17 000348

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: STORM DRAIN MASTER PLAN

This BMP involves updating the city's computerized storm drain facilities management system and developing the system to assist the city in meeting their NPDES requirements.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to optimize the city's efforts in meeting the NPDES permit requirements by using the city's geographical information system (GIS).

Long Beach has a computerized storm drain facilities management system. The system integrates several computer models/systems through a menu driven application in dBASE. The data base consists of land use maps, drainage maps, storm drain alignments, hydrology data, hydraulic data, and storm drain design data.

A major consideration in the use of the storm drain facilities management system is to integrate it with the city's GIS system. Currently the city is in the process of integrating some of the storm drain facilities management system onto the GIS platform. The GIS platform offers an excellent basis to assist the city in meeting the challenges of storm water management. The GIS system will provide a coherent database of several city departments' information. This information can be queried and manipulated to fit any type of application. Ultimately, the system will be used in scheduling, tracking and reporting the city's NPDES compliance efforts.

## GENERAL PROGRESS:

The entire storm drain system is on the GIS platform including the catch basins. This past year, the drainage boundaries in the facilities mapping system have been transferred on



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## GENERAL PROGRESS (contd.)

to the city's GIS platform. An new identification system for the storm drain system components have been implemented to correlate with the drainage boundaries.

The system has been very useful in tracking progress of the catch basin stenciling program. The system identifies those catch basins stenciled by volunteers. Other tracking system that will be developed are for illegal connection field activities, types of industrial and commercial sites in each watershed.

## SCHEDULE:

Continue to update the storm drain data and develop applications to assist the city in meeting the NPDES requirements.



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R0062190

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: CATCH BASIN STENCILING

This BMP involves stenciling the City catch basins with prohibitive language and graphic icons to discourages the illegal dumping of unwanted materials into the storm drain system.

## APPLICABLE PROGRAM AREA(S):

- RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- CONSTRUCTION
- ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective of the storm drain stenciling program is to enhance public awareness of the connection between the storm drain system and our receiving waters. Another objective is to discourage individuals' habitual waste disposal actions, e.g. dumping of automobile fluids and landscaping wastes into the storm drain system.

These objectives were accomplished by stenciling a sign adjacent to storm drain inlets which contains a message that discourages the dumping of improper materials into the storm drain system because they drain directly to the ocean. The City adopted the Los Angeles County/Heal the Bay standard stencil design as a matter of consistency.

The primary purpose of the stencil program is to have a message stenciled on the catch basins in the City of Long Beach and secondarily, but most importantly, to educate the public about non-point source pollution. The City decided to exercise this program to its fullest extent. The City chose to employ community volunteers to perform the stenciling work instead of hiring a contractor to do the work. What better way to educate the community than to get them involved in painting the warning symbols on the catch basins.

The City orchestrated the stenciling program with it's public education program by issuing press releases which described the program's purpose, by conducting special events and by distributing informational flyers.



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## GENERAL PROGRESS:

THANKS to all the hard working volunteers, the City's Catch Basin Stenciling Program has been a BIG SUCCESS !!! Thus far, we had over 370 volunteers paint more than 4000 catch basins!!! Participants were very enthusiastic about the project. We had some individuals volunteer more than once. We also received a lot of positive feedback from the non-participants.

A campaign "kick-off" event was held on Earth Day, April 22, 1995. The Department of Public Works partnered with the Department of Parks, Recreation and Marine to sponsor a Beach Clean Up and Catch Basin Stenciling event. At the event, in front of a crowd of volunteers and some dignitaries, the City's Mayor stenciled the first catch basin. Prior to this event, a press release was prepared for distribution to all the local newspapers, radio stations and the local cable company. Flyers were mailed to all the schools in the Long Beach Unified School District and to all the homeowners and business associations in the city.

From that day forward, the City's Engineering Bureau conducted nine stenciling events at different city parks throughout the community, one in each city council district. Each City Council member was notified about the stencil event within their council district. Some council members rolled up their sleeves and joined the stenciling work force in their district.

The City supplied the volunteers with all the necessary materials and maps. An educational briefing was conducted for each group prior to beginning their stenciling work. Informational material was also available to educate the non-participants about storm water pollution and the storm drain system. At the events, refreshments were generously donated by the International Longshoremen's and Warehousemen's Union, Locals 13, 63, 94, and their Southern California District Council. Certificates of participation were also provided to all the volunteers.

The Catch Basin Stenciling program is still ongoing. Although no more "formal" stenciling events are being conducted, the City receives several calls from various groups and individuals, who want to carry on the task. They are supplied with everything they need and proceed to organize themselves into teams to stencil the catch basins.

Many Long Beach citizens and friends from other communities participated. The following list of organizations demonstrates the diversity of the people who participated in this program:

Boy Scouts of America, Troops 77 & 693, Pack 77 and Others

Cub Scouts of America, Pack 67 & Others



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Eagle Scouts
El Dorado Park South Neighborhood Association
El Dorado Women's Club

Farmers & Merchants Bank
Friends of the Los Angeles River
Girl Scouts of America, Troops 479, 221 & 324 and Others
Holy Innocent School Students
Jr. Lifeguard Club
Lakewood High School Students
Lindberg Middle School Student
Long Beach City Council
Long Beach City Employees
Los Angeles International Church of Christ
Millikan High School Students
Millikan High Marine Biology Students
Neighborhood Citizen Committee
North Long Beach Business Association
Northwest Chapter of North Long Beach Neighborhood Association
Poly High School Students
Poly High School Cross Country Team
Poly High School Spanish Club
Red Cross
Sierra Club
Surfrider Foundation
Washington Youth Center
West End Community Association
Wrigley Association

**SCHEDULE:**

Continue existing program.



VOL 17 00353

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: RUNOFF CONTROL ORDINANCE: CONSTRUCTION

Adopt a runoff control ordinance requiring the use of BMPs during and after construction for the reduction of runoff and pollutants leaving a property or properties.

## APPLICABLE PROGRAM AREA(S):

- ☐ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- ■ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to require those who are disturbing land and building projects to include elements of stormwater pollution control. The program will provide an enhanced focus on stormwater pollution while establishing legal authority necessary to require compliance with the provisions of the NPDES State Construction Permit and the city's Municipal Stormwater permit and avoiding a perceived bias against construction and redevelopment.

Although existing city codes, policies and practices address many activities with indirect stormwater benefit, they could be strengthened with a focus towards stormwater quality. The approach to achieve this objective will require the following steps:

1. Identify specific relevant existing construction permit requirements and enforcement procedures;
2. Target specific mandatory and conditional practices deemed necessary to address stormwater concerns;
3. Coordinate with City Attorney, Planning and Building and utilities (water, sewer and gas) to modify existing in-house processing, and enforcement;
4. Obtain Council approval of ordinance, if necessary;
5. Implement with checklists, revised forms, and pertinent staff training.

## GENERAL PROGRESS:



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## GENERAL PROGRESS (contd):

The first two steps of the five step process, listed above, will be accomplished by the County upon the development of the countywide model program. The city expects to participate in this development process. Refinement of the City's existing codes, policies and procedures will commence after the development of the countywide model program which involves steps 3 through 5.

## SCHEDULE:

Commencement of activities have been delayed approximately four months. The implementation schedule will follow the schedule outlined in the new permit which is soon to be adopted.



VOL 17 000355

R0062195

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: PROPER DISPOSAL OF LITTER, YARD WASTE, AND PET FECES

This BMP involves discouraging improper disposal practices and to provide viable alternatives.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The primary objective of this BMP is to educate the public about the viable alternatives for improper disposal practices and about the water quality impacts of pollutants. By educating the public, this may improve the quality of stormwater runoff by preventing the accumulation of trash and debris on public streets, which may eventually wash into the storm drain system.

The City of Long Beach has in place several programs designed to reduce litter from public areas within the City and from private residential and commercial areas.

In conjunction with the Litter Receptacles BMP, the City has approximately 2500 litter receptacles. Litter receptacles are generally located in business areas, bus stops, parks, the marinas, the beach front, and at public facilities where people tend to congregate. The City also encourages business associations to place additional litter receptacles in major retail areas. These receptacles are paid for by the associations and serviced by the City's Refuse Division. The City also has programs for providing temporary waste receptacles at special events, such as the Long Beach Grand prix, parades, and street fairs, as well as special janitorial service/ litter control and cleanup programs in the City's business districts.

The City has developed a Neighborhood Improvement Strategy program. Through this



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R0062196

## BACKGROUND(contd.):

program, the city provides residents with litter receptacles for placement at locations in their neighborhood where litter accumulates. The residents service the receptacles by dumping them into their residential container which is then serviced by the city.

The City annually conducts Clean Sweep Operations for city residents in the spring. Clean Sweep events are scheduled with the Refuse Division by city councilpersons for their district. The City consists of nine council districts: thus, nine events are conducted. Residents are requested to set out allowable refuse for a free, one-time collection. This is an opportunity for residents to dispose of old furniture, tree trimmings, yard waste, appliances and other bulky items for free. Many communities take advantage of these free pick-ups to conduct neighborhood cleanup activities to remove litter and debris from their streets and alleys.

Curbside collection of recyclables is available to all single family residences and multi-family dwellings with ten or fewer units. Participants in the household recycling program separate recyclables from their refuse, and deposit the recyclable materials into a separate container. Recyclables are collected weekly, on the same schedule as regular refuse collection. Multi-family residences larger than ten units are not required to have a recycling program. The city fully supports any efforts by multi-family units to start their own program by providing educational material and advice, when requested. Permitted waste haulers are required to offer recycling services upon request.

The City of Long Beach offers a special collection service for Long Beach residents. Residents can request special collection of bulky items such as furniture, appliances, tires, yard waste, or tree trimmings for disposal. Residents are charged a nominal fee of $6.00 for each special collection. This program provides a year-round service to pick up items which might otherwise be improperly stored or disposed of.

As discussed in the Green Waste Program, BMP, there are three aspects to the green waste program: proper disposal of green waste, household composting, and city grounds keeping practices.

- Proper disposal of green - The city requires property owners to tie all tree limbs, shrubs, trimmings, and other green waste of a similar nature in compact bundles for disposal. Materials likely to become airborne upon disposal are required to be securely wrapped. The city encourages proper disposal through its Special Collection program and Clean Sweep Operation program.
- Household composting - The city sponsors and/or participates in seminars on composting and distributes literature explaining methods of green waste composting. Composting education classes are advertised in the Parks, Recreation and Marine Department quarterly schedule which is distributed to every resident and made available at public counters. The City's Nature Center display exhibits on composting and vermaposting for the general public to view.



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## BACKGROUND(contd.):

- City grounds keeping - In city parks, grass clippings are left on the turf for natural decomposition and re-incorporation. Traffic islands are cut with mulching mowers which grind lawn clippings and then leave them in place. About fifty percent of the city tree trimmings are transported to a recycling facility and the other half is hauled to a proper disposal facility.

The City intended to conduct a pilot project for the proper disposal of pet feces by installing 2 plastic bag dispensers in selected areas in which residents tend to walk their pets (e.g., parks, or beach boardwalks). These dispensers were going to include language urging residents to be responsible pet owners by cleaning up and depositing pet feces in a proper garbage receptacle. This pilot project is on hold until the new permit requirements are known at which time the City will have a better understanding about the countywide model program and will be able to focus its resources on the priority areas.

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness this BMP is that by discouraging improper disposal practices to residents and businesses and providing them with viable alternatives, there will be less debris collected in the storm drain system. The program assessment is based on showing how much material is being properly collected which is an indication of the amount of waste that is properly disposed of.

This past year, the 450 receptacles placed on residential and commercial streets collected over 290 tons of litter and were serviced on a weekly basis. Through the clean sweep operation, the amount of debris and yard waste collected was 770 tons. The quantity of material collected from the City's household recycling program include: 5,825 tons of newspaper; 1,446 tons of corrugated cardboard; and a combined total of 4,718 tons of aluminum/metal cans, glass bottles, and plastics. The amount of waste collected from the special collection program was 2300 tons which includes yard waste.

By providing these programs, people are given viable alternatives for improper disposal practices which the community of Long Beach generally use. This is confirmed by the amount of debris collected.

## SCHEDULE:

Continue the on-going City programs.

Implementation of the pilot project for the Pet Feces Reduction program has been postponed until the countywide model program for this BMP is developed.



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STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: LAND DEVELOPMENT

Augment existing land development policies and procedures to include a focus on storm water runoff quality concerns.

## APPLICABLE PROGRAM AREA(S):

- ☐ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- ■ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective of this BMP is to minimize and possibly eliminate pollutants from entering the City's storm drain system by incorporating control measures and establishing standard conditions for development projects.

Although existing city codes, policies and practices address many activities with indirect stormwater benefit, they could be strengthened with a focus towards stormwater quality. The approach to achieve this objective will require the following steps:

1. Determine appropriate size and type of development/redevelopment that should receive stormwater management conditions.
2. Establish standard conditions of approval addressing the State construction permitting.
3. Redefine intended purpose of on-site drainage facilities to address stormwater pollutant interception and removal, as appropriate.
4. Formulate a set of minimum BMPs to be suggested for implementation by building permit applicants.
5. Increase awareness of pertinent staff about stormwater pollution.
6. Incorporate stormwater quality control measures and requirements into city codes, policies and procedures where applicable and determined necessary.



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## GENERAL PROGRESS:

The first four steps of the six step process, listed above, will be accomplished by the County upon the development of the countywide model program. The city expects to participate in this development process. Refinement of the City's existing codes, policies and procedures will commence after the development of the countywide model program.

## SCHEDULE:

Commencement of activities have been delayed approximately four months. The implementation schedule will follow the schedule outlined in the new permit which is soon to be adopted.



VOL 17 000360 L

R0062200

# LOS ANGELES COUNTY
# DEPARTMENT OF PUBLIC WORKS

NPDES PERMIT NO. CA0061654

# ANNUAL REPORT - SIXTH YEAR
## July 1, 1995 to June 30, 1996

ENCLOSURE B-2 (VOLUME 2 0F 2)

EVIDENCE OF PROGRESS FOR EARLY ACTION AND ADDITIONAL BMPs - RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL (PHASES III)

Book 5 of 6
(June 27, 1996)

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000361

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R0062201

# City of Long Beach

VOL 17
000362
R0062202

# CITY OF LONG BEACH
DEPARTMENT OF PUBLIC WORKS
333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (310) 570-6383


May 30, 1996

RECEIVED
JUN 04 1996
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION

Mr. Gary Hildebrand
Supervising Civil Engineer III
County of Los Angeles
Department of Public Works
900 South Fremont Avenue, Annex 2nd Floor
P.O. Box 1460
Alhambra, CA 91802-1460

**SUBJECT:** **LOS ANGELES COUNTY NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT NO. CA0061654 PHASE III CO-PERMITTEE SUBMITTAL**

**Attention:** **Frank Kuo, AICP**

Dear Mr. Hildebrand:

In compliance with the provisions of the area-wide NPDES Permit, and as a Co-Permittee under the permit, the following document is submitted as specified in the third year activities plan for Phase III cities:

**City of Long Beach**
**Evidence of Progress of Implementation of BMPs**

The City of Long Beach believes that this submittal fully meets the requirements and submittal schedule set forth in the workplan.

If you have any questions, please contact Barbara Muñoz, Senior Civil Engineer at (310) 570-7454.

Sincerely,

Richard Schacht
Division Engineer

Enclosures

cc: Raymond T. Holland, Director of Public Works
Edward T. Putz, City Engineer
Lisa Peskay Malmsten, Deputy City Attorney

RS:BM:ptr/21-130


AIRPORT BUREAU
4100 DONALD DOUGLAS DR.
90808 (310) 570-2600
FAX (310) 570-2601

ENERGY RECOVERY BUREAU
120 HENRY FORD AVE.
90802 (310) 570-1196
FAX (310) 570-1220

ENGINEERING BUREAU
333 W. OCEAN BLVD., 8th FLOOR
90802 (310) 570-6383
FAX (310) 570-6012

INTEGRATED RESOURCES BUREAU
2929 EAST WILLOW ST.
90806 (310) 570-2850
FAX (310) 570-2861
TDD (310) 570-2863

PUBLIC SERVICE BUREAU
1801 SAN FRANCISCO AVE.
90813 (310) 570-2700
FAX (310) 570-2792
TDD (310) 570-2778


VOL 17 000363

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: PUBLIC EDUCATION AND OUTREACH PROGRAM

This BMP involves educating the public regarding the nature of urban runoff pollution and the behavioral modifications and actions that can be made by individuals to prevent it.

## APPLICABLE PROGRAM AREA(S):

- RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- CONSTRUCTION
- ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to inform city residents, commercial/industrial establishments and school children about the environmental problem of runoff pollution and the means to prevent this form of water pollution.

The public education program is integral to the successful implementation of many other BMPs in the City's Stormwater/Urban Runoff Management Program. To the extent possible, this program coordinates with ongoing educational efforts in the City in order to reach the largest audience in an efficient and cost-effective manner. The program also functions as a tool for the effective implementation of related BMPs.

## GENERAL PROGRESS:

The first year activities included: (1) identify a city NPDES education program coordinator; (2) establish a steering committee composed of representatives of city agencies who are already involved in pollution prevention and/or public education, or represent non-municipal stakeholders in the community;(3) inventory existing city publications, brochures, events and other media forms; (4) develop a program logo and mascot; (5) survey city employees to establish a baseline by which to measure education program success; (6) prepare and/or modify public education/information materials that will be disseminated through existing City venues to reach the target groups identified; (7) coordinate press releases, mayoral participation, and other forms of publicity for kicking-off related BMPs, such as catch basin stenciling. All the first year activities were accomplished.



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## GENERAL PROGRESS (contd.):

A critical component of this program is the ease with which the program can be identified through a symbol or slogan. The city's public education steering committee developed a logo to accompany all publications and communications about the storm water program (see top lefthand corner of this report). Also, a mascot was created to be used at public venues and for education targeted primarily to schoolchildren. A pelican was chosen for the program mascot. This character clearly represents marine environments, and, because of past history (near extinction in California), is already perceived as being as being especially sensitive to ocean pollution.

The public education program includes several target groups, such as residents, commercial and industrial establishments, and school-age children which are addressed separately below. The target group consisting of city managers and employees is covered under the Municipal Training BMP. The public education program assessment is based on the comprehensiveness of the educational effort. This is accomplished by tracking the number of events/presentations, including attendance and quantity of informational material distributed.

The following is a summary of the actions that were carried out for the specific target groups:

General Public/Residents

The City, on an ongoing basis, publishes newsletters, brochures, and fact sheets which reach all sectors of the City. Many of these publications are general enough for the insertion of articles, columns, or questionnaires on various runoff pollution related issues. Some are specifically tailored to pollution prevention issues that are directly related to urban runoff, e.g., proper household hazardous waste disposal, used motor oil recycling, and water conservation, green waste program. In addition, the City sponsors or participates in public events on a regular basis, such as Coastal Awareness Day, the Los Angeles County Fair and Beach Clean Up days. These events (venues) provide excellent opportunities for the dissemination of information regarding urban runoff pollution.

Long Beach makes a consistent effort at promoting recycling used oil. The curbside collection program is well advertised as part of the household recycling program, and several educational pamphlets used by the city discuss proper disposal and recycling of used motor oil; oil recycling is specified in the Marina Environmental Policies, published in the Long Beach Marina Rules and Regulations. Here's a run down on some of the materials distributed this past year for curbside recycling: 150,000 utility inserts, 150,000 publications, 12 ads, and hundreds of flyers.

The Intergrated Resources Bureau combined forces with the City's Nature Center to offer several classes through the Parks, Recreation and Marine Department. Here's a list of classes that are offered: Composting - "Turn Your Yard Leaves into Gold"; Vermipost -



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## GENERAL PROGRESS (contd.)

"Worms and You"; Nature's Recyclers -"Closing The Loop"; Plant It Earth; and Reduce-Reuse - Recycle (a Resource Management Series).

In addition to printed materials, a successful public campaign drive took place last year to kick off the commencement of the City's Stenciling Program. The City decided to exercise this program to its fullest extent. The City chose to employ community volunteers to perform the stenciling work instead of hiring a contractor to do the work. What better way to educate the community than to get them involved in painting the warning symbols on the catch basins. The City orchestrated the stenciling program with it's public education program by issuing press releases which described the program's purpose, by conducting special events and by distributing informational flyers.

A campaign "kick-off" event was held on Earth Day, April 22, 1995. The Department of Public Works partnered with the Department of Parks, Recreation and Marine to sponsor a Beach Clean Up and Catch Basin Stenciling event. At the event, in front of a crowd of volunteers and some dignitaries, the City's Mayor stenciled the first catch basin. Prior to this event, a press release was prepared for distribution to all the local newspapers, radio stations and the local cable company. Flyers were mailed to all the schools in the Long Beach Unified School District and to all the homeowners and business associations in the city.

The City's Engineering Bureau conducted nine stenciling events at different city parks throughout the community, one in each city council district. Each City Council member was notified about the stencil event within their council district. Some council members rolled up their sleeves and joined the stenciling work force in their district. Thus far, we had over 370 volunteers paint more than 4000 catch basins!! Participants were very enthusiastic about the project. We had some individuals volunteer more than once. We also received a lot of positive feedback from the non-participants. For a list of community groups that participated in Catch Basin Stenciling Program see the evidence of progress report for that specific BMP.

Industrial and Commercial Establishments

An extensive educational site visit model program will be developed by the County under the new permit. The City expects to participate in this development process. Establishing and implementing a city educational program for industrial/commercial establishments has been postponed and will take place after the countywide model program is developed.

Schoolchildren

There are many environmental outreach programs for City schoolchildren, including outreach by the City Water Department related to Water Conservation, and by Integrated Resources Bureau and the Nature Center.



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R0062206

## GENERAL PROGRESS (contd.)

The Intergrated Resources Bureau combined forces with the City's Nature Center to staff the Travelling Recycling Education Center (TREC). TREC visits all the Long Beach School District's 4th graders to teach them about recycling, urban run-off, and resource conservation.

Another program which took off this past year is the Moveable Musuem. This program was developed by Surfrider Foundation and co-sponsored by L.A. County Natural History Musuem and the City's Nature Center. Upon request, the Moveable Musuem visits the Long Beach School District schools and teaches the children about the environment. Three programs are offered. One program is called "Protect our Watery World" which gives an exploration of how our actions at home can help aquatic wildlife.

In addition, the City's Parks and Recreation Department Nature Center runs school tours and teacher workshops that are specifically related to ocean pollution prevention. The Nature Center's "Adopt-A-Gutter" Program, is a very effective method of reaching schoolchildren as well as entire neighborhoods regarding the runoff pollution prevention issue.

## SCHEDULE:

Continue existing program and refine it to fit, as necessary, the countywide model program which will soon be developed.



VOL 17 000367

R0062207

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: MUNICIPAL STAFF TRAINING

This BMP involves establishing a municipal staff awareness and training program embracing all applicable facets of City activities relating to storm water concerns.

## APPLICABLE PROGRAM AREA(S):

- RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- CONSTRUCTION
- ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective of this BMP is to educate municipal management and staff about the causes of stormwater pollution and the BMPs being implemented by the City of Long Beach for stormwater pollution control/prevention. By increasing awareness and understanding of the problems and offering suggested changes to alter the behavioral actions which lead to stormwater pollution, the City will come closer to its objective of decreasing the amount of pollutants entering the storm drain system.

## GENERAL PROGRESS:

City staff are composed of individuals from a broad spectrum of the City's economic and cultural sectors. Many of them will be responsible for implementing the BMPs. Consequently, at the outset of the Education Program, a survey was conducted to establish a baseline for the level of understanding City employees have of urban runoff pollution and methods to prevent it. The survey questionnaire was included with the paycheck distribution packet. After a few years, after the Education Program has been fully launched, the employee survey will be repeated to determine whether the education efforts have been successful.

Disseminating information to City employees has begun. Several articles have been published in the City's Employee Newsletter and the first issue of "The Flowline", which is a newsletter for city management, was published. Many City employees participated in hosting the Los Angeles County Fair informational booth. In order to participate, the employees were educated about the storm water quality program and its purpose.



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R0062208

## GENERAL PROGRESS (contd.):

The education of appropriate staff members to recognize how construction operations can contribute to runoff pollution and to recognize stormwater quality violations on construction sites has begun. Several city staff members attended the day-long seminar conducted by APWA regarding NPDES Construction permits and were trained to recognize stormwater quality violations such as vehicle management, on-site debris handling and other matters pertinent to NPDES program. An internal city training program will be developed from materials obtained at the seminar as well as from the countywide model program which is soon to be developed. The development of city inspectors' checklists to include stormwater pollution prevention elements has been postponed until the countywide model checklist is developed.

In coordination with the countywide model program for public agencies, the City's current information dissemination system will be expanded to include information relating to stormwater pollution prevention techniques and good housekeeping practices. City employees will be given information on how their actions and activities at work and home can contribute pollutants to storm drain system and what actions can reduce stormwater pollution. The City also plans to hold training workshops for employees whose jobs are directly related to Stormwater BMPs to explain each applicable BMP, its purpose, and its implementation.

## SCHEDULE:

Development and implementation of employee training workshops will follow the implementation schedule outlined in the new permit which is soon to be adopted.

Continue existing program.



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R0062209




DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: PUBLIC REPORTING OF ILLEGAL DISCHARGES AND/OR ILLEGAL DUMPING

This BMP involves promoting, publicizing, and facilitating public reporting of illegal discharges and/or dumping which includes utilizing the County 24-hour hotline.

## APPLICABLE PROGRAM AREA(S):

- RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- CONSTRUCTION
- ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing or mitigating illegal discharges and dumping into the storm drain system.

In order to facilitate and coordinate public reporting, the Los Angeles County Department of Public Works has implemented a 24-hour telephone Hotline. The storm drain Hotline is a "1-800" number which citizens can call to report suspected illegal discharges and dumping to the storm drain system. The Hotline number is 1-800-303-0003.

Long Beach has been a partner in the Hotline since September 1993 and has published the Hotline number in a Department of Public Works flood control flier which is mailed to all Long Beach utility customers (approximately 180,000) on an annual basis. The County Hotline number has also been published in brochures, informational flyers and pamphlets. In addition to the County Hotline, spills and/or dumping incidents are reported directly to the City via the Police Department or the Public Services Bureau.

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of this BMP are: (1) the public reporting system will deter illegal and illicit dumping of materials into the storm drain system; (2) the reporting will allow for quick responses to dumping incidents which will minimize the extent and amount of contamination to the storm drain system.



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R0062210

## GENERAL PROGRESS (contd.):

The number of calls received from the County dispatchers was approximately 23. This is a slight increase from the calls received the previous year. The number of direct calls received by 911 dispatchers and the Long Beach Public Service Bureau operators is 1500 phone calls. Of the 1500 phone calls, 220 were calls regarding hazardous waste. Most of the calls were relating to cleaning the debris out of the catch basins. Compared to the previous year, there has definitely been an increase in reporting. This may be attributed to the City's extensive public education program which was implemented this past year. A response reporting system has yet to be developed; therefore, an examination of the City's response has not been conducted.

## SCHEDULE:

Develop a city response reporting system.

Continue existing program.



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R0062211

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: CLEANING CATCH BASINS

This BMP involves cleaning catch basins, stormwater pump station forebays, earth ditches, and stormwater inlets on an annual basis.

## APPLICABLE PROGRAM AREA(S):

- RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- CONSTRUCTION
- ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by minimizing the buildup of debris and pollutants in catch basins and other storm drain structures.

The City of Long Beach has an existing program to clean catch basins, stormwater inlets, stormwater pump station forebays, and earth ditches on an annual basis. The catch basins, 3200 in quantity, are scheduled for cleaning a few months prior to the onset of the wet season. Cleaning of catch basins and inlets are contracted out, with inspection done by the city's Street Maintenance Division. The City owns and maintains 22 pump stations and approximately 4 miles of open-ditches which are cleaned manually by The city's Street Maintenance Division. In addition to the annual cleaning, these facilities are cleaned on an "as needed" basis in response to reports from residents and businesses.

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of cleaning the catch basins and the storm drain facilities is that litter and debris allowed to build up would contribute pollution to stormwater runoff. The program assessment is based on how well the catch basins and storm drain facilities are kept clean and the amount of debris collected.

The catch basin cleaning program is generally effective. The city's program provides the optimum benefit of minimizing stormwater pollution by cleaning the catch basins prior to the wet season, which lessens the pollution impact of the initial storm drain flush from the first storm of the season. At the time of this writing, the amount of debris collected by the



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R0062212

## GENERAL PROGRESS (contd.):

outside contractor was not known. The build up of material after the initial cleaning is then cleaned out on an "as-needed" basis. The amount of debris collected by city staff was 50 tons.

The amount of debris collected from the storm drain pump stations was 600 tons. The amount of debris collected from the open-ditches was 200 tons. The total amount of debris diverted from the storm drain system was 850 tons plus the amount collected by the outside contractor.

## SCHEDULE:

Continue existing program.



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R0062213

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: STREET SWEEPING

This BMP involves the regular sweeping of city streets.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- □ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by reducing the buildup of dirt, debris, and other pollutants on city streets.

The City of Long Beach has a very good sweeping program which requires most public areas to be swept on a weekly basis. The public areas include residential streets, major arterials, beach parking lots, bike paths, marina parking lots and airport areas. The areas are swept according to the following schedule:

| LOCATION | | SWEEPING FREQUENCY |
|---|---|---|
| Residential Streets | | Weekly |
| Downtown Streets | | Weekly or more frequently |
| Major Arterials | | Weekly or more frequently |
| Beach Parking Lots | | Weekly |
| Bike Paths | | Weekly |
| Marina Parking Lots | | Weekly |
| Airport: | Public Areas | Weekly or more frequently |
| | Roads | Weekly or more frequently |

The City of Long Beach practices source reduction by prohibiting the disposal of waste of any kind upon any street or alley. This prohibition includes the dumping, depositing, sweeping or blowing of debris into the street or alley. By practicing source reduction, the City of Long Beach minimizes the amount of material that is picked up in the sweeping program.



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R0062214

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of the street sweeping program is that dirt and debris which is collected by sweeping would otherwise be washed into the storm drain system by stormwater or non-storm related urban runoff. The program assessment is based on the frequency of sweeping and amount of debris collected.

According to the California Stormwater Best Management Practice Handbook, to achieve 50% removal of street dirt, the sweeping interval must occur ½ to 1 times the average interval between storms. By sweeping, at a minimum, on a weekly basis, the City of Long Beach exceeds this average interval and utilizes the effectiveness of street cleaning to the maximum extent practical. The time allowed for build-up of pollutants is kept to a minimum, which assures a low level of contaminants being washed off during storms.

This past year the City sweepers covered over 160,000 curb-miles and collected more than 13,000 tons of debris. This represents debris which is not being washed into the storm drain system.

## SCHEDULE

Continue existing program.



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000375
R0062215

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: HOUSEHOLD HAZARDOUS WASTE COLLECTION

This BMP involves the collection and proper disposal of household hazardous wastes, such as pesticides, paints, lubricants, and solvents.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing household hazardous wastes from entering the storm drain system through illegal dumping, illegal discharges, or contaminated runoff.

The City of Long Beach participates in the Household Hazardous Waste Roundup Program sponsored by the County of Los Angeles. The roundup is completely run and managed by the County. The role of the City of Long Beach is to advertise and inform residents on the roundup dates and locations, and when necessary, provide personnel to direct traffic at the roundup.

Several County roundup events are held each year at various locations. Long Beach City hosted a county roundup event for each of the past six years. The City very actively advertises the roundup event. A four-language brochure is mailed out with all utility bills to inform customers of the city-hosted events. To assist the City in spreading the word, the local newspapers advertise the events. Flyers are also distributed at many retail stores especially to all the major paint and hardware stores. County records show that Long Beach hosted events are among the highest attended in the County.

The City of Long Beach also promotes source reduction as a way of minimizing household hazardous waste. Promotion methods include distribution of source reduction guides, alternative product lists, and public education and information events. Many of the published items are multi-lingual, which makes the information more accessible to the entire Long Beach community.



VOL 17 000376

R0062216

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of the household hazardous waste collection program is that the material collected through the program is properly disposed of and is thus unavailable to be illegally or illicitly disposed of in the storm drain system.

The quantity of hazardous material collected, and properly disposed of, include: 4,700 gallons of oil; 15,000 gallons of paint; about 450 car batteries; and about 400 drums of miscellaneous waste. This past year 3,300 people participated.

## SCHEDULE:

Continue existing program.



VOL 17 000377

R0062217

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: LITTER RECEPTACLES

This BMP involves the placement and servicing of receptacles used for control of litter and refuse.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing litter and refuse from collecting in the storm drain system.

The City of Long Beach controls incidental litter through the placement and servicing of litter receptacles. Litter receptacles are generally located in business areas, bus stops, parks, the marinas, the beach front, and at public facilities where people tend to congregate. Approximately 2500 litter receptacles are located throughout the city. The City also encourages business associations to place additional litter receptacles in major retail areas. These receptacles are paid for by the associations and serviced by the City's Refuse Division.

The City has developed a Neighborhood Improvement Strategy program. Through this program, the city provides residents with litter receptacles for placement at locations in their neighborhood where litter accumulates. The residents service the receptacles by dumping them into their residential container which is then serviced by the city.

The City is host to many special events throughout the year. The City requires event sponsors to provide an adequate number of litter receptacles and that they be serviced. Special event litter receptacles are serviced by the City or by contract haulers.

By providing receptacles, people are given an alternative to littering which they will generally use. As evidence, areas around litter receptacles appear reasonably clean and litter-free.



VOL 17 000378

R0062218

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of litter receptacles is that refuse placed in the receptacles is refuse which may have otherwise collected in the storm drain system.

Use and service of the litter receptacles are adequate. This past year, the 450 receptacles placed on residential and commercial streets collected over 290 tons of trash and were serviced on a weekly basis. The City's use of field supervisors and refuse investigators works well to make sure receptacles do not overfill. Disposal patterns have been recognized which the Refuse Division uses to properly size receptacles for weekly service. With supervisors in the field, needs for larger or repairing receptacles is reasonably quick.

## SCHEDULE

Develop a reporting system to monitor the amount of waste collected in the parks, marinas, and beaches.

Continue existing program.



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R0062219

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: CLEAN SWEEP OPERATION PROGRAM

This BMP involves a one-time collection of refuse to city residents, free of charge.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the accumulation of trash and debris, which may eventually wash into the storm drain system.

The City annually conducts Clean Sweep Operations for city residents in the spring. Clean Sweep events are scheduled with the Refuse Division by city councilpersons for their district. The City consists of nine council districts; thus, nine events are conducted. Residents are requested to set out allowable refuse for a free, one-time collection. This is an opportunity for residents to dispose of old furniture, tree trimmings, yard waste, appliances and other bulky items for free.

A notice is mailed out with utility bills to advertise the event. The schedule of Clean Sweep events is usually publicized in local newspapers or community newsletters. Flyers are also sent to neighborhood associations. Some communities take advantage of these free pick-ups to conduct neighborhood cleanup activities to remove litter and debris from their streets and alleys.

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of the Clean Sweep program is that litter and debris collected and disposed of through this program is material which may have otherwise washed into the storm drain system, or contributed contaminants to stormwater runoff. The program assessment is based on showing how much material is being properly disposed of.



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R0062220

## GENERAL PROGRESS (contd.):

The clean sweep program is a great community program. It seems to serve as a "spring cleaning" event for residents. Those communities which take advantage of this opportunity by conducting neighborhood cleaning campaigns definitely impact storm water quality. Community clean-ups remove refuse from areas which are not otherwise maintained.

This past year, the amount of debris and litter collected was 770 tons.

## SCHEDULE:

Continue existing program.



VOL 17 000381

R0062221

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: HOUSEHOLD RECYCLING

This BMP includes collecting glass, plastic, newspaper, corrugated cardboard, aluminum and steel cans.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the collection of refuse in the storm drain system.

Curbside collection of recyclables is available to all single family residences and multi-family dwellings with ten or fewer units. Participants in the household recycling program separate recyclables from their refuse, and deposit the recyclable materials into a separate container. Recyclables are collected weekly, on the same schedule as regular refuse collection. It is collected by a firm under contract to the City of Long Beach.

Recyclables are set out in plastic open containers provided by the city. Items collected include corrugated cardboard, newspaper, glass, aluminum and steel cans, and plastic (#1-4). All items are mixed in the same container, except newspaper and cardboard, which are to be bundled. Residents are asked to rinse containers before placing them in the recycling bin.

Multi-family residences larger than ten units are not required to have a recycling program. The city fully supports any efforts by multi-family units to start their own program by providing educational material and advice, when requested. Permitted waste haulers are required to offer recycling services upon request.



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R0062222

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of the household recycling program are: (1) material collected is material which may otherwise have been illegally disposed of in the storm drain system; (2) material collected is material which may otherwise have been improperly stored outdoors in a way that would contribute contaminants to stormwater runoff. The program assessment is based on showing how much material is being properly collected.

The City's household recycling program is adequate. Implementation of a curbside collection program exercises this program to the fullest extent practical to the majority of Long Beach residents. This past year, the quantity of material collected include: 5,825 tons of newspaper; 1,446 tons of corrugated cardboard; and a combined total of 4,718 tons of aluminum/metal cans, glass bottles, and plastics.

## SCHEDULE:

Continue existing program.



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R0062223

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: SPECIAL COLLECTION PROGRAM

This BMP involves providing a service to residents for collection of bulky items for disposal.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the accumulation and improper disposal of refuse. The City of Long Beach offers a special collection service for Long Beach residents. Residents can request special collection of bulky items such as furniture, appliances, tires, yard waste, or tree trimmings for disposal. Residents are charged a nominal fee of $6.00 for each special collection. This program provides a year-round service to pick up items which might otherwise be improperly stored or disposed of.

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of the special collection program are: (1) items collected are items which may otherwise have been illegally dumped; (2) items collected are items which may otherwise have been improperly stored outdoors in a way that would contribute contaminants to stormwater runoff. The program assessment is based on showing how much material is being properly disposed of.

The special collection program is generally adequate. The city received approximately 8,320 calls this past year, with furniture and yard waste being the most common items collected. The amount of waste collected was 2300 tons.

## SCHEDULE:

Continue existing program.



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R0062224

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: USED OIL RECYCLING PROGRAM

This BMP involves collecting and recycling used motor oil.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the improper disposal of used motor oil into the storm drain system.

The City of Long Beach has a curbside collection program for used motor oil. This collection program is for single family residences and multi-family dwellings with ten or fewer units. Residents are supplied with special oil storage containers designed to prevent spillage during curbside collection. Oil is collected by the contracted recycling service used for the household recycling program. Oil is collected on the same schedule as the other recyclables, on a weekly basis, using the same collection vehicle.

The City also has a separate used oil collection program for the marinas. The City maintains a storage tank where marina residents can deposit their motor oil. The tank is emptied as needed by an outside contractor.

The City has encouraged development of a network of state certified drop-off centers where used oil can be taken for recycling. The drop-off centers are typically located at gas stations and auto parts stores. The certified drop-off centers are completely managed and maintained by the business owners. These drop-off centers supplement the City's programs by providing a place where persons not able to participate in the curbside program can take their oil. The city does not collect or maintain records of the oil collected at drop-off centers.



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000385
R0062225

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of the used oil recycling program is that oil collected and disposed of properly is oil which may have otherwise been illegally or illicitly disposed of in the storm drain system. The program assessment is based on showing how much used oil is being diverted by this collection program.

This past year, the amount of used-oil collected through curbside collection was 43,779 gallons. The amount collected from the marina was not available at this time of writing.

The City's used-oil recycling program is a comprehensive program of outstanding quality. Especially notable is the curbside collection program, which is rare for used oil recycling. Using curbside collection and supplying residents with containers is practicing this program to the maximum extent. Combined with the oil collection program in at the marinas and the certified drop-off centers, the City of Long Beach offers a very comprehensive collection program to its community.

## SCHEDULE:

Continue existing program.



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R0062226

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: GREEN WASTE PROGRAM

This BMP involves composting and proper disposal of green waste.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by preventing the collection and decomposition of organic material (green waste) in the storm drain system.

There are three aspects to the green waste program: proper disposal of green waste, household composting, and city grounds keeping practices.

- Proper disposal of green - The city requires property owners to tie all tree limbs, shrubs, trimmings, and other green waste of a similar nature in compact bundles for disposal. Materials likely to become airborne upon disposal are required to be securely wrapped. The city encourages proper disposal through its Special Collection program and Clean Sweep Operation program.
- Household composting - The city sponsors and/or participates in seminars on composting and distributes literature explaining methods of green waste composting. Monthly composting education classes are offered through the Parks, Recreation and Marine Department.
- City grounds keeping - In city parks, grass clippings are left on the turf for natural decomposition and re-incorporation. Traffic islands are cut with mulching mowers which grind lawn clippings and then leave them in place. About fifty percent of the city tree trimmings are transported to a recycling facility and the other half is hauled to a proper disposal facility.

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of the green waste program is that keeping the storm drain system free of organic matter will improve the quality of



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stormwater and urban runoff on the system. The program assessment is based on examining how comprehensive and effective the program is at keeping organic matter out of the storm drain system. The methods for assessing this BMP include:

- Evaluating promotion and participation in the residential composting program
- Evaluating landscape maintenance in terms of mulching, lawn trimming and irrigation, and collection of trimmings

The green waste program has been evaluated and found to be generally adequate. Through city ordinances the program includes measures to keep green waste out of the storm drain system. The composting education classes are effective. The classes are advertised in the quarterly Parks & Recreation Schedule. This past year, attendance at quarterly classes typically varied between 7 and 19. This indicates that there is consistent and on-going interest in home composting. Stormwater quality issues have been incorporated into the composting education classes.

This past year, the amount of waste collected from the special collection program was 2300 tons which includes yard waste. Through the clean sweep operation, the amount of debris and yard waste collected was 770 tons.

The refinement of the City's grounds keeping procedures will begin after the development of the countywide model program for Landscape and Recreational Facilities Management.

**SCHEDULE:**

The schedule for refining the City's grounds keeping procedures will follow the implementation schedule outlined in the new permit which is soon to be adopted.

Continue existing program.



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R0062228

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: FACILITY INSPECTIONS

This BMP will involve conducting "site visits" at industrial or commercial businesses which have potential for contributing pollutants to stormwater runoff or the storm drain system.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by minimizing the contribution of pollutants from industrial and commercial businesses which may eventually wash into the storm drain system.

The scope for this BMP has changed since the last reporting period due to the new permit negotiations. This BMP will involve educational site visits rather than inspections.

As reported previously, the city conducts a variety of inspection programs of businesses within the city. The Hazardous Waste Operations Division conducts annual inspections of approximately 700 hazardous waste generating businesses. The Fire Department conducts several programs, including: hazardous materials inspections of about 1700 facilities; code enforcement inspections; and new construction inspections. The Health Department conducts routine inspections on approximately 1,150 food preparation facilities twice per year.

The program is, in its present state, a combination of several inspection programs. As they currently now stand, specific inspection items are not established to educate the businesses about storm water quality or look for potential stormwater quality concerns. However, many of the inspection items do incidentally address stormwater concerns. For example, proper storage of some hazardous materials often require that they be stored in a covered area with containment for safety and public health reasons; at the same time, keeping hazardous materials covered also provides stormwater quality benefits.



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R0062229

## GENERAL PROGRESS:

The program assessment was based on the extent of which existing inspections cover stormwater quality issues. It was determined that the city's facility inspection program needed to be modified to include a focus on storm water quality. The methods for assessing this BMP included:

- Modifying the content of city inspection programs
- Examine city efforts towards educating the business owner on appropriate "housekeeping" practices

There is sufficient number and variety of inspection programs performed by the city to adequately cover industrial and commercial businesses. Some existing inspection programs will be better suited than others to address storm water issues. What needs to be developed is an educational program addressing storm water issues for the various types of facilities along with suggested BMPs to be implemented.

The new permit which is soon to be adopted outlines the minimum requirements that should be included in the Industrial/Commercial Educational Program. One requirement is the use of a checklist of specific storm water BMPs for each industrial/commercial SIC group. This list will be developed by the County and used on a countywide basis. The modification of the City's exiting inspection programs will begin after the approval of the new permit since it specifies the minimum program requirements.

## SCHEDULE:

The schedule for modifying the City's existing inspection programs and implementing the educational site visits will follow the implementation schedule outlined in the new permit which is soon to be adopted.



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R0062230

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: WATER CONSERVATION AND PROPER USE

This BMP includes the implementation of water conservation and proper use measures.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- □ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to improve the quality of stormwater runoff by reducing non-storm related urban runoff which may carry pollutants into the storm drain system.

The city has an on-going program to promote the conservation and proper use of water. The Water Department actively promotes this message through distribution of informational brochures and through presentations to schools and other civic organizations.

Water conservation and proper use program which minimize the amount of non-storm surface runoff are being practiced by city agencies. They include: (1) water shutoff nozzles are required on all hoses used in the marina area; (2) car washing in the marina area is prohibited;(3) moisture sensors have been installed in vegetated street medians to prevent over irrigation and unnecessary runoff; (4) the irrigation system for street medians is gradually being refitted with more water efficient sprinkler heads.

## GENERAL PROGRESS:

The assumptions used in evaluating the effectiveness of the water conservation program is that minimizing the volume of non-storm related runoff will minimize the amount of contaminants washed into the storm drain system. The program assessment is based on the comprehensiveness of the conservation and proper use education effort.



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R0062231

The water conservation program has been evaluated and found to be generally adequate. The emphasis of this program is on education. The Water Department distributed many brochures and nearly 85, 000 utilty inserts. The Department actively conducted a Water Awarenes Campaign for the month of May which include utility inserts and newspaper advertisements.

**SCHEDULE:**

Continue the existing program to the maximum extent practicable and to revise the educational program to include an element on surface water runoff.



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R0062232

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: STORM DRAIN MASTER PLAN

This BMP involves updating the city's computerized storm drain facilities management system and developing the system to assist the city in meeting their NPDES requirements.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective is to optimize the city's efforts in meeting the NPDES permit requirements by using the city's geographical information system (GIS).

Long Beach has a computerized storm drain facilities management system. The system integrates several computer models/systems through a menu driven application in dBASE. The data base consists of land use maps, drainage maps, storm drain alignments, hydrology data, hydraulic data, and storm drain design data.

A major consideration in the use of the storm drain facilities management system is to integrate it with the city's GIS system. Currently the city is in the process of integrating some of the storm drain facilities management system onto the GIS platform. The GIS platform offers an excellent basis to assist the city in meeting the challenges of storm water management. The GIS system will provide a coherent database of several city departments' information. This information can be queried and manipulated to fit any type of application. Ultimately, the system will be used in scheduling, tracking and reporting the city's NPDES compliance efforts.

## GENERAL PROGRESS:

The entire storm drain system is on the GIS platform including the catch basins. This past year, the drainage boundaries in the facilities mapping system have been transferred on to the city's GIS platform. An new identification system for the storm drain system components have been implemented to correlate with the drainage boundaries.



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## GENERAL PROGRESS (contd.)

The system has been very useful in tracking progress of the catch basin stenciling program. The system identifies those catch basins stenciled by volunteers. Other tracking system that will be developed are for illegal connection field activities, types of industrial and commercial sites in each watershed.

## SCHEDULE:

Continue to update the storm drain data and develop applications to assist the city in meeting the NPDES requirements.



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R0062234

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: CATCH BASIN STENCILING

This BMP involves stenciling the City catch basins with prohibitive language and graphic icons to discourages the illegal dumping of unwanted materials into the storm drain system.

## APPLICABLE PROGRAM AREA(S):

- RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- CONSTRUCTION
- ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objective of the storm drain stenciling program is to enhance public awareness of the connection between the storm drain system and our receiving waters. Another objective is to discourage individuals' habitual waste disposal actions, e.g. dumping of automobile fluids and landscaping wastes into the storm drain system.

These objectives were accomplished by stenciling a sign adjacent to storm drain inlets which contains a message that discourages the dumping of improper materials into the storm drain system because they drain directly to the ocean. The City adopted the Los Angeles County/Heal the Bay standard stencil design as a matter of consistency.

The primary purpose of the stencil program is to have a message stenciled on the catch basins in the City of Long Beach and secondarily, but most importantly, to educate the public about non-point source pollution. The City decided to exercise this program to its fullest extent. The City chose to employ community volunteers to perform the stenciling work instead of hiring a contractor to do the work. What better way to educate the community than to get them involved in painting the warning symbols on the catch basins.

The City orchestrated the stenciling program with it's public education program by issuing press releases which described the program's purpose, by conducting special events and by distributing informational flyers.



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## GENERAL PROGRESS:

THANKS to all the hard working volunteers, the City's Catch Basin Stenciling Program has been a BIG SUCCESS !!! Thus far, we had over 370 volunteers paint more than 4000 catch basins!!! Participants were very enthusiastic about the project. We had some individuals volunteer more than once. We also received a lot of positive feedback from the non-participants.

A campaign "kick-off" event was held on Earth Day, April 22, 1995. The Department of Public Works partnered with the Department of Parks, Recreation and Marine to sponsor a Beach Clean Up and Catch Basin Stenciling event. At the event, in front of a crowd of volunteers and some dignitaries, the City's Mayor stenciled the first catch basin. Prior to this event, a press release was prepared for distribution to all the local newspapers, radio stations and the local cable company. Flyers were mailed to all the schools in the Long Beach Unified School District and to all the homeowners and business associations in the city.

From that day forward, the City's Engineering Bureau conducted nine stenciling events at different city parks throughout the community, one in each city council district. Each City Council member was notified about the stencil event within their council district. Some council members rolled up their sleeves and joined the stenciling work force in their district.

The City supplied the volunteers with all the necessary materials and maps. An educational briefing was conducted for each group prior to beginning their stenciling work. Informational material was also available to educate the non-participants about storm water pollution and the storm drain system. At the events, refreshments were generously donated by the International Longshoremen's and Warehousemen's Union, Locals 13, 63, 94, and their Southern California District Council. Certificates of participation were also provided to all the volunteers.

The Catch Basin Stenciling program is still ongoing. Although no more "formal" stenciling events are being conducted, the City receives several calls from various groups and individuals, who want to carry on the task. They are supplied with everything they need and proceed to organize themselves into teams to stencil the catch basins.

Many Long Beach citizens and friends from other communities participated. The following list of organizations demonstrates the diversity of the people who participated in this program:

Boy Scouts of America, Troops 77 & 693, Pack 77 and Others

Cub Scouts of America, Pack 67 & Others



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Eagle Scouts
El Dorado Park South Neighborhood Association
El Dorado Woman's Club
Farmers & Merchants Bank
Friends of the Los Angeles River
Girl Scouts of America, Troops 479, 221 & 324 and Others
Holy Innocent School Students
Jr. Lifeguard Club
Lakewood High School Students
Lindberg Middle School Student
Long Beach City Council
Long Beach City Employees
Los Angeles International Church of Christ
Millikan High School Students
Millikan High Marine Biology Students
Neighborhood Citizen Committee
North Long Beach Business Association
Northwest Chapter of North Long Beach Neighborhood Association
Poly High School Students
Poly High School Cross Country Team
Poly High School Spanish Club
Red Cross
Sierra Club
Surfrider Foundation
Washington Youth Center
West End Community Association
Wrigley Association

**SCHEDULE:**

Continue existing program.



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STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: PROPER DISPOSAL OF LITTER, YARD WASTE, AND PET FECES

This BMP involves discouraging improper disposal practices and to provide viable alternatives.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The primary objective of this BMP is to educate the public about the viable alternatives for improper disposal practices and about the water quality impacts of pollutants. By educating the public, this may improve the quality of stormwater runoff by preventing the accumulation of trash and debris on public streets, which may eventually wash into the storm drain system.

The City of Long Beach has in place several programs designed to reduce litter from public areas within the City and from private residential and commercial areas.

In conjunction with the Litter Receptacles BMP, the City has approximately 2500 litter receptacles. Litter receptacles are generally located in business areas, bus stops, parks, the marinas, the beach front, and at public facilities where people tend to congregate. The City also encourages business associations to place additional litter receptacles in major retail areas. These receptacles are paid for by the associations and serviced by the City's Refuse Division. The City also has programs for providing temporary waste receptacles at special events, such as the Long Beach Grand prix, parades, and street fairs, as well as special janitorial service/ litter control and cleanup programs in the City's business districts.

The City has developed a Neighborhood Improvement Strategy program. Through this program, the city provides residents with litter receptacles for placement at locations in



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## BACKGROUND(contd.):

their neighborhood where litter accumulates. The residents service the receptacles by dumping them into their residential container which is then serviced by the city.

The City annually conducts Clean Sweep Operations for city residents in the spring. Clean Sweep events are scheduled with the Refuse Division by city councilpersons for their district. The City consists of nine council districts; thus, nine events are conducted. Residents are requested to set out allowable refuse for a free, one-time collection. This is an opportunity for residents to dispose of old furniture, tree trimmings, yard waste, appliances and other bulky items for free. Many communities take advantage of these free pick-ups to conduct neighborhood cleanup activities to remove litter and debris from their streets and alleys.

Curbside collection of recyclables is available to all single family residences and multi-family dwellings with ten or fewer units. Participants in the household recycling program separate recyclables from their refuse, and deposit the recyclable materials into a separate container. Recyclables are collected weekly, on the same schedule as regular refuse collection. Multi-family residences larger than ten units are not required to have a recycling program. The city fully supports any efforts by multi-family units to start their own program by providing educational material and advice, when requested. Permitted waste haulers are required to offer recycling services upon request.

The City of Long Beach offers a special collection service for Long Beach residents. Residents can request special collection of bulky items such as furniture, appliances, tires, yard waste, or tree trimmings for disposal. Residents are charged a nominal fee of $6.00 for each special collection. This program provides a year-round service to pick up items which might otherwise be improperly stored or disposed of.

As discussed in the Green Waste Program, BMP, there are three aspects to the green waste program: proper disposal of green waste, household composting, and city grounds keeping practices.

- Proper disposal of green - The city requires property owners to tie all tree limbs, shrubs, trimmings, and other green waste of a similar nature in compact bundles for disposal. Materials likely to become airborne upon disposal are required to be securely wrapped. The city encourages proper disposal through its Special Collection program and Clean Sweep Operation program.
- Household composting - The city sponsors and/or participates in seminars on composting and distributes literature explaining methods of green waste composting. Composting education classes are advertised in the Parks, Recreation and Marine Department quarterly schedule which is distributed to every resident and made available at public counters. The City's Nature Center display exhibits on composting and vermaposting for the general public to view.



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## BACKGROUND(contd.):

- City grounds keeping - In city parks, grass clippings are left on the turf for natural decomposition and re-incorporation. Traffic islands are cut with mulching mowers which grind lawn clippings and then leave them in place. About fifty percent of the city tree trimmings are transported to a recycling facility and the other half is hauled to a proper disposal facility.

The City intended to conduct a pilot project for the proper disposal of pet feces by installing 2 plastic bag dispensers in selected areas in which residents tend to walk their pets (e.g., parks, or beach boardwalks). These dispensers were going to include language urging residents to be responsible pet owners by cleaning up and depositing pet feces in a proper garbage receptacle. This pilot project is on hold until the new permit requirements are known at which time the City will have a better understanding about the countywide model program and will be able to focus its resources on the priority areas.

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness this BMP is that by discouraging improper disposal practices to residents and businesses and providing them with viable alternatives, there will be less debris collected in the storm drain system. The program assessment is based on showing how much material is being properly collected which is an indication of the amount of waste that is properly disposed of.

This past year, the 450 receptacles placed on residential and commercial streets collected over 290 tons of litter and were serviced on a weekly basis. Through the clean sweep operation, the amount of debris and yard waste collected was 770 tons. The quantity of material collected from the City's household recycling program include: 5,825 tons of newspaper; 1,446 tons of corrugated cardboard; and a combined total of 4,718 tons of aluminum/metal cans, glass bottles, and plastics. The amount of waste collected from the special collection program was 2300 tons which includes yard waste.

By providing these programs, people are given viable alternatives for improper disposal practices which the community of Long Beach generally use. This is confirmed by the amount of debris collected.

## SCHEDULE:

Continue the on-going City programs.

Implementation of the pilot project for the Pet Feces Reduction program has been postponed until the countywide model program for this BMP is developed.



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R0062240

STORM WATER MANAGEMENT CITY of LONG BEACH

DATE: MAY 30, 1996
CO-PERMITTEE: LONG BEACH CITY
NAME: EDWARD T. PUTZ, CITY ENGINEER

# EVIDENCE OF PROGRESS AND REVISED PLAN AND SCHEDULE

## BMP: SIDEWALK AND ALLEY CLEANING

This BMP involves the removal of dirt, rubbish, litter and debris from sidewalks and alleyways to prevent these pollutants from being washed into the storm drain system.

## APPLICABLE PROGRAM AREA(S):

- ■ RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL
- □ CONSTRUCTION
- ■ ILLICIT DISCHARGE AND ILLEGAL DUMPING

## BACKGROUND:

The objectives of this BMP are to educate the citizenry through its Public Outreach Program about reducing pollutants in stormwater by providing clean sidewalks and alleys, and to enforce the City's ordinances governing litter control as is necessary. The City also commits to continuing the use of service organizations, such as the Conservation Corps, to pick up litter and manually clean sidewalks in certain areas of the City.

City Cleanup Programs:

In conjunction with the Clean Sweep Operation Program BMP and the Neighborhood Improvement Strategy Program, the residential communities take advantage of free refuse pickups to conduct neighborhood cleanup activities to remove litter and debris from their local sidewalks and alleys.

Many Long Beach residents take full advantage of the Special Collection Program BMP for minimal cost. This program provides a year-round service to pick up items such as yard waste or tree trimmings which may otherwise be improperly disposed of.

The City no longer cleans improved (i.e., paved or asphalt) alleyways due to budget constraints. In 1994 over 100,000 miles of public alleys were swept as part of the City's street sweeping activities. The Refuse Collection Department still deploys a Special Crew of 2 "spotters" which patrol the City to look for people dumping garbage on streets and in alleys, and reports these areas to the Department for further action.

The City utilizes the services of several organizations and private companies to keep sidewalks and alleyways clean. Local Conservation Corps participants are often called



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## BACKGROUND (contd.):

in to pick up litter and manually clean alleyways. The Community Development Department hires private janitorial services to weekly clean sidewalks in the downtown business district.

Each of these City programs lessen the amount of litter and debris which could otherwise enter the storm drain system.

Through the Public Education and Outreach BMP, the City will inform the public about proper sidewalk cleaning methods, and proper disposal methods for sweepings, litter and debris.

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of this BMP is the amount of debris collected through the programs listed above may have been improperly disposed on the city sidewalks or alleys and ultimately captured in the in the catch basins. The City recognizes the importance of sidewalk and alley cleaning in maintaining a pollutant-free and aesthetically pleasing municipal environment.

A side from terminating the monthly alley sweeping due financial constraints, the City is fully committed in implementing the other programs. Through the clean sweep program, over 770 tons of debris were collected which may have otherwise been diverted into the storm drain system and carried directly to the ocean. In addition, 2300 tons of waste was collected through the special collection program.

## SCHEDULE:

Continue existing programs and refine them to fit the new permit requirements. The modifications, if any, will follow the implementation schedule outlined in the new permit.



VOL 17 000402

R0062242

## BACKGROUND (contd.):

in to pick up litter and manually clean alleyways. The Community Development Department hires private janitorial services to weekly clean sidewalks in the downtown business district.

Each of these City programs lessen the amount of litter and debris which could otherwise enter the storm drain system.

Through the Public Education and Outreach BMP, the City will inform the public about proper sidewalk cleaning methods, and proper disposal methods for sweepings, litter and debris.

## GENERAL PROGRESS:

The assumption used in evaluating the effectiveness of this BMP is the amount of debris collected through the programs listed above may have been improperly disposed on the city sidewalks or alleys and ultimately captured in the in the catch basins. The City recognizes the importance of sidewalk and alley cleaning in maintaining a pollutant-free and aesthetically pleasing municipal environment.

A side from terminating the monthly alley sweeping due financial constraints, the City is fully committed in implementing the other programs. Through the clean sweep program, over 770 tons of debris were collected which may have otherwise been diverted into the storm drain system and carried directly to the ocean. In addition, 2300 tons of waste was collected through the special collection program.

## SCHEDULE:

Continue existing programs and refine them to fit the new permit requirements. The modifications, if any, will follow the implementation schedule outlined in the new permit.



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R0062243

# LOS ANGELES COUNTY
# DEPARTMENT OF PUBLIC WORKS

## NPDES PERMIT NO. CA0061654

## PHASE III

## (LOWER LOS ANGELES RIVER, LOWER SAN GABRIEL RIVER, AND SANTA CLARA RIVER BASINS)

# ADDITIONAL BEST MANAGEMENT PRACTICES
# RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL AREAS

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R0062244

# CITY OF

# LONG BEACH

VOL 17
000405

Co-Permittee City of Long Beach
Date April 6, 1995

Name Edward T. Putz
Title City Engineer

# ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL AND INDUSTRIAL

Best Management Practices: Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

## CATCH BASIN STENCILING

Description:

This ABMP includes stenciling the catch basins with prohibitive language and graphic icons which discourage the illegal dumping of unwanted materials into the storm drain system.

Objectives:

The objective of the storm drain system stenciling program is to enhance public awareness of the pollutant effect on local receiving waters from stormwater/urban runoff and to discourage individuals' habitual waste disposal actions, e.g. dumping automobile fluids and landscaping wastes into the storm drain system. This objective is accomplished by stenciling a sign adjacent to storm drain inlets which contains a message that discourages the dumping of improper materials into the storm drain system.

Approach:

1. Select a stencil design. Long Beach adopted the Los Angeles County standard stencil design..
2. Inventory the catch basins to be stenciled. This work is complete and maps indicating their locations are being prepared.
3. Determine type of work force to be used. In coordination with the public

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Approach (cont'd.):

outreach program, the City has decided to use a combination of City forces and volunteer groups. For major arterials, City personnel will perform the stencil work, and for other areas, volunteers will be used.

4. Dissect the City into reasonable size areas. The City will be conducting 9 events, one in each council district.
5. Set a reasonable implementation schedule. The volunteer work will commence in April 1995 and be completed by early August 1995.
6. Contact environmental groups and volunteer organizations. This work has been done through phone calling and sending out letters to several local organizations.
7. Conduct a pilot project with the volunteer leaders. The pilot project has been scheduled for April 8, 1995.
8. Determine a kickoff campaign date. The kickoff campaign date has been scheduled for April 22, 1995. We are combining the Catch Basin Stenciling Program kick-off day with our Beach Clean-Up Program to emphasize the connection.
9. Advertise the events. For the April 22nd event, flyers have been mailed to more than 3,000 volunteers. Over a 1,000 flyers have been disbursed to the Long Beach Schools for posting. Flyers will be available at all City public counters. One announcement about the Catch Basin Stenciling Program has been published in the local City newspaper and another will follow a week before the event. Two weeks before each event, notification letters will be mailed to the homeowner associations within that council district.
10. In coordination with the Public Education and Outreach BMP, informational material will be available at the stenciling events to educate the public about storm water pollution and the storm drain system.

Schedule: Program is in progress.

Legal Authority: Not required

VOL 17 000407

Co-Permittee City of Long Beach
Date April 6, 1995

Name Edward T. Putz
Title City Engineer

# ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL AND INDUSTRIAL

Best Management Practices: Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

## PROPER DISPOSAL OF LITTER, YARD WASTE, AND PET FECES

Description:

This ABMP involves discouraging improper disposal practices by residents and business operators of solid waste, particularly placing or leaving litter, yard waste, and pet feces in the streets or areas where runoff may carry pollutants from these forms of solid waste into the storm drain system.

Objectives:

The primary objective of this BMP is to educate the public about the water quality impacts of pollutants contained in litter, yard waste, and pet feces and about viable alternatives to prohibited disposal practices.

Approach:

Through the Public Education and Outreach BMP, the City will attempt to educate the public about the laws requiring proper disposal methods that were passed to prevent pollutants from reaching the storm drain system, and to provide viable alternatives to prohibited behaviors.

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Approach (cont'd.) :

1. Litter/Yard Waste Reduction Programs - The City of Long Beach has in place several programs designed to reduce litter from public areas within the City and from private residential and commercial areas.

   a. Litter Receptacles. In conjunction with the Litter Receptacles BMP, the City will determine the location of approximately 350 existing litter receptacles. In coordination with the City's Neighborhood Improvement Strategy and Facility Inspections, the City will evaluate current distribution in an effort to target priority areas such as bus stops, convenience and grocery stores, gas stations, public buildings, parks and other high pedestrian traffic areas. The City also has programs for providing temporary litter receptacles at special events, such as the Long Beach Grand prix, parades, and street fairs, as well as special janitorial service/ litter control and cleanup programs in the City's business districts.

   b. Green Waste Program. Through the City's Green Waste Program BMP, the City will review ways to improve the program participation and effectiveness in reducing green waste pollution. The City will also provide information to residents through its Public Education and Outreach BMP about the advantages of backyard composting, vermaposting and grass-cycling. Within the City, the Parks and Recreation Department and the Nature Center offer classes and display exhibits on composting and vermaposting.

   c. Special Collection Program. Under the Special Collection Program BMP, the City will review the current program and make appropriate changes in the frequency and location of the Special collections, if necessary.

VOL 17 00409

Approach (cont'd.):

2. Implement Pet Feces Reduction Program - In conjunction with the Public Education and Outreach BMP, the public will be given information on the stormwater problems associated with improperly disposed pet feces. The City will conduct a pilot project by installing 2 plastic bag dispensers in selected areas in which residents tend to walk their pets (e.g., parks, or beach boardwalks). These dispensers will include language urging residents to be responsible pet owners by cleaning up and depositing pet feces in a proper garbage receptacle.

Schedule: Continue on-going Litter/Yard Waste Reduction Programs. Implement pilot project for the Pet Feces Reduction program by the Spring of 1996.

Legal Authority: Long Beach Municipal Code

VOL 17 00410

Co-Permittee City of Long Beach
Date April 6, 1995

Name Edward T. Putz
Title City Engineer

# ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL AND INDUSTRIAL

Best Management Practices: Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

## SIDEWALK AND ALLEY CLEANING

Description:

This ABMP involves the removal of dirt, rubbish, litter and debris from sidewalks and alleyways to prevent these pollutants from being washed into storm drain system.

Objectives:

The objectives of this ABMP are to educate the citizenry through its Public Outreach Program about reducing pollutants in stormwater by providing clean sidewalks and alleys, and enforce the City's ordinances governing litter control as is necessary.

Approach:

The City of Long Beach recognizes the importance of sidewalk and alley cleaning in maintaining a pollutant-free and aesthetically pleasing municipal environment.

Existing City Cleanup Programs

- The City cleans all improved (i.e., concrete or asphalt) alleyways at least once a month as part of the Street Sweeping program. About 6,000 miles of public alleys were swept in 1994 as part of the City's street sweeping activities. Logs of alley miles will be maintained and reported.

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Approach (cont'd.):

- The City also commits to continuing the use of service organizations to pick up litter and manually clean sidewalks in certain areas of the City. The City currently utilizes the services of several organizations and private companies to keep sidewalks and alleyways clean. Local Conservation Corps participants are often called to pick up litter and manually clean alleyways. The Community Development Department hires private janitorial services to weekly clean sidewalks in the downtown business district. A tracking system needs to be developed to record and report the amount of City effort.
- In conjunction with the Clean Sweep Operation Program BMP, residential communities can take advantage of free pickups to conduct neighborhood cleanup activities to remove litter and debris from their local sidewalks and alleys.
- Through the Public Education and Outreach BMP, the City will inform the public about proper sidewalk cleaning methods, and proper disposal methods for sweepings, litter and debris.

Schedule: Programs are currently in progress. Develop a tracking system to monitor the effectiveness by December 1995.

Legal Authority: Long Beach Municipal Code

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# CITY OF LONG BEACH

DEPARTMENT OF PUBLIC WORKS

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (310) 570-6383


April 7, 1995


RECEIVED

APR 13 1995

DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION
WATER QUALITY SECTION


Mr. Gary Hildebrand
Supervising Civil Engineer III
County of Los Angeles
Department of Public Works
900 South Fremont Avenue, Annex 2nd Floor
P.O. Box 1460
Alhambra, CA 91802-1460

**SUBJECT:** **LOS ANGELES COUNTY NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT NO. CA0061654 PHASE III CO-PERMITTEE SUBMITTAL**

Attention: Frank Kuo, AICP

Dear Mr. Hildebrand:

In compliance with the provisions of the area-wide NPDES Permit, and as a Co-Permittee under the permit, the following document is submitted as specified in the second year activities plan for Phase III cities:

**City of Long Beach**
**Additional BMP Plans**

The City of Long Beach believes that this submittal fully meets the requirements and submittal schedule set forth in the workplan.

If you have any questions, please contact Barbara Muñoz, Senior Civil Engineer at (310) 570-7454.

Sincerely,

Richard Schacht
Division Engineer

Enclosures

cc: Raymond T. Holland, Director of Public Works
Edward T. Putz, City Engineer

RS:BM:mlc/21-130


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FAX (310) 570-2601

ENERGY RECOVERY BUREAU
120 HENRY FORD AVE.
90802 (310) 495-2666
FAX (310) 436-6940

ENGINEERING BUREAU
333 W. OCEAN BLVD., 9th FLOOR
90802 (310) 570-6383
FAX (310) 570-6012

INTEGRATED RESOURCES BUREAU
2929 EAST WILLOW ST.
90806 (310) 570-2850
FAX (310) 570-2861
TDD (310) 570-2883

PUBLIC SERVICE BUREAU
1601 SAN FRANCISCO AVE.
90813 (310) 570-2700
FAX (310) 570-2792
TDD (210) 570-2778


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# CITY OF

# LOS ANGELES

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000414
R0062254

## Task 3.1.2 - Plan and Schedule for Residential, Commercial, & Industrial BMPs

G-05 **Stormwater Information Maintenance Management System (SWIMMS)** - This BMP is a continuation of the City of Los Angeles' Early Action BMP Improved Catch Basin Record Keeping. The SWIMMS data base will hold and process field data gathered during the enhanced catch basin cleaning program. It is anticipated that with a systematic catch basin record keeping, a more efficient system of catch basin cleaning will evolve. Thus, catch basins which tend to accumulate debris will be cleaned more frequently. Also, future education programs and modified or new Best Management Practices can be directed towards detected problem debris accumulation areas. City of Los Angeles, Stormwater Management Division is in the final stages of developing a pilot SWIMMS. The pilot SWIMMS database is being developed for a project area located within the Santa Monica Bay Drainage Basin. The pilot project is expected to be completed in the Winter of 1996. If the findings from the pilot project prove to be successful, the program is expected to expand on a City-wide basis.

G-07 **Street Cleaning Pilot Program** - This pilot project will provide for cleaning of the City of Los Angeles' public streets using two different types of vacuum sweepers, used at varying frequencies. The project will also examine the effectiveness of street washing as a method to reduce pollutants from entering into the storm drain system. The project will be conducted for a period of twelve months. A report will then be prepared describing the monitoring results, the pollutant removal efficiency, all associated costs, and the general effectiveness of the program. The project is scheduled to begin in the Fall of 1995.

G-08 **Roadside Trash Receptacle Project** - An existing City of Los Angeles, Bureau of Engineering program is already accomplishing the objective of this BMP. The existing program is the Transit Shelter Program being administered by the Central District. Under this Program, the transit shelter contractor is allowed to build and maintain transit shelters in the City of Los Angeles jurisdiction. The contractor is in turn required to provide trash receptacles near the transit shelters and to maintain the trash receptacles at least twice a week. This program has currently built 980 shelters. Of these, 942 shelters have trash receptacles which are being emptied twice a week. It is estimated that the volume of trash taken from these trash receptacles is about 110 cubic yards per week. The program is to add around 50 shelters every year until the present contract expires in March 1997.

G-11 **Closed Circuit Television (CCTV) of Storm Drain Lines** - This BMP will use closed circuit television to survey underground storm drain lines within the City of Los Angeles to determine their physical condition. These determinations will enable the City to prescribe repair and/or replacement of damaged storm drain segments; thus, preventing infiltration into the storm drain line. These efforts are now critical in some areas due to the possible damage caused by the Northridge earthquake. The CCTV will also be used as necessary to find and locate connections to the storm drain line that exhibit signs of illicit discharges. Locating connections into the storm drain line will help the City in detecting and eliminating illicit discharges. The CCTV contract was awarded in April 1994, for a term of three years.



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G-13 **Revise General Plan to Address Stormwater Quality** - The City of Los Angeles' Stormwater Management Division and Planning Department have worked together in the preparation of the Stormwater Drainage component of the City's General Plan. The revised component identifies the general requirements of Federal and State stormwater regulatory programs. The new Plan also contains general policies and programs with which the City will be involved as part of its stormwater pollution abatement efforts. Due to budget restraints and a shift in priority, the Planning Department had to postpone the review and adoption of all elements of the General Plan, with the exception of the framework element. Therefore, the addition of the Stormwater Drainage Component to the City's General Plan has been temporarily postponed.

G-15 **Stormwater Quality Modifications to the Department of Public Works/Bureau of Engineering's Storm Drain Design Manual (SDDM) and Standard Plans, where applicable** - An important consideration in processing revisions to the City of Los Angeles SDDM and Standard Plans is the need to identify stormwater pollutant reduction as a part of drainage systems design and design of other public works projects. Staff are beginning the development of Standard Plans which address specific stormwater pollution abatement BMPs or activities. Review of the California BMP Manuals, along with other reference sources, continues as staff identify management practices which could be developed as standards and incorporated into Standard Plans, or perhaps a new manual. Staff level modification and revision of sections of the SDDM will continue through December 1995. Draft design standards should be available by June 1996.

G-18 **Private Industry Outreach: General Industrial Stormwater Permit (GISP)** - Fact sheets were sent out to 2,700 facilities within the City of Los Angeles which had Standard Industrial Classification codes required to be covered by a GISP under categories i to ix and 8,300 facilities with SIC codes required to be covered under category xi. These facilities were identified from a Department of Water and Power database. The fact sheets informed the facility operators about the need for their facility to be covered by the GISP. Currently information is made available, by request, to industries on a case by case basis. This is an on-going activity.

G-20 **Propagation of Proper Management and Disposal of Used Oil and Toxic Materials** - This BMP promotes the proper disposal of used oil and toxic materials. The City of Los Angeles, Bureau of Sanitation operates a Hazmobile collection program. The Hazmobile operates at a location for a two-week period, three days each week. The Bureau operates a toll free number which can be used to make reservations for the Hazmobile up to three months in advance. This hotline also provides callers with a variety of waste disposal information, including where to take old tires and used motor oil. Based upon their zip code, callers are provided with the locations of certified and uncertified oil disposal centers in their area. In addition, a total of 42 Unocal service stations have been designated as State certified used motor oil recycling centers. This oil recycling program is a result of the City of Los Angeles, American Oceans Campaign and Unocal forming an alliance. The program is funded by a grant from the California Integrated Waste Management Board, which collects a four-cent



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deposit charge on each quart of motor oil sold in the state. The money is used to cover recycling center site costs and for a City-wide public education program. Hopefully, promoting the existence of appropriate means of disposal will prevent illegal disposal. Several printed materials such as general information brochures, posters and a variety of industry specific pieces are being produced and distributed to the other Co-Permittee cities. These are on-going activities for the City of Los Angeles.

G-22 **Stormwater Pollution Abatement Pilot Projects for City Facilities** - Within the City of Los Angeles, a variety of structural and non-structural BMPs could be implemented and studied at appropriate City-owned facilities. The Stormwater Management Division would like to use City-owned sites as locations for pilot projects. Staff have been working with the City's Bureau of Street Maintenance in determining a suitable facility for developing a stormwater pollution abatement pilot project. Currently, four of the Bureau's asphalt plants and maintenance yards are being considered. This is an on-going activity.

G-23 **Abandoned Waste Removal/Emergency Response Program** - The City of Los Angeles' Stormwater Management Division receives calls form citizens and public agencies regarding nonhazardous and hazardous waste abandoned in the public rights-of-way. The Division's Enforcement Unit responds to the calls by supervising cleanup efforts made by the City's contractor, or coordinating efforts with City agencies which conventionally handle the disposal of such wastes. Additionally, the Unit also handles reports of emergency spills into the public rights-of-way and the City's storm drain system by ensuring that adequate and immediate mitigation is done to minimize the spill's impact on the storm drain system and/or Waters of the State. The Unit also identifies responsible parties and issues Notices of Violations for failure to provide containment for uncontrolled discharges. This is an on-going activity.



VOL 17 00041 7

R0062257

# CITY OF

# LYNWOOD

VOL 17
000418
R0062258

Co-Permittee City of Lynwood Name Emilio M. Murga

Date April 12, 1995 Title Director of Public Works

## PLAN FOR ADDITIONAL BEST MANAGEMENT PRACTICES

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL BMP's

Best Management Practices: Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

Procedure:

It is illegal for any person to discharge, deposit, or suffer to be discharged or deposited any industrial waste or effluent in or upon incorporated territory of the City or into streams, bodies of water, storm drains or flood control channels without first securing a permit therefore from the City Engineer as provided in this subsection and at all times having an unrevoked permit therefore.

Under Section 14-9 of The Code of The City of Lynwood, the City Engineer, his designee or the Health Officer is allowed to inspect all industries for any non-storm water discharges.

- Establish an area-wide catch basin stenciling program with a universal stencil to discourage dumping, discarding, and/or discharge of pollutants, carriers, and/or debris into storm drainage system county wide.
- Develop programs to promote, publicize and facilitate public reporting of illegal discharges and/or dumping.
- Augment public education and outreach programs with regard to catch basins and storm drainage systems and their intended purpose.
- Create or augment a program to eliminate the improper disposal of litter, lawn/garden clippings, and per faces into the street or areas where runoff may carry these pollutants to the storm drainage system.
- Encourage owners and occupants of homes or businesses to remove dirt, rubbish, and debris from their sidewalks and alleys which may contribute pollutants to urban runoff.

VOL 17 00419

Co-Permittee City of Lynwood

Date April 12, 1995

Name Emilio M. Murga

Title Director of Public Works

## PLAN FOR ADDITIONAL BEST MANAGEMENT PRACTICES

### RESIDENTIAL, COMMERCIAL AND INDUSTRIAL BMP's

- Encourage recycling of oil, antifreeze, glass, plastic, and other materials to prevent their improper disposal into the storm drainage system.
- Encourage the proper disposal of Household Hazardous Wastes to prevent the improper disposal of such materials to the storm drainage system.
- Encourage the proper use and conservation of water to minimize runoff from landscaped areas, lawns, golf-courses, etc.

Legal Authority/Implementation Date(s):

Section 14-9 of The Code of The City of Lynwood/Currently in operation. The City will adopt a Storm Water and Urban Runoff Pollution Prevention Control Ordinance, Spring of 1995.

V80-141

VOL 17

000420

R0062260

# CITY OF

# MAYWOOD

VOL 17

000421

R0062261

Co-Permitee City of Maywood Name Matthew J. Binder

Date 3/31/95 Title City Engineer

# ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL SITES

**Best Management Practices:**

Defined as any practices or procedures that directly or indirectly reduce storm water or urban pollution into storm drain system.

**Procedure:**

Increase cleaning frequency, and number of roadside trash receptacles in areas where needed.

It is fully intended to implement a City-wide trash receptacle program, subject to budgetory restraints.

**Legal Authority/Implementation Date(s):**

None required / F.Y. 95-96

VOL 17 000422

Co-Permitee City of Maywood Name Matthew J. Binder

Date 3/31/95 Title City Engineer

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL SITES

**Best Management Practices:**

Defined as any practices or procedures that directly or indirectly reduce storm water or urban pollution into storm drain system.

**Procedure:**

Implement facility inspections of auto repair shops, auto body shops, auto parts and accessory shops, gasoline stations, and restaurants as the accumulation of pollutants, garbage, and/or debris tends to concentrate in these areas.

Facility inspections will be contracted with the County.

**Legal Authority/Implementation Date(s):**

County Code Title 20, Div. 2 / F.Y. 95-96

VOL 17 000423

Co-Permittee City of Maywood Name Matthew J. Binder

Date 3/31/95 Title City Engineer

# ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL SITES

**Best Management Practices:**

Defined as any practices or procedures that directly or indirectly reduce storm water or urban pollution into storm drain system.

**Procedure:**

Encourage owners and persons in control of homes or businesses to remove dirt, rubbish, and debris from their sidewalks and alleys which may contribute pollutants to urban runoff.

Program will be implemented to increase community awareness of stormwater pollution and steps that can be taken to protect our oceans.

**Legal Authority/Implementation Date(s):**

Maywood Municipal Code Sections 5-22.01, 5-22.02, 6-2.106, 6-404 (0)(1) / F.Y. 95-96

VOL 17 00424

Co-Permittee City of Maywood Name Matthew J. Binder

Date 3/31/95 Title City Engineer

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL SITES

**Best Management Practices:**

Defined as any practices or procedures that directly or indirectly reduce storm water or urban pollution into storm drain system.

**Procedure:**

Encourage recycling of oil, glass, plastic, and other materials to prevent their improper disposal into the storm drainage system. Each municipality should insure that receptacles are provided in strategic areas.

Program will be implemented to increase community awareness of recycling household disposables.

The City's contract trash hauler is formulating plans for a Materials Recycling Facility.

**Legal Authority/Implementation Date(s):**

Integrated Waste Management Act / F.Y. 95-96

VOL 17 000425

Co-Permittee City of Maywood Name Matthew J. Binder

Date 3/31/95 Title City Engineer

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL SITES

**Best Management Practices:**

Defined as any practices or procedures that directly or indirectly reduce storm water or urban pollution into storm drain system.

**Procedure:**

Encourage the proper disposal of household hazardous wastes to prevent the improper disposal of such materials to the storm drainage system. Each municipality should establish disposal centers in strategic areas.

The City participates as a co-sponsor of the County of Los Angeles' Household Hazardous Waste Round Up. Program will be implemented to increase community awareness of household hazardous waste.

**Legal Authority/Implementation Date(s):**

Integrated Waste Management Act of 1989 / F.Y. 1995-96

VOL 17 000426

Co-Permittee City of Maywood Name Matthew J. Binder

Date 3/31/95 Title City Engineer

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL SITES

**Best Management Practices:**

Defined as any practices or procedures that directly or indirectly reduce storm water or urban pollution into storm drain system.

**Procedure:**

Encourage the proper use and conservation of water.

Program will be implemented to inform the community of the proper use and conservation of water to reduce water runoff pollution.

**Legal Authority/Implementation Date(s):**

None required / F.Y. 95-96

VOL 17 000427

City of Maywood
4319 E. Slauson Ave. Maywood, CA 90270 Telephone (213) 562-5000 Fax (213) 773-2806

April 6, 1995

RECEIVED
APR 6 1995
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION
WATER QUALITY SECTION

Mr. Frank Kuo
Los Angeles County
Department of Public Works
Waste Management Division
P.O. Box 1460
Alhambra, CA 91802-1460

RE: Additional Best Management Practices (BMPs)

Dear Mr. Kuo:

Enclosed are plans for Additional Best Management Practices (BMPs) Residential, Commercial, and Industrial Sites; Illegal Discharges and Illicit Practices; and Construction Sites for the City of Maywood.

Very truly yours,

Matthew J. Binder

MATTHEW J. BINDER
City NPDES Contact

cc: Ron Lindsey, Chief Administrative Officer

VOL 17

00042B

R0062268

# CITY OF

# MONTEBELLO

VOL 17
000429

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX (213) 266-7600

September 2, 1993

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

| | |
|---|---|
| To Frank Kuo | From Alex Ahmed |
| Co. L.A.D.P.W. | Co. City of Montebello |
| Dept. Waste Mgmt | Phone 213-887-1471 |
| Fax# 818-458-3534 | Fax# 213-887-1401 |

Ayyad R. Ghobrial, Director
Department of Public Works
City of Montebello
1600 W. Beverly Boulevard
Montebello, CA 90640

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI File No. 6968)**

The Los Angeles Regional Water Quality Control Board adopted an NPDES Municipal Storm Water Discharge Permit (Order No. 90-079), June 18, 1990. The City of Montebello (City) is a Co-Permittee under this permit with Los Angeles County being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase II and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter dated June 4, 1993, in which the City requests permission to combine its Phase II and Phase III efforts under the deadlines for Phase II. Regional Board staff has considered the request and finds it to be acceptable. The Regional Board now recognizes that the City will follow all deadlines under Phase II of the permit.

If you have any questions please call me at (213) 266-7596, or have your staff contact Carlos Urrunaga at (213) 266-7598.

Mark R. Pumford, Chief
Stormwater Unit

cc: Frank Kuo, Los Angeles County Department of Public Works, Waste Management Division



VOL 17 00430

# CITY OF

# NORWALK

VOL 17
000431

Co-Permittee: Norwalk

Name: Mark Smith

Date: April 1995

Title: Consultant

NPDES Permit No.: CA0061654

Permit Task No.: 3.1.2

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SITES

Additional Best Management Practices: Defined as any practices or procedures not previously described in the City's Existing BMP and Early Action BMP documents that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure: ADOPT A STORMWATER/URBAN RUNOFF CONTROL ORDINANCE**

**Description:** Adopt a runoff control ordinance requiring the use of BMPs at selected commercial and industrial establishments.

**Background:** This is one of the 13 Baseline BMPs mandated by the Regional Water Quality Control Board (RWQCB).

**Implementation:** By May 31, 1995, the Norwalk City Council will adopt Ordinance No. 1437, "An Ordinance of the City of Norwalk Relating to Stormwater and Urban Runoff Pollution, Amending chapters VI, XI and XII of the Norwalk Municipal Code". Section 3 of the Ordinance will add Section 11-4.4, "Commercial and Industrial Activity", to the Municipal Code. Section 11-4.4 requires all commercial and industrial facilities to obtain an NPDES Permit if required to do so by State regulations. Section 11-4.4 also requires all commercial and industrial facilities to comply with the applicable BMPs adopted by the City. The City plans to collect data on the implementation of the ordinance during Fiscal Year 1995/96. The ordinance will be reevaluated after RWQCB issues the new NPDES permit to determine the need for revision.

**Legal Authority:** N/A

**Implementation Dates:** The City will issue progress reports on the implementation of this BMP as required by its NPDES Permit. Within twelve months of the RWQCB issuance of the new NPDES Permit, the ordinance will be reevaluated to identify any needed revisions.



VOL 17 00432

R0062272

Co-Permittee: Norwalk

Name: Mark Smith

Date: April 1995

Title: Consultant

NPDES Permit No.: CA0061654

Permit Task No.: 3.1.2

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SITES

Additional Best Management Practices: Defined as any practices or procedures not previously described in the City's Existing BMP and Early Action BMP documents that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure**: ENCOURAGE WATER CONSERVATION

**Description**: Encourage the proper use and conservation of water to minimize runoff from landscaped areas, lawns, golf courses, etc.

**Background**: This is one of the 3 Baseline BMPs mandated by the Regional Water Quality Control Board (RWQCB).

**Implementation**: The City plans to prepare and distribute public education materials which include information on the importance of water conservation in the context of the City's NPDES Program. These public education materials may be in the form of brochures, cable T.V. broadcasts, radio broadcasts, utility bill inserts or some other format. Some of these public education pieces will suggest water conservation BMPs for specific residential, commercial and industrial groups.

**Legal Authority**: Water Conservation Ordinance (City Ordinance No. 1378) Water Efficient Landscape Ordinance (NMC 27-56.1).

**Implementation Dates**: Public education materials will be prepared and distributed during Fiscal Year 1995/96.

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07058106042

VOL 17 000433

Co-Permittee: Norwalk

Name: Mark Smith

Date: April 1995

Title: Consultant

NPDES Permit No.: CA0061654

Permit Task No.: 3.1.2

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SITES

**Additional Best Management Practices**: Defined as any practices or procedures not previously described in the City's Existing BMP and Early Action BMP documents that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure**: **PUBLIC REPORTING OF ILLEGAL DISCHARGES/DUMPING**

**Description**: The City will develop programs to promote, publicize and facilitate public reporting of illegal discharges and/or dumping. The programs will include emphasis on the reporting of illegal discharges and dumping at residential, commercial and industrial sites.

**Bakground**: This is one of the 13 Baseline BMPs mandated by the Regional Water Quality Control Board (RWQCB) for implementation by all Co-Permittees. Although the scope of this procedure encompasses all three BMP categories established under the NPDES Permit, the BMP described herein focuses on residential, commercial and industrial sites.

**Implementation**: The City will prepare and distribute public education materials which promote the use of Los Angeles County's 1-800 NPDES hotline telephone number. The public education materials will target each of the three land use types - residential, commercial, industrial - indicating common illegal discharges, NPDES permitted discharges, and NPDES exempt discharges for each.

**Legal Authority**: N/A

**Implementation Date(s)**: The public education materials will be prepared and distributed during Fiscal Year 1995/96.



VOL 17 00434

R0062274

Co-Permittee: Norwalk

Name: Mark Smith

Date: April 1995

Title: Consultant

NPDES Permit No.: CA0061654

Permit Task No.: 3.1.2

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SITES

Additional Best Management Practices: Defined as any practices or procedures not previously described in the City's Existing BMP and Early Action BMP documents that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure**: **PUBLIC EDUCATION AND OUTREACH ON THE STORM DRAIN SYSTEM**

**Description**: The City will develop public education and outreach programs with regard to catch basins and storm drainage systems and their intended purpose.

**Background**: This is one of the 13 Baseline BMPs mandated by the Regional Water Quality Control Board (RWQCB). The scope of this procedure includes all three BMP categories established by the NPDES Permit; however, only that aspect which addresses residential, commercial and industrial sites is covered under this BMP.

**Implementation**: The City will prepare and distribute public education materials, targeting each of the three land use types. The public educational materials will contain the following elements: (1) a description of the storm drain system and its intended use; and (2) a list of common illegal discharges to the storm drain.

**Legal Authority**: N/A

**Implementation Dates**: Public educational materials will be prepared and distributed during the course of Fiscal Year 1995/96. Educational materials will be included with new business licenses on an ongoing basis.



VOL 17 00435

Co-Permittee: Norwalk

Name: Mark Smith

Date: April 1995

Title: Consultant

NPDES Permit No.: CA0061654

Permit Task No.: 3.1.2

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SITES

Additional Best Management Practices: Defined as any practices or procedures not previously described in the City's Existing BMP and Early Action BMP documents that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

Procedure: **CLEANING OF SIDEWALKS AND ALLEYS BY OWNERS/OCCUPANTS OF HOMES AND BUSINESSES**

Description: The City will encourage the owners and occupants of homes and businesses to remove dirt, rubbish, and debris from their sidewalks and alleys which may contribute pollutants to urban runoff.

Background: This is one of the 13 Baseline BMPs mandated by RWQCB for implementation by all Co-Permittees.

Implementation: The City will prepare and distribute public educational materials which promote the cleaning of sidewalks and alleys as a means to support the City's NPDES Program. The City will evaluate the feasibility of using its street sweeper contractor to sweep alleys also.

Legal Authority: N/A

Implementation Dates: The public outreach materials will be prepared and distributed during the course of Fiscal Year 1995/96. The feasibility study will be conducted and completed during Fiscal Year 1995/96.

res4.vnr
07058106042

VOL 17 00436

R0062276

Co-Permittee: Norwalk

Name: Mark Smith

Date: April 1995

Title: Consultant

NPDES Permit No.: CA0061654

Permit Task No.: 3.1.2

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SITES

Additional Best Management Practices: Defined as any practices or procedures not previously described in the City's Existing BMP and Early Action BMP documents that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure: HOUSEHOLD HAZARDOUS WASTE PROGRAM**

Description: The City will encourage the proper disposal of Household Hazardous Wastes (HHW) to prevent the improper disposal of such materials to the storm drain system.

Background: This is one of the 13 Baseline BMPs mandated by the Regional Water Quality Control Board (RWQCB) for implementation by all Co-Permittees. Although the City currently participates in the Los Angeles County-wide HHW Program, the City's program has never been promoted in the context of NPDES goals and has not been identified in previous NPDES documents as an Existing or Early Action BMP. Therefore, it is described herein as an Additional BMP.

Implementation: Through the use of public education materials, such as public counter fliers and community newsletter articles, the City will describe the importance of proper HHW disposal in terms of NPDES objectives.

Legal Authority: N/A

Implementation Dates: Public education materials will be distributed during the course of Fiscal Year 1995/96.

res5.vnr
07058106042

VOL 17 000437

R0062277

Co-Permittee: Norwalk

Name: Mark Smith

Date: April 1995

Title: Consultant

NPDES Permit No.: CA0061654

Permit Task No.: 3.1.2

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SITES

Additional Best Management Practices: **Defined as any practices or procedures not previously described in the City's Existing BMP and Early Action BMP documents that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.**

**Procedure: HOUSEKEEPING PRACTICES**

**Description**: The City will promote efficient and safe storage, use, disposal and cleanup of potentially harmful materials. The targeted audience will include City staff as well as the general public.

**Background**: Although this procedure has been promoted from other perspectives, such as safety and aesthetics, it has not had as much emphasis as a means to achieve NPDES goals. This BMP will emphasize the NPDES aspect.

**Implementation**: The City will prepare and distribute educational material on housekeeping practices and NPDES requirements for City staff who are involved in the outdoor handling of hazardous substances. The educational materials will emphasize the importance of keeping work areas clean, following all applicable safety precautions, prompt cleanup of chemical spills, etc. The importance of these activities will be explained in terms of NPDES objectives. The City will also prepare and distribute similar educational material for the general public.

**Legal Authority**: N/A

**Implementation Dates**: The above-described educational materials will be prepared and distributed during 1996.



VOL 17 00438

R0062278

Co-Permittee: Norwalk

Name: Mark Smith

Date: April 1995

Title: Consultant

NPDES Permit No.: CA0061654

Permit Task No.: 3.1.1

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SITES

Additional Best Management Practices: Defined as any practices or procedures not previously described in the City's Existing BMP and Early Action BMP documents that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure: VEHICLE USE REDUCTION**

**Description:** The City will encourage vehicle use reduction as a means to achieve NPDES goals. this BMP will be targeted at City staff and the general public.

**Background:** Vehicle use reduction has traditionally been promoted as a means to mitigate problems such as traffic congestion and air pollution. However, vehicle use is also a significant contributing factor in stormwater pollution. The pollutants associated with this activity include motor oil, transmission fluid, ethylene glycol, zinc (from tire wear), and asphalt (from road wear). In a city such as Norwalk, where roadways comprise a major land use, vehicle use reduction may be an important BMP.

**Implementation:** The City will prepare and distribute educational material for the general public and City staff which explains and promotes vehicle use reduction as a means to achieve NPDES goals. The City will examine existing vehicle use reduction programs to identify opportunities for adding this BMP to them.

**Legal Authority:** N/A

**Implementation Date(s):** The above-described activities will be accomplished during Fiscal Year 1995/96.



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000439
R0062279

City of NORWALK

VOL 17

# ADDITIONAL BEST MANAGEMENT PRACTICES

NPDES Permit No. CA0061654

APRIL 1995

HDR

HDR Engineering, Inc.

0004440

R0062280

# ADDITIONAL BEST MANAGEMENT PRACTICES

**April 1995**

**Prepared for:**

**The City of Norwalk**
**12700 Norwalk Boulevard**
**Norwalk, California 90650**

**NPDES Permit No. CA0061654**

Prepared by:

HDR Engineering, Inc.
2600 Michelson Drive
Suite 1600
Irvine, California 92715
(714) 756-6800

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000441

R0062281

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VOL 17 000442

R0062282

# CITY OF

# PALOS VERDES ESTATES

VOL 17

000443

R0062283

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX (213) 266-7600

PETE WILSON, Governor

June 3, 1993

RECEIVED
JUN 07 1993
WASTE MANAGEMENT DIVISION

Tim D'Zmura, Director
Department of Public Works
City of Palos Verdes Estates
PO Box 1086
Palos Verdes Estates, CA 90274-0283

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI 6948)**

The Los Angeles Regional Water Quality Control Board adopted an NPDES Municipal Storm Water Discharge Permit (Order No. 90-079), June 18, 1990. The City of Palos Verdes Estates (City) is a Co-Permittee under this permit with Los Angeles County being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase I and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter dated May 24, 1993, in which the City requests permission to combine its Phase I and Phase III efforts under the deadlines for Phase I. Regional Board staff has considered the request and finds it to be acceptable. The Regional Board now recognizes that the City will follow all deadlines under Phase I of the permit.

If you have any questions please call me at (213) 266-7510, or have your staff contact Carlos Urrunaga at (213) 266-7598.

Robert P. Ghirelli

ROBERT P. GHIRELLI, D.Env.
Executive Officer

cc: Frank Kuo, Los Angeles County Department of Public Works, Waste Management Division

VOL 17 00444

R0062284

# CITY OF

# PARAMOUNT

VOL 17

000445

Co-Permittee City of Paramount Name William C. Pagett

Date February 22, 1995 Title Assistant City Engineer

## ADDITIONAL BEST MANAGEMENT PRACTICES
### RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL BMP'S

**Best Management Practices**: Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure**:

USED OIL RECOVERY PROGRAM. Prior to initiating a used oil recycling program the procedure used by citizens of the City was to dispose of used crankcase auto oil by participating in the County's hazardous waste collection program. The City advised its citizens through it's quarterly newsletters of upcoming collection dates. In July 1994, the city applied for and was approved to receive Used Oil Opportunity Grant and Used Oil Block Grant funds. The City initiated the Used Oil Recycling Program in August 1994. The elements of the program are as follows: 1) Only residential uses are included in the program (no commercial uses). 2) The program provides participating residents with a 1 gallon container to store used oil. 3.) There are three certified collection centers within the city where citizens could turn in used oil. 4) Citizens could obtain from the City a rebate coupon worth $3.00 for them to have a oil change performed by participating gas stations. 5) The City is presently arranging to have curb pickup services performed once a month. It is anticipated to start in the summer of 1995.

**Legal Authority/Implementation Date(s)**:

Municipal Code Article VI Discharge of Hazardous Material regulating the proper disposal of waste. Program initiated by the City in August, 1994.

per 2.06a

VOL 17 00046

R0062286

Co-Permittee City of Paramount Name William C. Pagett

Date February 22, 1995 Title Assistant City Engineer

## ADDITIONAL BEST MANAGEMENT PRACTICES
### RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL BMP'S

**Best Management Practices**: Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure**:

**DISCHARGE OF HAZARDOUS MATERIAL-SEMINAR PROGRAM.** In an effort to assist commercial enterprises to comply with NPDES requirements the City has initiated a seminar/workshop program. The seminars are intended to inform companies doing business in the city of what will be required of them to comply with newly adopted NPDES regulations. The first seminar addresses hazardous waste disposal. The workshop cosponsored by the City and the Paramount Chamber of Commerce was titled "What you don't know could cost you!" and held on February 16, 1995.

**Legal Authority/Implementation Date(s)**:

Municipal Code Article VI. Discharge of Hazardous Material, regulating the proper disposal of waste. Program initiated by the City in October 1994.



VOL 17 000447

Co-Permittee City of Paramount

Name Bill Pagett

Date February 22, 1995

Title Assistant City Engineer

## ADDITIONAL BEST MANAGEMENT PRACTICES
### RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL BMP'S

**Best Management Practices**: Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure**:

Part of the Early Action BMP's proposed by the City was the establishment of an inspection program of all auto related and restaurant businesses doing business within the City. Prior to establishment of program an enabling ordinance authorizing such inspection is presently being processed. In anticipation of the inspection program it is proposed that the City prepare a brochure advising businesses of the program and inviting their volunteer participation in it by offering to provide city personnel to inspect their premises to assist the businesses in developing effective methods of preventing pollutants originating from their property from entering the city's storm drain system. Brochure to be mailed out with annual business licenses issued each fiscal year.

**Legal Authority/Implementation Date(s)**:

Budgeting Process presently practiced by City/Part of Public Outreach Program adopted by the City. Brochure will be prepared and available to be mailed by July 31, 1995.



VOL 17 000448

VOL 17 00449

CITY OF PARAMOUNT

GERALD A. MULROONEY
Mayor
MANUEL E. GUILLEN
Vice Mayor
DR. ESTHER C. CALDWELL
Councilmember
HENRY HARKEMA
Councilmember
DIANE J. MARTINEZ
Councilmember

February 27, 1995

Mr. William DePoto
Supervising Civil Engineer II
Water Quality Section
Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91802-1460

Re: Transmittal of Additional Best Management Practices pertaining to the City of Paramount.

Dear Bill,

Transmitted herewith are the above subject required submittal for NPDES permit compliance pertaining to the City of Paramount. The city is in the second year of Phase III of Permit No. CA0061654(C16948) issued by the California Regional Water Quality Control Board, Los Angeles Region.

Please advise the undersigned at (310)908-6214 or Mr. Vern Hee at (310)908-6259 if additional actions is required of the City.

Very truly yours,

CITY OF PARAMOUNT

William C. Pagett
Assistant City Engineer

WP:vh
per 2.01m

RECEIVED
FEB 28 1995
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION
WATER QUALITY SECTION

R0062289

16400 Colorado Avenue • Paramount, California 90723-5050 • (310) 220-2000
Facsimiles: City Hall (310) 630-6731. Public Services Facility (310) 630-2713. Sheriff Substation (310) 220-2009

# CITY OF

# PASADENA

VOL 17
000450
R0062290

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

CALIFORNIA REGIONAL WA R QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

Fk -
File -

September 13, 1994

RECEIVED
SEP 15 1994
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION

Mr. Daniel Rix
Principal Engineer
City of Pasadena
100 North Garfield Avenue
Pasadena, CA 91109-7215

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI File No. 6948)**

The Los Angeles Regional Water Quality Control Board adopted an NPDES Municipal Storm Water Discharge Permit (Order No. 90-079) on June 18, 1990. The City of Pasadena (City) is a Co-Permittee under this permit with the County of Los Angeles being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase II and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter in which the City requests permission to combine its Phase II and Phase III efforts under the deadlines for Phase II. Regional Board staff has considered the request and finds it to be acceptable. The Regional Board now recognizes that the City will follow all deadlines under Phase II of the permit.

If you have any questions please call Carlos Urrunaga at (213) 266-7598.

Mark R. Pumford

MARK R. PUMFORD, Chief
Stormwater Unit

cc: Frank Kuo, County of Los Angeles, Department of Public Works, Waste Management Division

VOL 17

0004 51

R0062291

2M 9/14/94

# CITY OF

# PICO RIVERA

VOL 17 00452

R0062292

**THE ADDITIONAL BMP PLAN FOR THIS CITY/AGENCY WAS NOT MADE AVAILABLE AT TIME OF PUBLICATION.**

VOL 17
000453
R0062293

# CITY OF

# RANCHO PALOS VERDES

VOL 17
000454
R0062294

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

June 27, 1994

RECEIVED
JUN 28 1994
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION

Ms. Veronica Dolleschel
Sr. Administrative Analyst
City of Rancho Palos Verdes
30940 Hawthorne Blvd
Rancho Palos Verdes, CA 90274-5391

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI File No. 6948)**

The Los Angeles Regional Water Quality Control Board adopted an NPDES Municipal Storm Water Discharge Permit (Order No. 90-079) on June 18, 1990. The City of Rancho Palos Verdes (City) is a Co-Permittee under this permit with the County of Los Angeles being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase I and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter in which the City requests permission to combine its Phase I and Phase III efforts under the deadlines for Phase I. Regional Board staff has considered the request and finds it to be acceptable. The Regional Board now recognizes that the City will follow all deadlines under Phase I of the permit.

If you have any questions please call Carlos Urrunaga at (213) 266-7598.

MARK R. PUMFORD, Chief
Stormwater Unit

cc: Frank Kuo, Los Angeles County Department of Public Works, Waste Management Division, Stormwater Management Unit

RM 6/28/94

VOL 17 000455

# CITY OF

# REDONDO BEACH

VOL 17 00456

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX (213) 266-7600

105-3
NPDES Files
Permit

MAR 8 1994

March 7, 1994

Mr. Dani Alvarez
City Engineer
City of Redondo Beach
415 Diamond Street
Redondo Beach, CA 90277-0270

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI File No. 6948)**

The Los Angeles Regional Water Quality Control Board adopted an NPDES Municipal Storm Water Discharge Permit (Order No. 90-079) on June 18, 1990. The City of Redondo Beach (City) is a Co-Permittee under this permit with the County of Los Angeles being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase I and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter dated February 28, 1994, in which the City requests permission to combine its Phase I and Phase III efforts under the deadlines for Phase I. Regional Board staff has considered the request and finds it to be acceptable. The Regional Board now recognizes that the City will follow all deadlines under Phase I of the permit.

If you have any questions please call Carlos Urrunaga at (213) 266-7598.

MARK R. PUMFORD, Chief
Stormwater Unit

cc: Frank Kuo, Los Angeles County Department of Public Works, Waste Management Division, Stormwater Management Unit



4/28/94

VOL 17 000457

# CITY OF

# ROLLING HILLS

VOL 17
000458
R0062298

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

September 14, 1993

Ms. Lola M. Ungar
Principal Planner
City of Rolling Hills
2 Portuguese Bend Road
Rolling Hills, CA 90274

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI File No. 6948)**

The Los Angeles Regional Water Quality Control Board adopted an NPDES Municipal Storm Water Discharge Permit (Order No. 90-079), June 18, 1990. The City of Rolling Hills (City) is a Co-Permittee under this permit with the County of Los Angeles being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase I and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter dated September 10, 1993, in which the City requests permission to combine its Phase I and Phase III efforts under the deadlines for Phase I. Regional Board staff has considered the request and finds it to be acceptable. The Regional Board now recognizes that the City will follow all deadlines under Phase I of the permit.

If you have any questions please call me at (213) 266-7596, or have your staff contact Carlos Urrunaga at (213) 266-7598.

Mark R. Pumford, Chief
Stormwater Unit

cc: Frank Kuo, Los Angeles County Department of Public Works, Waste Management Division, Stormwater Management Unit

VOL 17 000459

R0062299

# CITY OF

# ROLLING HILLS ESTATES

VOL 17 00460

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX (213) 266-7600

May 10, 1994

Mr. Samuel Wise
Assistant City Manager
City of Rolling Hills Estates
4045 Palos Verdes Drive North
Rolling Hills Estates, CA 90274

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI File No. 6948)**

The Los Angeles Regional Water Quality Control Board adopted an NPDES Municipal Storm Water Discharge Permit (Order No. 90-079) on June 18, 1990. The City of Rolling Hills Estates (City) is a Co-Permittee under this permit with the County of Los Angeles being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase I and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter dated May 5, 1994, in which the City requests permission to combine its Phase I and Phase III efforts under the deadlines for Phase I. Regional Board staff has considered the request and finds it to be acceptable. The Regional Board now recognizes that the City will follow all deadlines under Phase I of the permit.

If you have any questions please call Carlos Urrunaga at (213) 266-7598.

MARK R. PUMFORD, Chief
Stormwater Unit

cc: Frank Kuo, Los Angeles County Department of Public Works, Waste Management Division, Stormwater Management Unit

RECEIVED
MAY 10 1994
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION
WATER QUALITY SECTION



VOL 17 00046-1

R0062301

# CITY OF

# SANTA CLARITA

VOL 17
000462
R0062302

Co-Permittee: City of Santa Clarita

Name: Nancy Delange

Date: 4-13-95

Title: Associate Engineer

## PLAN FOR ADDITIONAL BEST MANAGEMENT PRACTICES

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL BMP'S

Best Management Practices: Defined as any current practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**MATERIAL STORAGE CONTROL**
**HOUSEKEEPING PRACTICES**
**VEHICLE LEAK AND SPILL CONTROL Procedure:**

The City has a transit facility where buses and city vehicles are maintained, washed and serviced. Materials such as fertilizer for the parks division are also stored at this location. All automotive fluids are changed in a confiled area which drains to a clarifier. All fluids and materials are properly stored and recycled or disposed of.

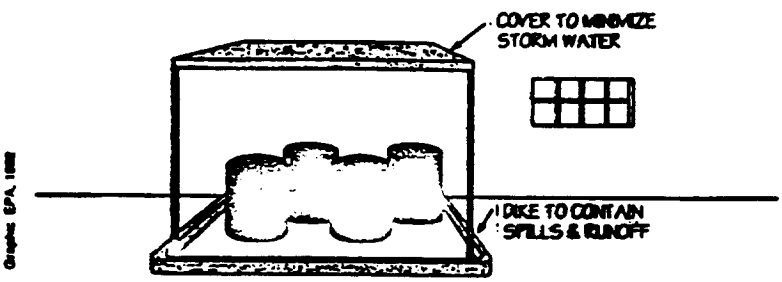
This facility has a separate NPDES permit and has a Storm Water Pollution Prevention Plan. BMP's for this facility are addressed in the SWPPP.



VOL 17 0004 63

R0062303

# BMP: MATERIAL STORAGE CONTROL




**Program Elements**

- *New Development*
- *Residential*
- *Commercial Activities*
- *Industrial Activities*
- *Municipal Facilities* (circled)
- *Illegal Discharges*

## DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from material delivery and storage by minimizing the storage of hazardous materials on-site, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice primarily covers material delivery and storage for municipal operations. For material storage related to the general public (e.g., storage of pesticides) refer to SC10 Housekeeping Practices. For other information on municipality handling of materials, see Spill Prevention and Cleanup BMPs (SC40/SC41) and Material Disposal and Recycling BMPs (SC30-SC32). The Industrial Handbook also contains material management information for industrial activities at municipal facilities.

## APPROACH

- The key is to design and maintain material storage areas that reduce exposure to storm water:
  - Store materials inside or under cover on paved surfaces.
  - Use secondary containment.
  - Minimize storage and handling of hazardous materials.
  - Inspect storage areas regularly.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.1, SC50, Illegal Dumping Control.

## REQUIREMENTS

- Cost Considerations
  - Will vary depending on the size of the facility and the necessary controls.
- Regulations
  - Storage of reactive, ignitible, or flammable liquids must comply with the Uniform Fire Code and the National Electric Code.
- Administrative / Staffing
  - Accurate and up-to-date inventories should be kept of all stored materials.
- Equipment
  - Keep an ample supply of spill cleanup materials near the storage area.
- Training
  - Employees should be well trained in proper material storage.

## PUBLIC EDUCATION / PARTICIPATION

- Employee education is paramount for successful BMP implementation.

## LIMITATIONS

- Storage sheds often must meet building and fire code requirements.

**Targeted Constituents**

- ○ *Sediment*
- ● *Nutrients*
- ○ *Heavy Metals*
- ● *Toxic Materials*
- ○ *Floatable Materials*
- ○ *Oxygen Demanding Substances*
- ● *Oil & Grease*
- ○ *Bacteria & Viruses*

- ● *Likely to Have Significant Impact*
- ○ *Probable Low or Unknown Impact*

**Implementation Requirements**

- ◒ *Capital Costs*
- ◒ *O&M Costs*
- ○ *Regulatory*
- ○ *Staffing*
- ● *Training*
- ◒ *Administrative*

● *High* ○ *Low*

**SC20**

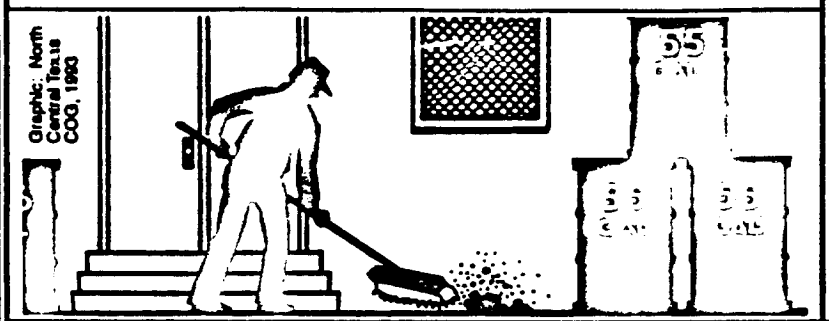
Best Management Practices



VOL 17 000464

R0062304

# BMP: HOUSEKEEPING PRACTICES




**Program Elements**

- New Development
- (Residential)
- Commercial Activities
- Industrial Activities
- (Municipal Facilities)
- Illegal Discharges

## DESCRIPTION

Promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals. Related information is provided in BMPs SC11, Safer Alternative Products; SC31, Household Hazardous Waste Collection; SC32, Used Oil Recycling; and the Spill Prevention and Cleanup BMPs (SC40/SC41). For information on specific activities at municipal facilities, see Chapter 4, Industrial Handbook.

## APPROACH

- Pattern a new program after the many established programs from municipalities around the state and country. Integrate this best management practice as much as possible with existing programs at your municipality.
- This BMP has two key audiences, municipal employees and the general public.
- Implement this BMP in conjunction with SC11, Safer Alternative Products.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.1, SC50, Illegal Dumping Control.

## REQUIREMENTS

- Cost Considerations
  - The primary cost is for staff time as noted below.
- Regulations
  - There are no regulatory requirements to this BMP. Existing regulations already require municipalities to properly store, use, and dispose of hazardous materials.
- Administrative / Staffing
  - Staff to train municipal employees and to coordinate public education efforts.
- Equipment
  - There are no major equipment requirements to this BMP.
- Training
  - Municipal employees who handle potentially harmful materials should be trained in good housekeeping practices. Personnel who use pesticides must be trained in their use. The California Department of Pesticide Regulation license pesticide dealers, certify pesticide applicators and conduct on-site inspections.

## PUBLIC EDUCATION / PARTICIPATION

- Public awareness is a key to this BMP.

## LIMITATIONS

- There are no major limitations to this best management practice.

**Targeted Constituents**

- ● Sediment
- ● Nutrients
- ○ Heavy Metals
- ● Toxic Materials
- ○ Floatable Materials
- ● Oxygen Demanding Substances
- ● Oil & Grease
- ○ Bacteria & Viruses

- ● Likely to Have Significant Impact
- ○ Probable Low or Unknown Impact

**Implementation Requirements**

- ○ Capital Costs
- ◒ O&M Costs
- ○ Regulatory
- ◒ Staffing
- ● Training
- ○ Administrative

● High ○ Low

**SC10**

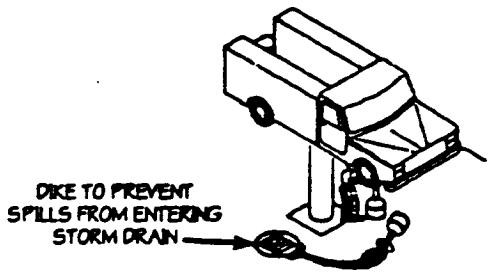
Best Management Practices



VOL 17 000465

R0062305

# BMP: VEHICLE LEAK AND SPILL CONTROL




**Program Elements**

- *New Development*
- *Residential*
- *Commercial Activities*
- *Industrial Activities*
- ***Municipal Facilities*** (●)
- *Illegal Discharges*

## DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from vehicle leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This BMP covers only prevention and cleanup of spills from vehicles. SC41 contains information on prevention and cleanup of spills from aboveground storage tanks. See SC4 in the Industrial Handbook for more information regarding BMPs for vehicle maintenance shops (such as municipal service centers or corporation yards).

## APPROACH

Vehicles will leak and spill fluids. The key is to reduce the frequency and severity of leaks and spills, and when they do occur, to prevent or reduce the environmental impacts.

- Perform fluid removal and changes inside or under cover on paved surfaces.
- Properly store hazardous materials and waste.
- Have spill cleanup supplies readily available.
- Clean up spills and leaks immediately.
- Use dry cleanup methods.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.1, SC50, Illegal Dumping Control.

## REQUIREMENTS

- Cost Considerations
  - Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil or water can be quite expensive.
- Regulations
  - This is not a major element of this best management practice.
- Administrative / Staffing
  - This BMP has no major administrative or staffing requirements.
- Equipment
  - Keep ample supplies of spill control and cleanup materials at municipal facilities, near storage and maintenance areas.
  - Update spill cleanup materials as changes occur in the types of chemicals on-site.
- Training
  - Training is crucial to reducing the frequency, severity, and impacts of leaks and spills.

## PUBLIC EDUCATION / PARTICIPATION

- Encourage the general public to regularly inspect and maintain their vehicles.

## LIMITATIONS

- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

**Targeted Constituents**

- ○ *Sediment*
- ○ *Nutrients*
- ● *Heavy Metals*
- ● *Toxic Materials*
- ○ *Floatable Materials*
- ○ *Oxygen Demanding Substances*
- ● *Oil & Grease*
- ○ *Bacteria & Viruses*

- ● *Likely to Have Significant Impact*
- ○ *Probable Low or Unknown Impact*

**Implementation Requirements**

- ○ *Capital Costs*
- ◒ *O&M Costs*
- ○ *Regulatory*
- ○ *Staffing*
- ● *Training*
- ○ *Administrative*

● *High* ○ *Low*

**SC40**






VOL 17 000466

R0062306

Co-Permittee: City of Santa Clarita

Name: Nancy Delange

Date: 4-13-95

Title: Associate Engineer

## PLAN FOR ADDITIONAL BEST MANAGEMENT PRACTICES

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL BMP'S

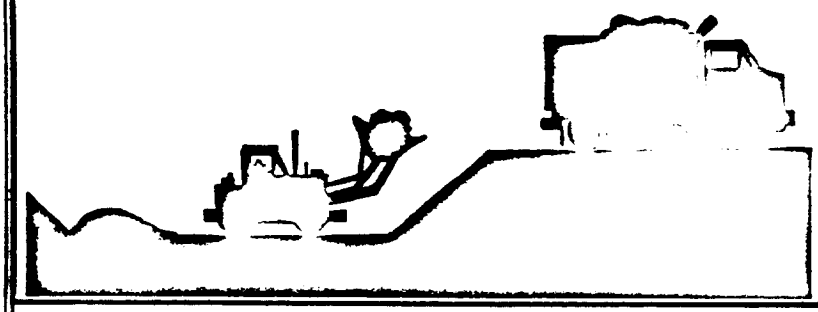
Best Management Practices: Defined as any current practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**DETENTION/INFILTRATION DEVICE MAINTENANCE**
**STORM DRAIN FLUSHING Procedure:**

The City contracts with the County or private contractors to clean and maintain the city's catch basins, debris basins and storm drain systems. The stormwater master plan when completed will evaluate the existing system and provide recommendations for cleaning and maintenance of these systems.

VOL 17 000467

# BMP: DETENTION/INFILTRATION DEVICE MAINTENANCE



**Program Elements**

- *New Development*
- *Residential*
- *Commercial Activities*
- *Industrial Activities*
- ***Municipal Facilities***
- *Illegal Discharges*

## DESCRIPTION

Proper maintenance and siltation removal is required on both a routine and corrective basis to promote effective storm water pollutant removal efficiencies for wet/dry detention pond and infiltration devices.

## APPROACH

- Remove silt after sufficient accumulation.
- Periodically clean accumulated sediment and silt out of pre-treatment inlets.
- Infiltration device silt removal should occur when the infiltration rate drops below 1/2 inch per hour.
- Removal of accumulated paper, trash, and debris should occur every six (6) months or as needed to prevent clogging of control devices.
- Vegetation growth should not be allowed to exceed 18 inches in height.
- Mow the slopes periodically and check for clogging, erosion and tree growth on the embankment.
- Corrective maintenance may require more frequent attention (as required).

## REQUIREMENTS

- Cost Considerations
  - Frequent sediment removal can be labor intensive and costly. However, properly designed ponds allow for easy removal of accumulated sediments at relatively minor cost.
  - Cost of waste material for transport and disposal.
- Administrative/Staffing
  - Two-person teams may be needed for routine silt removal and excavation.
  - Program manager needed to track maintenance activities and provide field assistance.
  - Staff team needed for corrective maintenance activities.
- Regulations
  - Permits may be required by Corps or Engineers, Fish & Wildlife or State Fish & Game.
- Equipment
  - Vehicles, dump trucks, bulldozers, trackhoes, excavators, mowers, weed trimmers, sickles, machetes, shovels, rakes, and personal protective equipment (PPE), (goggles, dust masks, coveralls, boots, gloves).
- Training
  - Appropriate excavation and maintenance procedures.
  - Proper waste disposal procedures.

**Targeted Constituents**

- ● *Sediment*
- ○ *Nutrients*
- ● *Heavy Metals*
- ○ *Toxic Materials*
- ○ *Floatable Materials*
- ● *Oxygen Demanding Substances*
- ○ *Oil & Grease*
- ● *Bacteria & Viruses*

- ● *Likely to Have Significant Impact*
- ○ *Probable Low or Unknown Impact*

**Implementation Requirements**

- ◒ *Capital Costs*
- ◒ *O&M Costs*
- ○ *Regulatory*
- ◒ *Staffing*
- ○ *Training*
- ○ *Administrative*

● *High* ○ *Low*

**SC75**

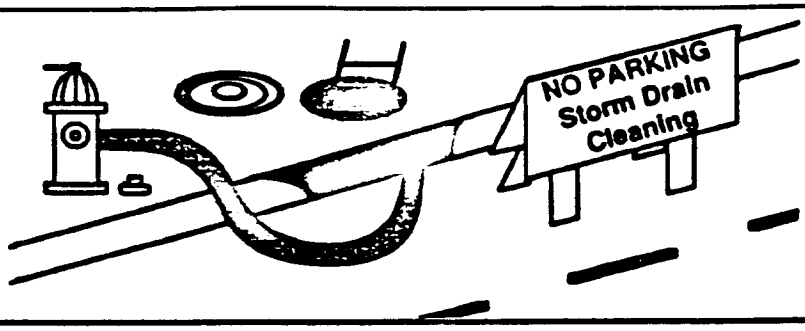
Best Management Practices



VOL 17 000468

R0062308

# BMP: STORM DRAIN FLUSHING




**Program Elements**

- *New Development*
- *Residential*
- *Commercial Activities*
- *Industrial Activities*
- *Municipal Facilities* (●)
- *Illegal Discharges*

## DESCRIPTION

A storm drain is "flushed" with water to suspend and remove deposited materials. Flushing is particularly beneficial for storm drain pipes with grades too flat to be self-cleansing. Flushing helps ensure pipes convey design flow and removes pollutants from the storm drain system.

## APPROACH

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Whenever possible, flushed effluent should be collected and pumped to the sanitary sewer for treatment.

## REQUIREMENTS

- Cost Considerations
  - Unless flushing to a dry/wet detention area, the collection of liquid and sediments may be costly in terms of pollutant removal benefits.
- Regulations
  - Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous waste, and other pollutants that may hinder the designed conveyance capacity of the storm drain system.
- Administrative/Staffing
  - Minimum 2-person teams needed for routine sediment removal and flush water collection.
  - Equipment operators required.
- Equipment
  - Water source (water tank truck, fire hydrant).
  - Sediment collector (eductor/vacuum truck, dredge).
  - Inflatable devices to block flow.
  - Sediment/turbidity containment/treatment equipment required if flushing to an open channel.

## PUBLIC EDUCATION/PARTICIPATION

- If large scale flushing activities are undertaken, local residents should be informed in advance.
- The public should be educated about the purpose of storm drains and the problems created by illegal dumping.

**Targeted Constituents**

- ● *Sediment*
- ● *Nutrients*
- ● *Heavy Metals*
- ○ *Toxic Materials*
- ○ *Floatable Materials*
- ● *Oxygen Demanding Substances*
- ○ *Oil & Grease*
- ● *Bacteria & Viruses*

- ● *Likely to Have Significant Impact*
- ○ *Probable Low or Unknown Impact*

**Implementation Requirements**

- ⊖ *Capital Costs*
- ● *O&M Costs*
- ○ *Regulatory*
- ● *Staffing*
- ⊖ *Training*
- ○ *Administrative*

● *High* ○ *Low*

**SC73**

Best Management Practices



VOL 17 000469

R0062309

Co-Permittee: City of Santa Clarita

Name: Nancy Delange

Date: 4-13-95

Title: Associate Engineer

## PLAN FOR ADDITIONAL BEST MANAGEMENT PRACTICES

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL BMP'S

Best Management Practices: Defined as any current practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

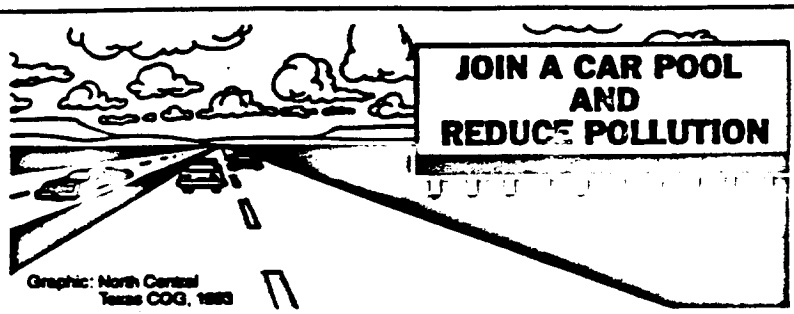
VEHICLE USE REDUCTION Procedure:

The City has submitted a trip reduction program to the South Coast Air Quality Management District. The City has also established a rideshare committee which assisted in the development and review of our Trip Reduction Plan.

VOL 17 000470

R0062310

# BMP: VEHICLE USE REDUCTION



Graphic: North Central Texas COG, 1993

**Program Elements**

- New Development
- Residential
- Commercial Activities
- Industrial Activities
- Municipal Facilities
- Illegal Discharges

## DESCRIPTION

Reduce the discharge of pollutants to storm water from vehicle use by highlighting the storm water impacts, promoting the benefits to storm water of alternative transportation, and integrating initiatives with existing or emerging regulations and programs.

## APPROACH

- Integrate this best management practice as much as possible with efforts being developed and implemented by government agencies and businesses to reduce vehicle use and improve air quality (e.g. County Congestion Management Agency). Integration will help avoid redundant and/or conflicting programs and be more effective and efficient.
- Establish trip reduction programs at major employers (government, large businesses).

## REQUIREMENTS

- Cost Considerations
  - The primary cost is for staff time as noted below.
- Regulations
  - Support efforts to pass reasonable regulations at the State and local level (General Plans, land use plans, and zoning ordinances) aimed at reducing vehicle use and developing transit-oriented communities.
  - Support development of regional governing bodies to address the issue in a comprehensive way (multi-media, watershed-based approach).
- Administrative / Staffing
  - Requires at least one staff person to track, review, and comment on emerging legislation and programs.
- Equipment
  - There are no major equipment requirements for this BMP.
- Training
  - There are no training requirements for this BMP.

## PUBLIC EDUCATION / PARTICIPATION

- Make the association in the public's mind that air pollution = water pollution.
- Educate the public and municipal employees about the water quality benefits of reduced vehicle use.
- Help coordinate public participation in ride sharing programs.

## LIMITATIONS

- "Turf battles" may limit the level of cooperation and integration between departments and programs.
- The use of alternative transportation is highly dependent on its convenience and relative cost.

**Targeted Constituents**

- ○ Sediment
- ○ Nutrients
- ● Heavy Metals
- ● Toxic Materials
- ○ Floatable Materials
- ○ Oxygen Demanding Substances
- ● Oil & Grease
- ○ Bacteria & Viruses

- ● Likely to Have Significant Impact
- ○ Probable Low or Unknown Impact

**Implementation Requirements**

- ○ Capital Costs
- ○ O&M Costs
- ◒ Regulatory
- ◒ Staffing
- ◒ Training
- ◒ Administrative

● High ○ Low

**SC21**

Best Management Practices



VOL 17 000471

R0062311

# CITY OF

# SANTA FE SPRINGS

VOL 17
000472
R0062312

Co-Permittee: City of Santa Fe Springs Name: John R. Price

Date: April 13, 1995 Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES

## RESIDENTIAL, COMMERCIAL AND INDUSTRIAL BMP'S

Best Management Practices: Defined as any current practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

Procedure:

- Public education programs, involving any NPDES requirement areas, will be reviewed and updated to meet latest standards.

- Educational materials regarding water conservation, housekeeping, vehicle maintenance, and general yard care and their relation to NPDES requirements will be made available to residents and contractors, and shall be included in water bills and new business licenses.



TOTAL P.04

VOL 17 000473

R0062313

CITY OF SANTA FE SPRINGS

11710 TELEGRAPH ROAD, 90670-3658 - P.O. BOX 2120 - (310) 868-0511 - FAX (310) 868-7112

AWARD WINNER

**TRANSMITTAL**

April 13, 1995

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 4

| | |
|---|---|
| To Frank Kuo | From George O'Brien |
| Co. LA County | Co. City of Santa Fe Springs |
| Dept. Public Works | Phone # (310) 868-0511 |
| Fax # 818-458-4992 | Fax # (310) 868-7112 |

Frank Kuo, City Coordinator
Waste Management Division
County of Los Angeles
Department of Public Works
P. O. Box 1460
Alhambra, CA 91802-1460

Subject: Stormwater Discharge Program Submittals
Plan for Additional BMP's

Dear Mr. Kuo:

A plan of the City's additional best management practices (BMP's) has been prepared, and the following information is submitted:

| No. of Copies | Description | Deadlines for Submittal |
|---|---|---|
| 1 Set | Construction Site BMP's | April 13, 1995 |
| 1 Set | Illegal Discharge/Illicit Disposal Practices | April 13, 1995 |
| 1 Set | Residential, Commercial and Industrial BMP's | April 13, 1995 |

This material is being sent in conjunction with NPDES permit requirements.

If you have any questions, please call George H. O'Brien at (310) 868-0511, Extension 267.

Very truly yours,

John R. Price
Director of Public Works

JRP/gho/tc

xc: California Regional Water Quality Control Board - Los Angeles Region

Albert L. Sharp, Mayor • Betty Wilson, Mayor Pro Tempore
City Council
Mercedes A. Diaz • Ronald S. Karnes • George Minnehan
City Manager
Don Powell

VOL 17

0000474

R0062314

# CITY OF

# SIGNAL HILL

VOL 17
000475
R0062315

Co-Permittee: City of Signal Hill
Date: 4-3-95


Name: Richard Lundahl
Title: Director of Public Works

## PLAN FOR ADDITIONAL BEST MANAGEMENT PRACTICES (BMP'S) FOR RESIDENTIAL, COMMERCIAL, & INDUSTRIAL

Best Management Practices: Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

Procedure:

The City of Signal Hill is operating an Industrial Waste Inspection Program which inspects restaurants, industrial and commercial businesses 1-12 times annually. Inspections include identifying conditions which may lead to contaminated run-off. Any such conditions are required to be mitigated.

Based on inspection results, target areas are identified and rain water run-off quality is monitored during rain storms.

Legal Authority/Implementation Date(s):

Signal Hill Municipal Code 13.06



VOL 17 00476

Co-Permittee: City of Signal Hill
Date: 4-3-95


Name: Richard Lundahl
Title: Director of Public Works

## PLAN FOR ADDITIONAL BEST MANAGEMENT PRACTICES (BMP'S) FOR RESIDENTIAL, COMMERCIAL, & INDUSTRIAL

**Best Management Practices:** Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure:**

The City is continuing its public outreach efforts by:

1. Airing NPDES video developed by the City of Los Angeles.
2. Publishing articles related to storm water pollution and methods of prevention in City publications. Publications are distributed to all residences and businesses.
3. Publishing notices informing residents of upcoming Los Angeles County Haz-Mat roundups.

**Legal Authority/Implementation Date(s):**

N/A

ADBMP2.RCI

VOL 17 000477

Co-Permittee: City of Signal Hill
Date: 4-3-95


Name: Richard Lundahl
Title: Director of Public Works

**PLAN FOR ADDITIONAL BEST MANAGEMENT PRACTICES (BMP'S) FOR ILLEGAL RESIDENTIAL, COMMERCIAL, & INDUSTRIAL**

**Best Management Practices:** Defined as any practices or procedures that directly or indirectly reduce stormwater/urban runoff pollution into the storm drain system.

**Procedure:**

The City has established standards and procedures for the design, installation, and management of water conserving landscapes in all new industrial, commercial, and residential developments as well as park areas, road medians and corridors to reduce excessive water demands.

**Legal Authority/Implementation Date(s):**

Signal Hill Municipal Code 13.06



VOL 17 00478
R0062318

CITY OF SIGNAL HILL

2175 Cherry Avenue Signal Hill, California 90806 (310) 989-7300 FAX (310) 989-7393/7391

RECEIVED
APR 10 1995
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION

April 3, 1995

Bill DePoto
Los Angeles County Department of Public Works
Waste Management Division
P.O. Box 1460
Alhambra, CA 91802-1460

SUBJECT: SUBMITTAL OF ADDITIONAL BEST MANAGEMENT PRACTICES

Dear Mr. DePoto,

The City of Signal Hill is submitting the attached Additional Best Management Practices as a requirement of year 2 activities for Phase III cities.

If you have any questions, please call Charlie Honeycutt at (310) 989-7353.

Sincerely,

Richard Lundahl
Director of Public Works/City Engineer

VOL 17 000479

R0062319

# CITY OF

# SOUTH GATE

VOL 17

000480

R0062320

Co-Permittee: City of South Gate
Date: April 7, 1995

Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any additional practices or procedures that are planned to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

City has a volunteer conservation of water program in which they discourage residences from washing cars on the lawn and side walks, leaving the hose unattended, and using a bucket to wash cars instead of running water.

Bilingual brochures and pamphlets are provided.

Additional BMP:

Coloring books and pamphlets are distributed at schools.

Date:
Ongoing

Legal Authority:
Department of Public Works policy

RECEIVED
APR 13 1995
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION
WATER QUALITY SECTION

VOL 17 000481

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL,

Additional Best Management Practices:
Defined as any additional practices or procedures that are planned to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

Almost all storm drain catch basins and storm drain lines are owned by the Los Angeles County and they are maintained by this agency. There are a few drains that are owned by the City and there is one line that is a private owned. The City lines are maintained regularly by the City.

Additional BMP:

City now has a regular schedule of once per year to inspect and clean the catch basins. Records for all catch basin cleanings will be held at the City's file.

Date:
BMP now in place

Legal Authority:
City of South Gate, Department of Public Works policy

VOL 17 000482

R0062322

Co-Permittee: City of South Gate
Date: April 7, 1995

Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any additional practices or procedures that are planned to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

Household hazardous waste roundups are held on a regular basis by the L. A. County Sanitation District. City's personnel inform the residences where to properly dispose their hazardous waste at the available round-ups.

**Additional BMP:**

Continue to publicize and participate in the Household Hazardous-Waste Round-ups.

Date:
BMP in place

Legal Authority:
City policy

VOL 17 000483

Co-Permittee: City of South Gate
Date: April 7, 1995

Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any current practices or procedures that is optimized to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

Trash containers are provided at the bus stations and the busy streets. City has contracts with the Western Waste to empty the trash containers. The containers are emptied as often as needed. This will encourage people to dispose of their litter in the street properly.

Additional BMP:

City personnel patrol every street in the city. Sites with excessive litter are recorded and the number of trash containers are increased as needed.

Date:
BMP in place

Legal Authority:
City Department of Public Works' policy

VOL 17 000484

Co-Permittee: City of South Gate
Date: April 7, 1995

Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices: Defined as any additional practices or procedures that are planned to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

Maintenance Division performs street sweeping once per week of all residential streets and two to three times per week in commercial areas to reduce debris from washing into storm drains. City owns an vacuum air sweeper which functions by suction of debris instead of the regular broom function. Debris are then hauled and dumped at a local landfill site.

All the residential and commercial streets are being swept on the regular schedule. Records of the amount of debris collected are kept at the Public Work's Yards office.

Additional BMP:

City personnel inspect streets on a regular basis. Street sweeping will be increased on an as needed bases.

Date:
BMP in place

Legal Authority:
City Department of Public Works policy

VOL 17 000485

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any current practices or procedures that is optimized to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

City has contracts with Western Waste to provide trash containers for the residences. Separate trash receptacles are provided for recyclable materials and refuse. This will encourage the public to recycle as much as possible which will reduce the amount of trash generated.

Optimized Procedure:

This procedure is ongoing and no change is anticipated.

Additional BMP:

The number of recyclable trash cans will be increased as needed.

Date:
BMP in place

Legal Authority:
City, Department of Public Works

VOL 17 00486

R0062326

Co-Permittee: City of South Gate
Date: April 7, 1995

Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any current practices or procedures that is optimized to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

Street and maintenance division performs landscape maintenance functions of all landscape other than parks to reduce landscape debris destined for storm drains.

Additional BMP:

1. There will be meetings and training regarding overspray and runoff for all the personnel at the maintenance division.

2. Forms will be designed and handed out to the City employees who are maintaining the landscaping regarding reducing the water usage and overspray.

Date:
August 1995

Legal Authority:
City's Department of Public Works policy

VOL 17 000487

Co-Permittee: City of South Gate
Date: April 7, 1995

Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any current practices or procedures that is optimized to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

Parks and Recreation Division performs landscape maintenance functions at City parks reducing amount of landscape debris destined to storm drains. Trash receptacles are provided at all parks to reduce litter which can be washed into storm drains. Trash containers are collected as needed and could be as often as daily.

Additional BMP:

Number of the trash receptacles at the parks will be increased on an as needed basis.

Date:
BMP in place

Legal Authority:

City's Departments of Parks and Recreation and Public Works policy

VOL 17 000488

## ADDITIONAL MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any additional practices or procedures that are planned to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:

For new and renovated landscapes, the Community Development Division reviews landscape and irrigation plans to determine that the design will minimize overspray and other excess water which flows into the storm drain system.

The water and park superintendent review plans for compliance with the water conservation ordinance. This work is done at the request of the Building Department.

Additional BMP:

Flyers will be handed out at the counter to the contractors proposing new and renovated landscapes that will discourage overspray and other excess watering.

Date:

August 1995

Legal Authority:

City Of South Gate Municipal Code Section 11.34.096

VOL 17 000489

Co-Permittee: City of South Gate
Date: April 7, 1995



Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any current practices or procedures that is optimized to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:
City has a preventive mainteaance program for all 120 miles of sewer line city owns. This program is consisted of using a hydroblaster and maintaining all line once a year. This will prevent sewers from over flowing and creating excessive water run-off in the street which could then discharge in to the storm drains.

Problem sewers are inspected and cleaned more frequently. Records will be kept at the City's Public Work's yard for the number of overflows and their locations.

**Additional BMP:**

1:The number of sewer inspections will be increased on an as needed basis.

2: Approximately 150 industrial and commercial sites with the potential for causing sewer stoppages are inspected 1 to 4 times per year.

Date:
BMPs in place

Legal Authority:

City's Department of Public Works policy

VOL 17 00490

R0062330

Co-Permittee: City of South Gate
Date: April 7, 1995



Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

Additional Best Management Practices:
Defined as any current practices or procedures that is optimized to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

Existing Procedure:
City monitors the street on regular basis to collect any trash that might be dumped in the alley's or deserted areas. In this event, trash is collected and hauled to the local dump site. This will prevent the illegal trash from entering the storm drain in case of rain storm.

City will perform an investigation to prosecute the person in charge of the illegal dumping.

Additional BMP:
Records will be kept at the City's Public Works yard for all the trash pick ups from various streets within the City.

Date:
BMP in place

Legal Authority:
City's Department of Public Works
City' Police Department

VOL 17 000491

Co-Permittee: City of South Gate
Date: April 7, 1995

Name: Jim Biery
Title: Director of Public Works

## ADDITIONAL BEST MANAGEMENT PRACTICES RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL

**Additional Best Management Practices:**
Defined as any additional practices or procedures that are planned to the maximum extent practicable in efficiency for the control of stormwater runoff pollution.

**Existing Procedure:**
Most of the street waste including asphalt or road base is utilized for other projects within the city, and any extra waste is hauled to the Blue Diamond which is a recycling company for these type of material. This will prevent of such material been stored at the maintenance yard and then possibly washed in to the storm drain in rainy seasons.

**Additional BMP:**
A Stormwater Pollution Prevention Plan will be prepared for the Corporate Yard

**Date:**
June 30, 1995

**Legal Authority:**
City's Department of Public Works policy

VOL 17 00492

# CITY OF

# SOUTH PASADENA

VOL 17
000493

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

March 14, 1994

RECEIVED

Mr. James R. Van Winkle, P.E., Ph.D.
Director of Public Works
City of South Pasadena
1414 Mission Street
South Pasadena, CA 91030

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI 6948)**

The Los Angeles Regional Water Quality Control Board adopted NPDES Municipal Storm Water Discharge Permit No. CA0061654 (Order No. 90-079) on June 18, 1990. The City of South Pasadena (City) is a Co-Permittee under this permit, with Los Angeles County being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase II and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter, in which the City requests permission to combine its Phase II and Phase III efforts under the deadlines for Phase II. Regional Board staff has considered the request and finds it acceptable. The Regional Board now recognizes that the City will follow all deadlines under Phase II of the permit.

If you have any questions please contact Carlos Urrunaga at (213) 266-7598.

Mark R. Pumford, Chief
Stormwater Unit

cc: Frank Kuo, Los Angeles County, Department of Public Works, Waste Management Division

VOL 17 00494

4/26/94

R0062334

# CITY OF

# TORRANCE

VOL 17
000495
R0062335

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

RECEIVED
MAR - 8 1994
DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION
WATER QUALITY SECTION

March 7, 1994

Mr. Richard W. Burtt
City Engineer
City of Torrance
3031 Torrance Boulevard
Torrance, CA 90509-2970

**LOS ANGELES COUNTY AREA-WIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORM WATER DISCHARGE PERMIT (NPDES NO. CA0061654, CI 6948)**

The Los Angeles Regional Water Quality Control Board adopted an NPDES Municipal Storm Water Discharge Permit (Order No. 90-079) on June 18, 1990. The City of Torrance (City) is a Co-Permittee under this permit with Los Angeles County being Principal Permittee.

The City, as a Co-Permittee to the Los Angeles County area-wide NPDES Municipal Storm Water Discharge Permit, currently participates under Phase I and Phase III of the permit due to the City's drainage patterns. This Regional Board has received your letter, in which the City notifies this Board of its decision not to submit the following information under Phase III because what was submitted for Phase I also applies to Phase III:

a) Submittal of Existing Rainfall Data
b) Submittal of Existing Flow Data
c) Submittal of Existing Water Quality Data
d) Determination of Existing BMPs
   1. Construction Site BMPs
   2. Illegal Discharge/Illicit Disposal Practices
   3. Residential Commercial and Industrial BMPs
e) Identification of Waste Disposal Facilities
f) Development of Early Action BMP Plans
g) Determination of the Required Legal Authority
h) Stormwater Permit Implementation Agreement
i) Additional BMP Plans

VOL 17 00496

Regional Board staff has considered the request and finds it to be acceptable. Items submitted by the City for Phase I, that are also applicable to Phase III, will be considered as having satisified the identical submittal requirements for Phase III.

If you have any questions, please contact Carlos Urrunaga at (213) 266-7598.

MARK R. PUMFORD, Chief
Stormwater Unit

cc: Michael Ritchey, City of Torrance, Department of Engineering
Frank Kuo, Los Angeles County Department of Public Works, Waste Management Division

VOL 17 000497

# CITY OF

# VERNON

VOL 17
000498
R0062338

Co-Permittee: Vernon Name: Samuel Kevin Wilson

Date:April 13, 1995 Title: Acting Director of Community Services and Water

## ADDITIONAL BEST MANAGEMENT PRACTICES

Residential, Commercial, and Industrial

### BMP 16: REQUIRE ON SITE STORM DRAIN INSPECTION MANHOLES

On June 1, 1993, the Vernon City Council passed Ordinance Number 1013 which amended Chapter 7 of the Vernon Municipal Code. Part of this ordinance amended Appendix D of the Uniform Plumbing Code. This Appendix regulates rainwater piping for building construction. The City of Vernon added specific language that requires a plumbing permit for any on site stormwater piping, not just roof drains. In addition, this amendment requires a Vernon Standard storm drain inspection manhole to be placed at an approved point in any stormwater piping system that connects to the storm drain via an underground connection. Furthermore, properties that have existing underground storm drain connections will be required to retroactively install an inspection manhole if the property remains vacant for a period of one year. Our policy is to require this box to be placed such that it is improbable that any illicit connections to the storm water system could be made on private property. Since passage of this ordinance, several of these inspection manholes have been installed. These inspection manholes will prove to be an effective tool for tracing the source of any future stormwater contamination.



VOL 17 000499

R0062339

Co-Permittee: Vernon

Name: Samuel Kevin Wilson

Date:April 13, 1995

Title: Acting Director of Community Services and Water

# ADDITIONAL BEST MANAGEMENT PRACTICES

Residential, Commercial, and Industrial

## BMP 16: REQUIRE ON SITE STORM DRAIN INSPECTION MANHOLES

On June 1, 1993, the Vernon City Council passed Ordinance Number 1013 which amended Chapter 7 of the Vernon Municipal Code. Part of this ordinance amended Appendix D of the Uniform Plumbing Code. This Appendix regulates rainwater piping for building construction. The City of Vernon added specific language that requires a plumbing permit for any on site stormwater piping, not just roof drains. In addition, this amendment requires a Vernon standard storm drain inspection manhole to be placed at an approved point in any stormwater piping system that connects to the storm drain via an underground connection. Furthermore, properties that have existing underground storm drain connections will be required to retroactively install an inspection manhole if the property remains vacant for a period of one year. Our policy is to require this box to be placed such that it is improbable that any illicit connections to the storm water system could be made on private property. Since passage of this ordinance, several of these inspection manholes have been installed. These inspection manholes will prove to be an effective tool for tracing the source of any future stormwater contamination.



VOL 17 00050

R0062340

Co-Permittee: Vernon

Name: Samuel Kevin Wilson

Date:April 13, 1995

Title: Acting Director of Community Services and Water

# BEST MANAGEMENT PRACTICES

## Residential, Commercial, and Industrial

### BMP 9: INSPECT AUTOMOBILE USES AND RESTAURANTS

The City of Vernon Municipal Code Chapter 13 Article IV established a Hazardous Materials Monitoring Program in which any facility that handles any substance that could pose a threat to the environment have a permit issued by the City of Vernon Health Department. This permit requires the facility to provide secondary containment for all stored materials and also requires any use of such substances to be performed in such a manner that the possibility of a release to the storm drain is minimized. Automobile repair shops, gas stations, and body shops often handle substances that could pose a threat to the environment and as such are required to obtain a permit. All permitted facilities are inspected by a Registered Environmental Health Specialist annually or more often if necessary.

The City of Vernon Health Department also requires all food facilities to obtain a permit in accordance with Chapter 13 Article II of the City of Vernon Municipal Code. This ordinance requires all permitted food facilities (restaurants, food processors, meat packing plants, etc.) to keep their facilities in a clean, sanitary condition. Refuse control and disposal requirements are strictly enforced during frequent inspections by Registered Environmental Health Specialists.



VOL 17 000501

R0062341

Co-Permittee: Vernon

Name: Samuel Kevin Wilson

Date:April 13, 1995

Title: Acting Director of Community Services and Water

# BEST MANAGEMENT PRACTICES

## Residential, Commercial, and Industrial

### BMP 10:ENCOURAGE REMOVAL OF DIRT, RUBBISH, AND DEBRIS FROM SIDEWALKS AND ALLEYS

The City of Vernon Municipal Code Section 12.5 requires property owners to maintain the sidewalk area in front of their property free from weeds, rubbish, garbage, or dirt of any kind. This ordinance is enforced by the Department of Community Services. If a sidewalk area is found to be a public nuisance due to debris, the property owner is given a notice to abate the nuisance and if said nuisance is not abated immediately, the City will clean up the nuisance and bill the property owner.

A public outreach program has been developed to inform the public about their responsibility to keep the sidewalk area clean. A utility bill insert will be distributed to all customers by June 1995. This insert encourages the public to keep Vernon clean and describe how rubbish can affect the storm drain system.



VOL 17 00502

R0062342

Co-Permittee: Vernon

Name: Samuel Kevin Wilson

Date:April 13, 1995

Title: Acting Director of Community Services and Water

# BEST MANAGEMENT PRACTICES
## Residential, Commercial, and Industrial

### BMP 11: RECYCLING PROGRAM

The City of Vernon has a comprehensive recycling and waste minimization program that is administered by the City Health Department. This program has been in place for a number of years and has been an unconditional success. Since implementation, a tremendous volume of waste has been diverted for recycling rather than being dumped in landfills. By some estimates, over 51% of the total volume of waste generated in the City daily has now been diverted from landfills. This has been accomplished by an aggressive outreach program that is administered by the City of Vernon Health Department. Informational pamphlets have been mailed to all industrial and commercial sites and reminders are handed out during inspections. These pamphlets are also prominently displayed in public areas in City Hall. The pamphlet encourages businesses to recycle what they can and also to reduce the volume of waste generated in order to reduce the demand for landfill space.



VOL 17 0005033

R0062343

Co-Permittee: Vernon

Name: Samuel Kevin Wilson

Date:April 13, 1995

Title: Acting Director of Community Services and Water

# BEST MANAGEMENT PRACTICES
## Residential, Commercial, and Industrial

### BMP 13: ENCOURAGE WATER CONSERVATION

The City of Vernon has developed public education program involving water conservation, and while this program has not yet been fully implemented, several elements are already in place. Posters that encourage water conservation have been displayed at City Hall. Many of the City's public works vehicles have bumper stickers that encourage water conservation. A water bill insert will include information about the problems that the misuse of water through overwatering and vehicle washing can cause in the storm drain system. This water bill insert will be distributed by July 1995.



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R0062344

# CITY OF

# WHITTIER

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R0062345

| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

# ADDITIONAL BEST MANAGEMENT PRACTICES
## *Residential, Commercial, and Industrial*
## *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #1: | City-wide Catch Basin Stenciling Program |
|---|---|

All 500 catch basins in residential, commercial, and industrial areas of the City shall be stenciled using Heal the Bay's "No Dumping" message. The purpose of this BMP is to discourage the dumping of any material to the municipal storm water system other than storm water, unless otherwise exempted.

The City has already begun its catch basin stenciling program. Using City crews and Boy Scouts, the City has, to date, stenciled 60 catch basins in its Uptown commercial area. The remaining catch basins shall be stenciled over the next two years, starting with those situated in industrial and commercial areas of the City.

| | |
|---|---|
| **Implementation Schedule:** | All catch basins shall be stenciled by June 30, 1997 or by a date specified in the 1995-2000 Municipal NPDES Permit. |
| **Legal Authority:** | Administrative directive pursuant to NPDES municipal permit. |



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R0062346

| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #2: | Illegal Discharge/Illicit Disposal Reporting Program |
|---|---|

The City currently participates in the Los Angeles County Department of Public Works Illegal Discharge/Dumping toll-free hotline to report suspected illegal discharges and dumping to the municipal storm drain system, including streets, catch basins, gutters, and flood control conveyances. It should be noted, however, that the City does not have full legal authority to control illicit discharges to the municipal storm water system (e.g., non-storm water discharges). It will, however, have such authority once it adopts a storm water/runoff control ordinance which shall be in conformance with **Code of Federal 40, §122.26(d)(2)(i)** provisions. This requirement is mandated by the next five year permit which will take effect this year.

Once the City adopts the ordinance, it shall implement a storm water/urban runoff pollution prevention public information program (PIP), which among other things, is intended to promote citizen awareness of the hotline and encourage reporting of "in progress" and "after-the-fact" illegal disposal and illicit discharges to the municipal storm water system. In general, this shall be achieved by listing the toll-free hotline number and City enforcement agency numbers in all storm water/urban runoff pollution prevention materials (e.g., articles, flyers, special mailers, etc.). In the meantime, the City shall continue to respond to reports of illegal dumping/illicit discharges that violate current City codes and other laws.



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Specific internal procedures for investigating and resolving reports of illegal dumping/illicit discharge is also a requirement associated with the next permit that shall be dealt with in the City's forthcoming Storm Water Management Plan.

| | |
|---|---|
| **Implementation Schedule:** | On-going for illicit discharges and illegal dumping practices that violate current City code and other statutes. City shall act on reports of all unpermitted non-storm water discharges to the municipal storm water system that will be illegal once the 1995-2000 permit takes effect on January 1, 1996 or the deadline for complying with legal authority requirements to be estabtished in the final NPDES permit. |
| **Legal Authority:** | Administrative directive. |



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| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #3: | Adoption of Runoff Ordinance Requiring Use of BMPs During and After Construction and at Selected Commercial and Industrial Sites |
|---|---|

The legal authority requirements associated with next five year NPDES permit that is scheduled to take effect this year will include this and other provisions containing BMP requirements for construction sites. At this time, the City is considering the following provisions pertaining to construction site discharges:

(a) No person shall commence or continue any construction activity in the City that causes the disturbance of five acres or more of soil by clearing, grading, and excavating without demonstrating to the City's Building Division that such person has obtained an NPDES General Construction Activity Storm Water Permit (hereinafter "construction permit") from the State Water Resources Control Board of the California Environmental Protection Agency (hereinafter "SWRCB"). NPDES construction activity does not include (i) routine maintenance to maintain original line and grade, (ii) hydraulic capacity, (iii) the original purpose of the facility, or (iv) emergency construction activities required to protect the public health and safety.

(b) Any person engaged in a construction activity in the City requiring an NPDES construction permit shall retain at the construction site the following documents (i) a copy of the Notice of Intent to Comply with Terms of the General Permit to Discharge Water Associated with Construction Activity; (ii) a waste discharge identification number issued by the SWRCB; and (iii) a Storm Water Pollution Prevention Plan and Monitoring Program Plan for the construction activity requiring the construction permit.



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(c) Any person engaged in a construction activity in the City requiring a construction permit shall, upon request from a duly authorized officer of the City, provide any of the documents described in paragraph (b) of this section.

(d) Any person engaged in any building or construction activity requiring a permit from the City shall require the owner of the property to prevent, to the maximum extent practicable, such activity from causing the discharge of (i) sediment to the municipal storm water system; and (ii) pollutants in or on significant materials associated with such activity from entering the municipal storm water system.

(g) Prior to the construction of any new structure or facility, or rehabilitation any existing structure or facility, irrespective of land use, such project shall be:

(i) Evaluated for its potential to generate significant quantities of pollutants contained in runoff once construction is completed; and

(ii) Based on such evaluation, the Director of Public Works or Building Official may require the developer/contractor to incorporate BMPs for reducing pollutant loads in urban runoff associated with the project's land use. The assignment of BMPs shall be based on cost-effectiveness, applicable water quality standards for the sub-watershed, sound engineering practices, and health and safety considerations.

| | |
|---|---|
| **Implementation Schedule:** | Adoption of Storm Water/Urban Runoff Pollution Prevention Ordinance containing the above-cited provision shall be completed by the deadline specified in the next five year permit. (Note: The deadline for this requirement as specified in the draft permit -- dated February 14, 1995 -- is January 1, 1996. |
| **Legal Authority:** | Forthcoming City ordinance. |



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| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #4: | Development of Storm Water/Urban Runoff Pollution Public Education and Outreach Program |
|---|---|

The City shall develop and implement a public education/outreach program in keeping with the new NPDES municipal permit. As it is now written the draft version of the new permit requires a 5-year urban runoff education strategy," which targets such audiences as "municipal employees, local construction contractors, businesses in the area, and the general public." To that end, the City shall develop and implement a public education and outreach program consisting of various media, including written material, audio material, visual material.

The City's public education/outreach program shall focus on preventing the discharge of targeted pollutants to the municipal storm water system which have been identified as being responsible for impairing beneficial uses of receiving and ocean waters. Such pollutants may include, for example, oil and grease, heavy metals, and debris. To that end, the City shall consider utilizing the following media:

- ***Newsprint***

Storm water/urban runoff pollution prevention articles could be presented in the *Whittier Community Services Activity Guide*, a quarterly community newsletter that is sent to 23,000 residential address in the City. This print medium could be used to promote various residential-oriented Best Management Practices (e.g., avoiding disposal of lawn clippings and leaves into catch basins).



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- ***Special Mailers***

Storm water/urban runoff pollution prevent-related articles or messages could be incorporated into the City Water Division's *Annual Water Quality Report* which lists water quality sampling results for Proposition 65 constituents. Pollutant-specific BMPs could also be inserted in water/utility bills which are sent to 16,000 customer addresses.

- ***Public Outreach***

Presentation of storm water/urban pollution prevention topics to public and private schools and community organizations including but not limited to the Chamber of Commerce, Kiwanas and Lions Club, PTA, etc. Presentations could include use of storm water management-related video-tapes such as "Urban Runoff," produced by the City of Santa Monica, and "Fantastic Journey," produced by the City of Los Angeles. Beyond this, speakers from Heal the Bay and other organizations interested in storm water management may be invited to discuss storm water/urban runoff pollution prevention at various community meetings and other forums.

- ***Community Events***

Storm water/urban runoff pollution prevention materials may be presented and distributed at community events such as the Annual Uptown Festival.

Last year, the City distributed storm water/urban runoff pollution prevention flyers and other materials from a booth at the Uptown Festival.

- ***Cable Television***

City intends to air various storm water/runoff pollution prevention video-tapes on City's cable channel including *"Urban Runoff,"* produced by the City of Santa Monica, and *"Fantastic Journey,"* produced by the City of Los Angeles.

- ***Generic Brochure***

Although the City has not yet developed its own brochure, it recently distributed several storm water management-related brochures at the City's Annual Uptown Festival. The brochures included: (1) Heal the Bay's *"Twenty Ways to Heal the Bay;"* (2) *"Heal the Bay's Dirty Words Every Kid*



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*Should Know;"* (3) Los Angeles County's *"Storm Water/Urban Runoff Quality Management Program,"* and (4) Los Angeles County's *"The Ocean Begins at Your Front Door."* The City also intends to adopt a "generic" brochure that is currently being developed by the Los Angeles County NPDES Co-Permiteee Public Outreach Committee for use by all cities, as recommended in the Woodward-Clyde/UCLA Study. Actually, the City intends to use all brochures, flyers, and other storm water/urban runoff pollution prevention materials developed by the Public Outreach Committee of the Storm Water Management Task Force.

In an effort to avoid "wheel reinventing," the City intends to share with subject industrial and commercial dischargers in the City BMPs acquired from various resources. Industrial and commercial BMPs have been developed by a number of organizations, including USEPA, State Water Resources Control Board, California Integrated Waste Management Board, Sanitation Districts of Los Angeles County, Alameda County, Los Angeles County, the City of Los Angeles, the City of Santa Monica, and the American Public Works Association Storm Water Task Force. For example, the Los Angeles County NPDES Public Outreach Committee has already obtained pamphlets describing BMPs for a number of activities, including:

- *Food Services Best Management Practices (City of Los Angeles)*
- *Automotive Maintenance and Car Care Best Management Practices (City of Los Angeles )*
- *Best Management Practices for Automotive-Related Industries: Practices for Sanitary Sewer Dischargers and Storm Water Pollution Control (Santa Clara Valley Nonpoint Source Pollution Control Program).*
- *General Construction and Site Supervision (City of Los Angeles)*
- *Best Management Practices for the Construction Industry: Painting and Application of Solvents and Adhesives (City of Los Angeles)*
- *Best Management Practices for the Construction Industry: Roadwork and Paving (City of Los Angeles)*
- *Best Management Practices for the Construction Industry: Heavy Equipment Operation and Earth Moving Activities (City of Los Angeles)*



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- *Best Management Practices for the Construction Industry: Fresh Concrete and Mortar Application (City of Los Angeles)*
- *Best Management Practices for the Construction Industry: Earth Moving Activities and Erosion Control Methods (City of Los Angeles)*

Such BMPs – as well as other stormwater/urban runoff management-related public information – could be disseminated through the City's Waste Reduction and Recycling Coordinator.

| | |
|---|---|
| **Implementation Schedule:** | Aforementioned program activities not performed will be implemented by December 15, 1995. |
| **Legal Authority:** | May be authorized by administrative directive or Council resolution. |



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R0062354

| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #5: | Catch Basin Cleaning |
|---|---|

As stated in its Early Action Best Management Practices Plan, the City provides annual catch basin maintenance prior to the start of the wet season (October 1), to reduce first flush pollutant concentrations. Catch basins may be cleaned more frequently or on an "as needed" basis, either in response to citizen requests or clogging detected by City field crews. Given the relatively debris-free appearance of catch basins, there is no need to increase the frequency of catch basin cleaning at this time. In addition, the also uses a "Vac-Jet" truck which is used to remove sludge accumulated inside catch basins. Caked-on sludge is removed by a high-pressure hose and is then vacuumed into an on-board reservoir. This BMP is highly effective to the extent that it removes pollutants such as lead and other heavy metals that builds-up in catch basins.

| Implementation Schedule: | On-going administrative practice. |
|---|---|



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| | |
|---|---|
| **Legal Authority:** | City's catch basin maintenance program is based on administrative policy. |

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| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #6: | Increasing number of roadside trash receptacles and maintenance frequency in areas where needed. |
|---|---|

As stated in its City's *Early Action Best Management Practices Plan*, the City's dedication to maintaining a clean environment is evidenced by the relative absence of litter in public or private places in the City. This is the planned result of weekly street sweeping and deployment of an adequate number of trash receptacles in heavily congested areas.

| Implementation Schedule: | This is an on-going City practice. |
|---|---|
| Legal Authority: | Administrative policy. |



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| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #7: | Increasing frequency of street sweeping in areas where needed. |
|---|---|

Streets in all zones are swept at least twice monthly monthly, with the exception of (a) the Uptown commercial district of the City, which is swept at least three time a week; (b) selected residential areas, which are swept once a week; and (c) street medians, which are swept once a week. This frequency exceeds the *Proposed Minimum Compliance Levels for California Regional Water Quality Control Board's Recommend BMPs for Phase I permittees*, which calls for monthly street sweeping. It should be noted that this document is used to evaluate ABMP compliance for all permittees, calls for sweeping of all streets within a co-permittee's jursidiction at least once a month.

| Implementation Schedule: | On-going practice. |
|---|---|
| Legal Authority: | Administrative practice. |



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| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| | |
|---|---|
| **ABMP #8:** | Creating or augmenting of a program to eliminate improper disposal of litter, lawn/garden clippings, and pet feces into the street or areas where runoff may carry such pollutants to the storm drainage system |

City has legal authority to discourage improper disposal of the following pollutant materials:

- **Litter/Vegetative Matter**

City prohibits by ordinance littering of any refuse or debris within the City as specified in §8.040.010 which incorporates by reference Los Angeles County Code Title II, Division, which also prohibits littering in the County. City ordinance against the disposal of refuse and trash is further strengthened under §8.12.210, which makes it unlawful for anyone to deposit refuse or non-combustible trash (i.e., all waste and rubbish including vegetative matter) from residences and places of business to any "any lot or upon any public or private drive, alley or street, or in any building, or any other public or private place within the City."

This prohibition will be strengthened even further once the City adopts its storm water/urban runoff pollution control ordinance which shall, among things, make unlawful the discharge of any material to components fo the municipal strom water system that is not entirely comprised of storm water and is not exempted non-storm water discharge.



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- **Pet Waste:**

City ordinance incorporates by reference *Title 10 of the Los Angeles County Code*, as adopted in §6.04.020, which prohibits the deposition of animal waste on pubic property, including streets and gutters -- components to the municipal storm water system.

| | |
|---|---|
| **Implementation Schedule:** | On-going practice. |
| **Legal Authority:** | Whittier Municipal Code provisions cited above. |



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R0062360

| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #9: | Implementing inspections of auto repair shops, auto body shops, auto parts and accessory shops, gasoline stations, and restaurants. |
|---|---|

Developing and implementing this activity as an ABMP will not be necessary once the new municipal NPDES permit takes effect. The new permit will require inspections of <u>all</u> facilities within a permittee's jurisdiction for possible illicit discharges to the municipal storm water system and adherence to pollution prevention BMPs such as good housekeeping practices, proper storage and handling of materials containing pollutants, and spill prevention and response – to name a few. These requirements shall be achieved through the City's storm water/urban runoff pollution prevention ordinance.

| Implementation Schedule: | January 1, 1996 or date specified in final permit. |
|---|---|
| Legal Authority: | Forthcoming City ordinance. |



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R0062361

| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #10: | Encouraging owners and occupants of homes or businesses to remove dirt, rubbish and debris from sidewalks and alleys which may contribute to pollutants in urban runoff. |
|---|---|

Although Whittier Municipal Code prohibits the placement of refuse and miscellaneous debris (including dirt) in any street, alley, parkway or other public place or in or upon any vacant or unimproved lot, it does not compel residents or businesses to clean sidewalks and alleys of such materials. Whittier residents and businesses, however, are very conscientious of the appearance of their premises and proximate rights of way. This is evident throughout Whittier where debris is seldom found. Nevertheless, the importance of keeping sidewalks and alleys free of litter and other debris as a BMP shall be mentioned in the City's storm water/urban pollution prevention public education/outreach program plan

| Implementation Schedule: | By December 15, 1995, |
|---|---|
| Legal Authority | Administrative practice pursuant to 1995-2000 NPDES municipal permit. |



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R0062362

| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #11: | Encouraging recycling of oil, antifreeze, glass, plastic, and other materials to prevent improper disposal into the storm drainage system. |
|---|---|

City operates a residential and curbside recycling program that encourages through public education compliance with this existing BMP.

| Implementation Schedule: | On-going. |
|---|---|
| Legal Authority: | State Assembly Bill 939. |



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R0062363

| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #12: | Encouraging proper disposal of household hazardous wastes to prevent improper disposal of such materials to the storm drainage system. |
|---|---|

Residents and businesses are encouraged to take hazardous wastes to Household Hazardous Waste Round-ups (see above ABMP #11) as part of the City's recycling program. The storm water/urban runoff pollution prevention public education/outreach program shall emphasize the importance of recycling to reducing pollutant concentrations in storm water runoff.

| Implementation Schedule: | On-going. |
|---|---|
| Legal Authority: | AB 939. |



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R0062364

| Co-Permittee: | City of Whittier | Name: | Leon Yehuda |
|---|---|---|---|
| Date: | April 13, 1995 | Title: | Assistant Director of Public Works |

## ADDITIONAL BEST MANAGEMENT PRACTICES
### *Residential, Commercial, and Industrial*
### *Permit Task 3.1.2*

**Best Management Practice:** *Defined as any practice or procedure that directly or indirectly reduces storm water/urban runoff pollution into the municipal storm drain system.*

**Practice/Procedure:**

| ABMP #13: | Encouraging the proper use and conservation of water to minimize runoff from vegetated areas. |
|---|---|

City may not be able to encourage proper water use and conservation as a means of minimizing runoff to the municipal storm water system. The increase in the City's ground water supplies due to above average rainfall this and last year makes it unncessary and difficult to enforce existing water conservation ordinance. In addition, the 1995-2000 municipal NPDES permit will obviate the need for this ABMP because it requires conformance with CFR 40 requirements for establishing legal authority which calls for the elimination of non-storm water discharges (i.e., any material that is not entirely composed of storm water) to the municipal storm water system.

| Implementation Schedule: | By January 1, 1996 or other compliance date for establishing legal authority required by the new permit. |
|---|---|
| Legal Authority: | By forthcoming City ordinance. |



VOL 17 000525

# Report Regarding Proposed Permit from the California Regional Water Quality Control Board, Los Angeles Region, for the Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges Within the County of Los Angeles

## BACKGROUND

In 1987, Congress amended portions of the Clean Water Act and established requirements for permitting stormwater runoff.

This amendment established the framework of the National Pollutant Discharge Elimination System (NPDES) program for the storm water discharges from municipalities, industries, and construction activities entering waters in the United States.

California is one of 38 states granted authority by the Environmental Protection Agency (EPA) to administer the NPDES Storm Water Program. This program is administered through the State Water Resources Control Board (SWRCB) and the Regional Boards.

The SWRCB issued an "early" 5-year Municipal Storm Water NPDES permit to Los Angeles County as the Principal Permittee which included 86 "Co-Permittee" cities. This permit outlined requirements to develop a Stormwater/Urban Runoff Management Program and was to expire on June 18, 1995. The existing NPDES permit remains in effect until a new permit is issued.

## EXISTING PERMIT

Long Beach, together with staff and an environmental consultant, have met the following permit requirements:

- Defined drainage areas and identified drainage facilities;
- Prepared storm drain flow maps;
- Determined Best Management Practices (BMPs) to enhance storm water quality;
- Developed early action BMPs;
- Determined required legal authority for regulating stormwater/urban runoff;
- Developed a database for the storm drain system components;
- Submitted evidence of progress in implementing early action BMPs;
- Submitted evidence of having legal authority to regulate storm water/urban runoff; and
- Submitted evidence of progress implementing early action BMPs and additional BMPs.

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The annual cost of the City's existing program is $12,400,000. The program consists of several BMPs which include services such as street sweeping, catch basin stenciling, public education, encouraging the proper disposal of litter, household recycling, conserving water, and cleaning catch basins. Exhibit A lists all of the BMPs included in the City's program and their associated costs.

## NEW PERMIT

### PERMIT DEVELOPMENT

The City of Long Beach has been an active participant in the development of this new permit. An Executive Advisory Committee (EAC), consisting of 1 County and 15 City officials, was formed in March 1994 to work on developing a new 5-year permit. Long Beach serves on this committee.

In an attempt to reach a consensus among the affected agencies, the Department of Public Works has been working for over a year with the California Regional Water Quality Control Board (RWQCB) staff along with L.A. County staff. The City Attorney's Office has also been intensely involved in this process.

To date, there are still major concerns regarding the permit requirements and their impacts on limited City resources.

### MAJOR CONCERNS

1. **The permit contains findings that are not based on relevant, sound scientific data specific to the receiving waters of Long Beach.**

   Problems in Santa Monica Bay, causing the closure of beaches, have received extensive press coverage recently. The order correlates the problems in Santa Monica Bay to be equivalent to perceived problems in the receiving waters in Long Beach. Long Beach does not have the same problems as Santa Monica Bay. Santa Monica Bay is negatively impacted by the Hyperion sewage treatment facility. The City of Long Beach Department of Health and Human Services regularly tests the water at our beaches and reports that beach closures are rare, usually related to a sewer pipe break.

   Findings and requirements which do not comply with the Clean Water Act or which lack a sound scientific basis and would therefore expose the City of Long Beach to unreasonable risks of suit by third parties should be deleted.



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2. **The permit exceeds the conditions set forth in the Clean Water Act.**

The City Attorney's office has numerous concerns regarding the legality of this permit as drafted. The RWQCB, in our opinion, has exceeded the requirements of the Federal Clean Water Act.

3. **The "site visit" program specified in this permit creates unfunded mandates.**

Under the disguise of the Public Education Program, the State is attempting to shift its responsibility onto the cities to inspect and enforce industrial facilities that are covered under either a General Industrial Activities Storm Water Permit (GIASP) or a General Construction Activity Permit (GCAP) issued by the State Water Resources Control Board.

In addition, the permit requires cities to "visit" approximately 3,800 facilities every two years including restaurants, gas stations, vehicle repair shops, vehicle body shops, and vehicle parts and accessories stores. The site visit, at a minimum, would require cities to:

a) consult with a facility representative about the local storm water codes, regulations and ordinances;
b) review the facility for compliance;
c) take action against problematic facilities; and
d) if necessary, identify and report problem facilities to the Regional Board.

This requirement is premature at this time. The State has yet to fully implement their Industrial NPDES program and the pollutants of concern have not been identified to link these facilities as significant contributors.

4. **The permit contains provisions that would allow additional requirements to be imposed after its adoption.**

Several areas in the draft permit allow the RWQCB to impose additional requirements on cities as it sees fit. One glaring example is that each permittee must implement the Countywide Storm Water Management Plan which has yet to be developed. The draft permit does not clearly state what the plan requirements will be which makes it impossible to determine the fiscal impact on the cities. Cities would not have the ability to plan or budget expenses. The RWQCB would, therefore, be able to impose additional requirements, after adoption of this permit, without a public hearing process, denying the City the opportunity to comment or to effectively plan or budget for expenses.



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5. **Compliance dates are not realistic and reporting requirements are excessive.**

Compliance dates must take into consideration the government process in policy making and budgeting. Given the number of cities (86), the time frame to coordinate this program needs to be considered as well.

The amount of reporting outlined in this permit is too expensive, laborious and unreasonable. For example, cities must report annually a program budget summary which shall include: capital, operation and maintenance expenditures; funding sources; staff resources, equipment and support capabilities; contract services; cost sharing arrangements; and any foreseeable shortfalls.

6. **Some program requirements are so specific as to prevent any flexibility.**

The City should be allowed to develop its own procedures in a creative, cost effective way as long as the goals of the permit are accomplished. If the goals are met, the means and the amount spent should not matter to the RWQCB.

7. **Permit does not provide for future revisions to the Clean Water Act.**

The permit should be written such that the RWQCB agrees to reopen negotiations on the requirements imposed on cities if Congress modifies the Clean Water Act during the term of this permit.

ESTIMATED COSTS

This proposed permit will have an impact on City resources. Since the details of the Countywide model program have not been developed yet, the estimated program costs were difficult to determine. The cost estimates are based on the minimum program requirements outlined in the proposed permit. The total estimated cost for the new permit is $3,470,000 in start-up costs for the first year and $2,550,000 for on-going costs thereafter. These costs are not included in the proposed City budget.

Staff from the Public Works Department and City Attorney's office met with each affected department to determine the permit requirements. The various departments then developed their associated costs for compliance which are shown in Exhibit B. The individual departments permit responsibilities are shown in Exhibit C.

SCHEDULE

The proposed permit does not appear to recognize that cities have limited fiscal and



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administrative resources for implementing unfunded mandates. Nevertheless, the RWQCB staff issued a Tentative Order on May 23, 1996.

This Tentative Order may be adopted by the RWQCB on the scheduled Board Hearing date of July 15, 1996, and would be effective within 90 days from its adoption date.

June 25, 1996
ETP:RSA:



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**EXHIBIT "A"**

## EXISTING NPDES BEST MANAGEMENT PRACTICES(BMP) PROGRAM COSTS

| BMP | ACTIVITY | COST |
|---|---|---|
| 1 | Public Reporting of Illegal Discharges and/or Dumping | $64,000 |
| 2 | Cleaning Catch Basins | $45,000 |
| 3 | Street Sweeping | $4,500,000 |
| 4 | Household Hazardous Waste Collection | $6,000 |
| 5 | Litter Receptacles | $1,000,000 |
| 6 | Clean Sweep Operation Program | $50,000 |
| 7 | Household Recycling | $3,500,000 |
| 8 | Special Collection Program | $400,000 |
| 9 | Used Oil Recycling | $750,000 |
| 10 | Green Waste Program | $10,000 |
| 11 | Facility Inspections | $600,000 |
| 12 | Water Conservation and Proper Use | $25,000 |
| 13 | Storm Water Telemetry System (Deleted from existing permit) | |
| 14 | Monitoring Pollution in Public Waters | $100,000 |
| 15 | Grading Permits | $100,000 |
| 16 | Construction Site Waste Removal (Deleted from existing permit) | |
| 17 | Construction Projects | No Direct Costs Identified |
| 18 | Public Education and Outreach Program | $200,000 |
| 19 | Storm Water Quality Management Program | $160,000 |
| 20 | Storm Drain Master Plan | $40,000 |
| 21 | Catch Basin Stenciling Program | $40,000 |
| 22 | Runoff Control Ordinance for Construction Sites (To be included in new permit) | |
| 23 | Proper Disposal of Litter, Yard Waste and Pet Feces | Covered Under BMP 10 |
| 24 | Sidewalk and Alley Cleaning | $810,000 |
| 25 | Oil Properties (Deleted from existing permit) | |
| 26 | Municipal Staff Training | Covered Under BMP 18 |
| 27 | Land Development (To be included in new permit) | |
| 28 | Identifying Storm Drain Connections (To be included in new permit) | |
| 29 | Detecting/Eliminating Illegal Discharges and Illicit Disposal Practices (To be included in new permit) | |
| | TOTAL COST | $12,400,000 |

*Note: BOLD BMPs are the 13 BMPs required under the existing permit*

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EXHIBIT "B"

LIST OF AFFECTED DEPARTMENTS
AND ASSOCIATED NPDES PROGRAM ADDITIONAL
COSTS FOR NEW PERMIT

| DEPARTMENT | ESTIMATED START UP COST FOR FIRST YEAR | ON-GOING COST PER YEAR Year |
|---|---|---|
| City Attorney | (1) | (1) |
| Community Development | (2) | (2) |
| City Prosecutor | (1) | (1) |
| Fire | $ 270,000 | $ 270,000 |
| Gas | 285,000 | 125,000 |
| General Services | 30,000 | 30,000 |
| Harbor | (3) | 205,000 |
| Health & Human Services | 35,000 | 25,000 |
| Parks, Recreation, and Marine | 930,000 | 930,000 |
| Planning & Building | 400,000 | 350,000 |
| Police | 140,000 | 65,000 |
| Public Works | 1,200,000(4) | 400,000 |
| Water | 200,000 | 150,000 |
| Total Cost | $3,470,000 | $2,550,000 |

(1) Costs not identified at this time.

(2) Direct cost not identified at this time, however, the permit may add one more regulatory requirement for doing business in the City of Long Beach at a time when we are trying to attract business.

(3) Startup Costs have been accomplished.

(4) Some costs can be spread over as many as 4 years.

C:EXHIBIT B.DOC

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## EXHIBIT C

### NPDES MUNICIPAL PERMIT- CITY DEPARTMENT RESPONSIBILITY MATRIX

| PERMIT COMPONENT | PERMIT SECTION (PAGE) | PERMIT REQUIREMENTS | RESPONSIBLE AFFECTED DEPARTMENT |
|---|---|---|---|
| Program Management Responsibilities of the Permittees | I.B.2.(15) | Coordinate among City departments the implementation of permit requirements | PW |
| | I.B.3.(15) | Participate in the development and necessary updates of the CSWMP | PW |
| | I.B.4.(15) | Coordinate annual reports to LACPW and RWQCB | PW |
| | I.B.5. & 6.(15) | Serve on the WMC and participate in the development of the WMAP. | PW |
| Program Management Fiscal Resources | I.D.2.(16) | Submit an annual budget summary | PW (and affected Depts.) |
| Program Management Legal Authority | I.E.2.(19) | Submit evidence of legal authority or schedule for obtaining the legal authority to comply with permit | CA |
| Illicit Connections/Discharges Illicit Connections | II.A.2.(22) | Develop and implement illicit connection elimination program (based on countywide model program) | PW<br>HD |
| Illicit Connections/Discharges Illicit Discharges | II.B.2.(23) | Develop and implement illicit discharge elimination program (based on countywide model program) | CP<br>FD<br>HHS<br>PW<br>HD<br>PD |
| Illicit Connections/Discharges Public Reporting | II.D.2.(26) | Implement the countywide illicit discharges and illicit disposal reporting program | PD<br>PW<br>FD<br>HHS<br>HD |
| Illicit Connections/Discharges Public Reporting | II.D.4.(26) | Implement the countywide reporting program for hazardous substance entering the storm drain system | HHS<br>FD<br>HD<br>PD |
| Development Planning & Const. Development Planning | III.A.1.a.(27) | Participate in developing countywide recommended BMPs for development projects | PBD<br>HD<br>CD |
| | III.A.1.b.(27) | Participate in developing countywide Standard Urban Storm Water Mitigation Plans and guidelines | PBD<br>HD<br>CD |

CA: City Attorney; CD: Comm. Dev; CP: City Prosecutor; FD: Fire Dept.; GD: Gas Dept.; GS: Gen. Svc.; HD: Harbor Dept.; HHS: Health & Human Svc.; PRM: Parks, Recreation & Marina; PBD: Planning & Bldg. Dept.; PD: Police Dept.; PW: Public Works Dept.; WD: Water Dept.; FM: Financial Mgmt.

Definitions: CSWMP = Countywide Stormwater Watershed Management Plan WMC = Watershed Management Comm.
WMAP = Watershed Management Area Plan LACDPW = Los Angeles County Dept. of Public Works
RWQCB = Regional Water Quality Control Board



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## EXHIBIT C

### NPDES MUNICIPAL PERMIT- CITY DEPARTMENT RESPONSIBILITY MATRIX

| PERMIT COMPONENT | PERMIT SECTION (PAGE) | PERMIT REQUIREMENTS | RESPONSIBLE AFFECTED DEPARTMENT |
|---|---|---|---|
| | III.A.2.(27) | Participate in developing a checklist for prioritizing development projects based on "potential significant effect" on storm water quality and incorporate into city procedures | PBD |
| | | | HD |
| | | | CD |
| | III.A.3.a.(28) | Participate in developing storm water management guidelines for CEQA documents and incorporate into city procedures | PBD |
| | | | HD |
| | | | CD |
| | III.A.3.b.(28) | Consider storm water management when City revises General Plan | PBD |
| | III.A.4.(29) | Require "high priority" projects to submit a Urban Storm Water Mitigation Plan prior to issuing grading/building permit | PBD |
| | | | HD |
| | III.A.5.(30) | Implement a developer information program (based on countywide model program) | PBD |
| | | | HD |
| Development Planning & Const. Development Construction | III.B.1.(30) | Participate in developing countywide recommended BMPs for construction projects | PBD |
| | | | PW |
| | | | HD |
| | | | WD |
| | | | GD |
| | III.B.2.a.(31) | Develop a regulatory program for construction projects (based on countywide model program) | PBD |
| | | | PW |
| | | | HD |
| Development Planning & Const. Development Construction | III.B.2.a.(31) | Develop a regulatory program for construction projects (based on countywide model program) | WD |
| | | | GD |
| | III.B.2.b.(31) | Implement a procedure whereby construction projects greater than five acres must have a State NPDES Construction Permit | PBD |
| | III.B.2.b.(31) | Implement a procedure whereby construction projects greater than five acres must have a State NPDES Construction Permit | PW |
| | | | HD |
| | III.B.3.a.(32) | Participate in developing countywide construction inspection program | PBD |
| | | | PW |
| | | | HD |
| | | | WD |
| | | | GD |
| | III.B.3.b.(32) | Implement a construction inspection program (based on countywide model program) | PBD |
| | | | PW |
| | | | HD |
| | | | WD |
| | | | GD |



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## EXHIBIT C

### NPDES MUNICIPAL PERMIT- CITY DEPARTMENT RESPONSIBILITY MATRIX

| PERMIT COMPONENT | PERMIT SECTION (PAGE) | PERMIT REQUIREMENTS | RESPONSIBLE AFFECTED DEPARTMENT |
|---|---|---|---|
| Public Agency Activities Public Agency Model Program | IV.A&C(33) | Participate in developing countywide public agency program to reduce stormwater pollution which includes: | |
| | | 1. Sewage Systems Operations | WD |
| | | | HD |
| | | 2. Public Construction Activities | PW |
| | | | HD |
| | | | WD |
| | | | GD |
| | | 3. Vehicle Maintenance/Material Storage Facilities Mgmnt. | GS |
| | | | PW |
| | | | HD |
| | | | PD |
| | | | FD |
| | | | WD |
| | | | PR&M |
| Public Agency Activities Public Agency Model Program | IV.A&C(33) | 4. Landscape & Recreational Facilities Mgmnt. | PR&M |
| | | | PW |
| | | | WD |
| | | | GD |
| | | | HD |
| | | | PD |
| | | | FD |
| | | 5. Storm Drain Ops. & Mgmnt. | PW |
| | | | HD |
| | | | FD |
| | | 6. Streets & Roads Maintenance | PW |
| | | | HD |
| | | | FD |
| | | | WD |
| | | | PR&M |
| | | 7. Parking Facilities Mgmnt. | PW |
| | | | GS |
| | | | HD |
| | | | PD |
| | | | FD |
| | | | WD |
| | | | PR&M |
| | | 8. Public Industrial Activities | PW |
| | | | HD |
| | | | WD |
| | | | GD |
| | | | WD |
| | | 9. Emergency Procedures | PW |
| | | | FD |
| | | | PD |
| | | | HHS |
| | | | GD |



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## EXHIBIT C

### NPDES MUNICIPAL PERMIT - CITY DEPARTMENT RESPONSIBILITY MATRIX

| PERMIT COMPONENT | PERMIT SECTION (PAGE) | PERMIT REQUIREMENTS | RESPONSIBLE AFFECTED DEPARTMENT |
|---|---|---|---|
| | | | WD |
| | | | HD |
| | | | PBD |
| Public Agency Activities Public Agency Program | IV.B.(33) | Develop and implement a public agency program (based on countywide model program) | ALL AFFECTED DEPT. |
| Public Info.& Participation Immediate Outreach | V.A.1.(40) | Have outreach materials available such as: (a) written material for General Public, City employees, Contractors & Developers, Industries; (b.) audio material such as radio broadcast; (c.) visual material such as catch basin labeling. | PW (and ALL AFFECTED DEPT.) |
| | V.A.2.(42) | Demonstrate outreach material is being distributed and employees are being trained. | PW (and ALL AFFECTED DEPT.) |
| | V.A.3.(41) | Analyze effectiveness of the education program | PW (and ALL AFFECTED DEPT.) |
| Public Info.& Participation Industrial/Commercial Educational Program | V.B.(42) | Develop an industrial/commercial site visit program which includes: | |
| | | 1. Identification of Sources- participate in developing a countywide database system & collect database info. | PBD |
| | | | FM |
| | | | HD |
| | | | ? |
| | | 2. Source Control Measures -participate in developing a countywide checklist & use during site visits | PD |
| | | | HHS |
| | | | HD |
| | | | ? |
| | | 3. "Educational" Site Visits - (a.) implement site visits based on specified schedule (b.) visit includes: consultation w/ facility rep.; distribution of materials; notify RWQCB of non-complying w/ State NPDES industrial program; conduct follow-up visits as deemed necessary. | PD |
| | | | HHS |
| | | | HD |
| | | | ? |
| Public Info. & Participation Five-Year Storm Water Public Education Strategy | V.C.(46) | Participate in developing countywide Five-Year Storm Water Public Education Strategy which shall identify the Cities' responsibilities for implementation. | PW |
| Monitoring Watershed Special/Pilot Projects | VI.C.(50) | Cities (with pops. > 100K) shall be the lead agencies in each WMA for (a) obtaining approval and (b.) conducting a pilot project. | PW |
| | | | HD |
| Program Reporting and Evaluation Program Annual Report | VII.A.(52) | Prepare and submit an annual report which includes: (a) Summary of Program accomplishments (b.) Summary of BMP Implementation (c.) Evaluation of Effectiveness (d.) Progress in obtaining full Legal Authority (e.) List of known spills | PW (and ALL AFFECTED DEPT.) |



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**EXHIBIT C**

**NPDES MUNICIPAL PERMIT- CITY DEPARTMENT RESPONSIBILITY MATRIX**

| PERMIT COMPONENT | PERMIT SECTION (PAGE) | PERMIT REQUIREMENTS | RESPONSIBLE AFFECTED DEPARTMENT |
|---|---|---|---|
| Program Reporting and Evaluation Monitoring Annual Report | VII.A.(53) | Prepare and submit annual progress report on watershed pilot project | PW |

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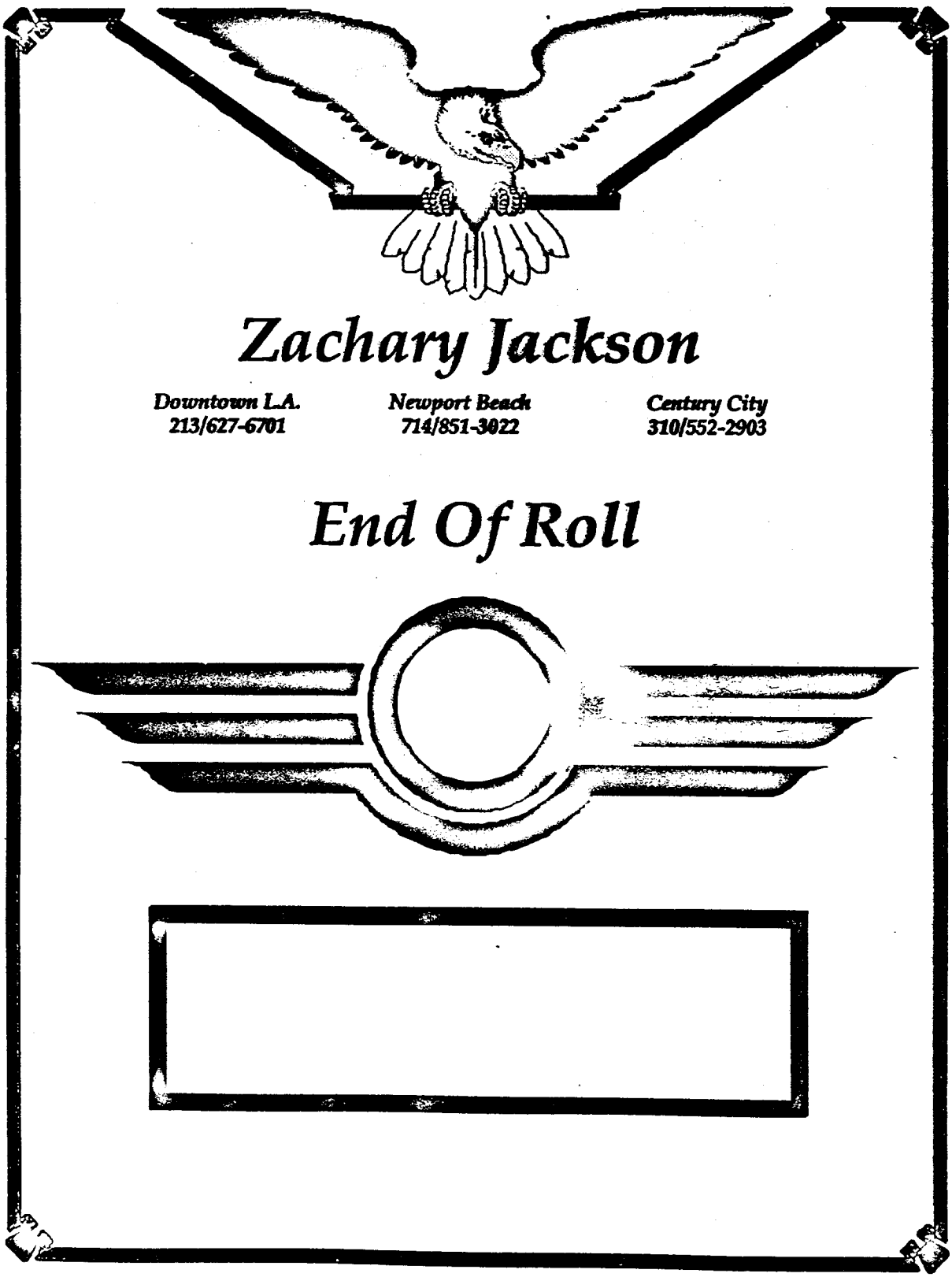

# Zachary Jackson


Downtown L.A. 213/627-6701

Newport Beach 714/851-3022

Century City 310/552-2903


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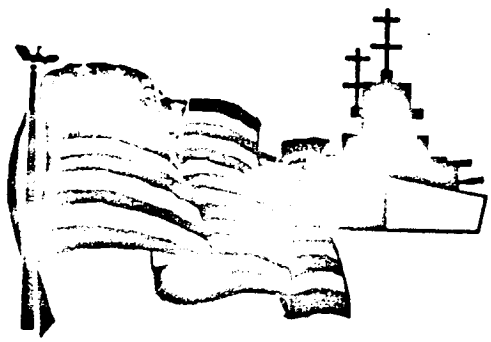
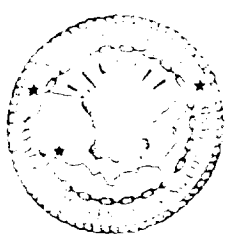
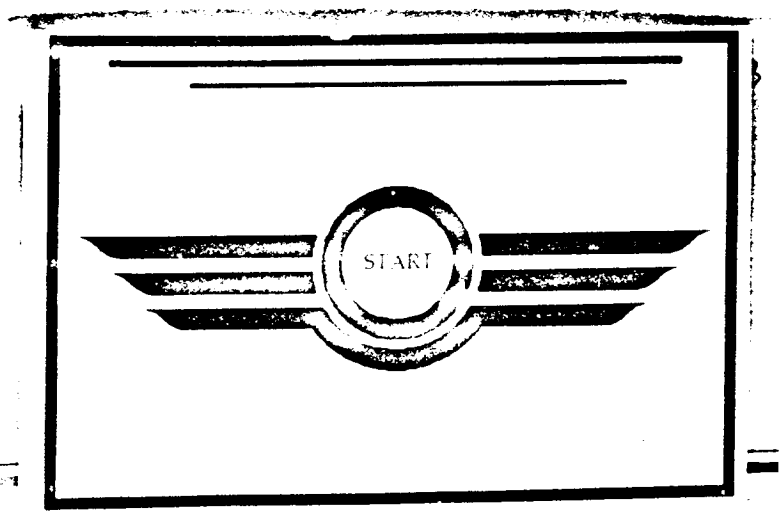


# DRAFT
# REMEDIAL INVESTIGATION (RI) REPORT
# INSTALLATION RESTORATION PROGRAM
# FOR SITE 7
# NAVAL STATION LONG BEACH
# LONG BEACH, CALIFORNIA
# CTO-0026



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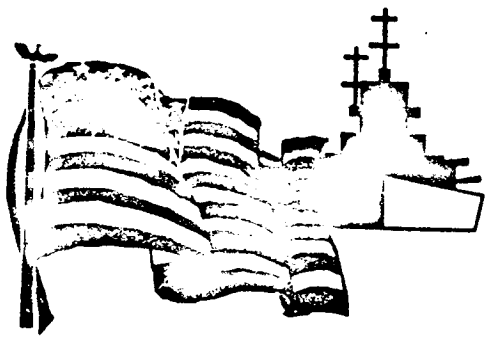
Bechtel National, Inc.

**NAVY**
**CLEAN II**
**PROGRAM**



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# INSTALLATION RESTORATION PROGRAM
# FOR SITE 7
# NAVAL STATION LONG BEACH
# LONG BEACH, CALIFORNIA
# CTO-0026

BOX 13

Submitted to:

Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

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R0062379

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Room 135
San Diego, California 92132-5187

Contract No: N68711-92-D-4670

VOL 18

# COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY CLEAN II

96 FEB 23 AM 11:03

# DRAFT
# REMEDIAL INVESTIGATION (RI) REPORT
# INSTALLATION RESTORATION PROGRAM
# FOR SITE 7
# NAVAL STATION LONG BEACH
# LONG BEACH, CALIFORNIA
# CTO-0026

Prepared By:
BECHTEL NATIONAL, INC.
Fifty Beale Street
San Francisco, California 94105-1895

22 February 1996

Signature: _____ Date: 22 Feb 96
Omer I. Kadaster, P.E., CTO Lead

Signature: _____ Date: 2/22/96
K. K. Kapur, P.E., Project Manager

0003

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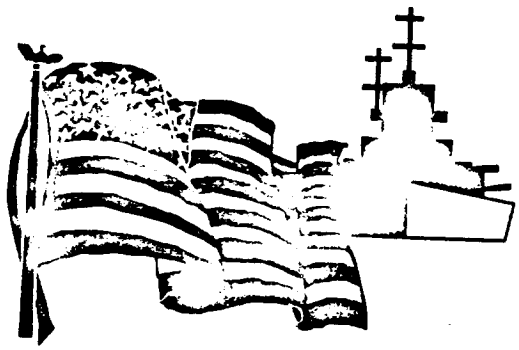
Bechtel National, Inc.

# NAVY CLEAN II PROGRAM



BOX 6

# INTERIM STATUS OF REMEDIAL INVESTIGATION AT SITE 7 (WEST BASIN) NAVAL STATION LONG BEACH LONG BEACH, CALIFORNIA CTO 0026

START

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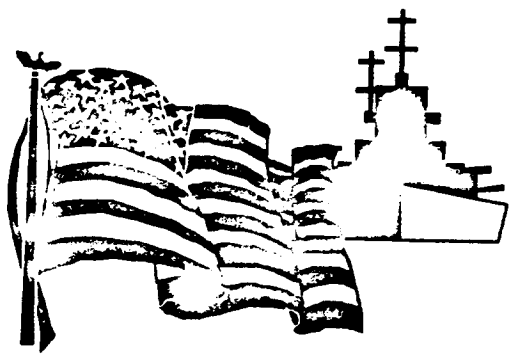
Bechtel National, Inc.

# NAVY CLEAN II PROGRAM



BOX 6

# INTERIM STATUS OF REMEDIAL INVESTIGATION AT SITE 7 (WEST BASIN) NAVAL STATION LONG BEACH LONG BEACH, CALIFORNIA CTO 0026

0446

Submitted to:

Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

R0062381

# TECHNICAL MEMORANDUM NO. 6

## COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY CLEAN II

Southwest Division
Naval Facilities Engineering Command
Contract No. N68711-92-D-4670

## INTERIM STATUS OF REMEDIAL INVESTIGATION AT SITE 7 (WEST BASIN) NAVAL STATION LONG BEACH LONG BEACH, CALIFORNIA CTO 0026

Prepared by:

BECHTEL NATIONAL, INC.
401 West A Street, Suite 1000
San Diego, CA 92101

June 15, 1995

Signed: _____ Date: JUNE 19, 1995
Omer J. Kadaster, P.E., CTO Lead

Signed: _____ Date: 6/19/95
K.K. Kapur, P.E., Project Manager

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VOL 18

# SUMMARY

This Technical Memorandum No. 6 (TM6) presents an interim status of the Remedial Investigation (RI) for the Long Beach Harbor West Basin (West Basin). The RI was conducted to assess potential environmental contamination in marine sediment and organism tissue in the West Basin. TM6 discusses the rationale of the RI with respect to the design of the sample location/analysis and data analysis plan, describes the field activities and procedures including sampling conducted as part of the RI, summarizes the laboratory analytical methods and test results, and outlines the work in progress. Following completion of laboratory analysis, and data analysis and interpretation, the general contents of TM6 will be incorporated into the RI Report. The RI Report will be prepared in accordance with the Installation Restoration Program, the Facilitywide Risk Assessment Work Plan, CLEAN I Work Plan, Sediment and Fish Sampling/Analysis Implementation Plans, and the Risk Assessment Work Plan.

A review of previous investigations performed within the West Basin specifically, and the general Los Angeles/Long Beach Harbor areas and coastal southern California in general, was conducted. Scientific surveys were reviewed and summarized to define chemical and biological regional ambient conditions. The ambient conditions provide a basis for comparison and interpretation of the results of this investigation. Reports of past dredging activities were also reviewed to provide information for the ensuing Feasibility Study.

As part of the review of previous investigations, an attempt was made to identify sources of discharge with respect to areas of contamination within the West Basin. Source identification included points of discharge origin, facility operations, discharge generators, and locations of discharge points within the receiving waters of the West Basin. This information will be utilized to further delineate the nature and extent of contamination.

During the summer of 1994, sediment and tissue samples were collected from 45 locations in the West Basin and three reference stations. The collected sediment samples consisted of surface (10 centimeter depth) and subsurface (maximum of 5 meter depth) sediment samples. Benthic infaunal invertebrates were also collected from the sediment samples. Bottom-dwelling fish, such as California halibut and white croaker, were collected. Whole fish, fish tissue, and fish bile were used for laboratory analysis.

Surface sediment samples were analyzed for physical parameters (grain size and total organic carbon [TOC]), chemical parameters (metals, sulfides, butyltin, polynuclear aromatic hydrocarbons [PAHs], polychlorinated biphenyls [PCBs], pesticides and semi-volatile organic compounds [SVOCs]), toxicity (bioassay) and benthic infauna. Subsurface sediment samples were analyzed for physical parameters (grain size and TOC) and chemical parameters (metals, butyltin, PAHs, PCBs, pesticides, and SVOCs). Bioaccumulation data were obtained by analyzing fish tissue for metals, butyltin, PAHs, PCBs, and pesticides. Clam bioaccumulation tests, conducted using sediment samples, were analyzed for metals, butyltin, PAHs, PCBs, and pesticides.

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## Summary

Preliminary results indicate that the distributions of sediment physical, chemical, and biological characteristics in the West Basin generally appear to follow a predictable pattern, based on sediment deposition and proximity to specific shore-based features, such as piers, seawalls, ship moorings, and stormwater outfalls. Sediments beneath the piers appear to be generally finer, contain greater levels of sulfides, and are higher in organic content than sediments from open water areas of the West Basin.

Preliminary results indicate concentrations of chemical contaminants in sediments beneath the piers generally higher than those of the open areas of the West Basin and project reference data. Contaminants may be accumulating in sediment beneath the piers as these areas are generally favorable for sedimentation and generally remained undisturbed. Sediments in areas along the northern seawall and the Navy Mole appear to contain chemical contaminant concentrations greater than those of the central areas of the West Basin, and somewhat greater than project reference concentrations.

At the time of this writing, the following tasks were in progress:

- chemical data evaluation, pending completion of statistical data analysis;
- biological data evaluation, pending completion of benthic community analysis and completion of statistical analysis of bioassay results; and
- ecological and human health risk assessment.

Following completion of these tasks, the results of this investigation, including recommendations and conclusions, will be included in the RI Report.

0449



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HEALTH AND SAFETY ACTIVITIES



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# ACRONYMS / ABBREVIATIONS

| | |
|---|---|
| AA/GF | Atomic Absorption/Graphite Furnace |
| AOPC | Area of Potential Concern |
| ARARs | Applicable and/or Relevant and Appropriate Requirement |
| ASTM | American Society for Testing and Materials |
| AVS | Acid Volatile Sulfide |
| BNI | Bechtel National, Incorporated |
| BOD | Biochemical Oxygen Demand |
| BPTCP | Bay Protection and Toxic Cleanup Program |
| BRAC II | Base Closure and Realignment Act of 1990 |
| Cal-EPA | California Environmental Protection Agency |
| CDFG | California Department of Fish and Game |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| CLEAN | Comprehensive Long-Term Environmental Action Navy |
| cm | centimeter |
| COC | Chain of Custody |
| COPC | Chemical of Potential Concern |
| CRP | Community Relations Plan |
| CTO | Contract Task Order |
| °C | Degrees Celsius |
| DDD | Dichloro-diphenyl-dichloroethane |
| DDE | Dichloro-diphenyl-ethane |
| DDT | Dichloro-diphenyl-trichloroethane |
| DHS | California Department of Health Services |
| DO | Dissolved Oxygen |
| DON | Department of Navy |
| DQO | Data Quality Objective |
| DTSC | Cal-EPA Department of Toxic Substances Control |
| dw | dry weight |
| DWR | State of California Department of Water Resources |
| ECD | Electron Capture Detector |
| EP | Equilibrium Partitioning |
| EPH | Eastern Pacific High |
| ER-L | Effects Range - Low |
| ER-M | Effects Range - Median |
| FID | Flame Ionization Detector |
| FM | Frequency Modulation |
| FPD | Flame Photoionization Detector |



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Acronyms / Abbreviations

| | |
|---|---|
| FS | Feasibility Study |
| FSAP | Fish Sampling and Analysis Plan |
| ft | foot, feet |
| ft/s | foot/second |
| $ft^3$ | cubic foot |
| °F | Degrees Fahrenheit |
| g | grams |
| $g/m^2$ | gram per square meter |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatograph/Mass Spectrometer |
| GPC | Gel Permeation Chromatography |
| GPS | Global Positioning System |
| HPAH | High Molecular Weight Polynuclear Aromatic Hydrocarbons |
| HPLC | High Performance Liquid Chromatograph |
| HRS | Hazard Ranking System |
| HSM | Health and Safety Manager |
| HSS | Health and Safety Supervisor |
| HWP | Hazardous Waste Permit |
| IAS | Initial Assessment Study |
| $IC_{50}$ | Inhibitory Concentration for 50% of Test Organisms |
| ICP | Inductively Coupled Plasma |
| IDCS | Impact Driven Coring System |
| IDW | Investigation Derived Waste |
| IR | Installation Restoration |
| km | kilometer |
| LA/LB | Los Angeles/Long Beach |
| LARWQCB | Regional Water Quality Control Board - Los Angeles Region |
| LBNC | Long Beach Naval Complex |
| LBNSY | Long Beach Naval Shipyard |
| $LC_{50}$ | Lethal Concentration for 50% of Test Organisms |
| LPAH | Low Molecular Weight Polynuclear Aromatic Hydrocarbons |
| $m^3$ | cubic meter |
| MCL | Minimum Cleanup Levels |
| mgd | million gallons per day |
| mg/kg | milligram per kilogram |
| µg/kg | microgram per kilogram |
| µmol/g | micromole per gram |
| mg/L | milligram per liter |



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Acronyms / Abbreviations

| | |
|---|---|
| MLLW | Mean Lower Low Water |
| mm | millimeter |
| µg/L | microgram per liter |
| µg/mL | microgram per milliliter |
| µg/m$^3$ | microgram per cubic meter |
| NAVSTA | Naval Station Long Beach |
| NEESA | Naval Energy and Environmental Support Activity |
| NISZ | Newport-Inglewood Structural Zone |
| nm | nanometer |
| NOAA | National Oceanographic and Atmospheric Administration |
| NOEC | No Observable Effects Concentration |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priority List |
| NS&T | National Status & Trends |
| OEHHA | Office of Environmental Health Hazards Assessment |
| OSHA | Ocupational Safety and Health Administration |
| OVA | Organic Vapor Analyzer |
| OU | Operable Unit |
| PA | Preliminary Assessment |
| PAH | Polynuclear Aromatic Hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PEL | Permissible Exposure Limits |
| PID | Photoionization Detector |
| pH | Hydrogen Ion Concentration |
| POLA | Port of Los Angeles |
| POLB | Port of Long Beach |
| POTW | Publicly-Owned Treatment Works |
| POT | Publicly-Owned Treatment Works |
| ppb | part per billion |
| PPE | Personal Protective Equipment |
| ppm | part per million |
| ppt | part per thousand |
| PQL | Practical Quantitation Limits |
| PRG | Preliminary Remediation Goal |
| PSEP | Puget Sound Estuary Program |
| psi | pounds per square inch |
| QAPP | Quality Assurance Project Plan |
| QA/QC | Quality Assurance / Quality Control |



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Acronyms / Abbreviations

| | |
|---|---|
| RAB | Restoration Advisory Board |
| RAWP | Risk Assessment Work Plan |
| RCRA | Resource Conservation and Recovery Act |
| RFA | RCRA Facility Assessment |
| RI | Remedial Investigation |
| RI/FS | Remedial Investigation/Feasibility Study |
| RPD | Relative Percent Difference |
| RWQCB | Cal-EPA Regional Water Quality Control Board |
| SAP | Sampling and Analysis Plan |
| SCCWRP | Southern California Coastal Water Research Project |
| SEM | Simultaneously Extracted Metals |
| SHSO | Site Health and Safety Officer |
| SI | Site Inspection |
| SL | Screening Levels |
| SOP | Standard Operating Procedure |
| SVOC | Semi-Volatile Organic Compound |
| SWDIV | Southwest Division |
| SWMU | Solid Waste Management Unit |
| SWRCB | State Water Resources Control Board |
| TBT | Tributyltin |
| TEL | Threshold Exposure Limits |
| TITP | Terminal Island Treatment Plant |
| TM6 | Technical Memorandum No. 6 |
| TOC | Total Organic Carbon |
| TRC | Technical Review Committee |
| UCL | Upper Confidence Limit |
| U.S. ACOE | United States Army Corps of Engineers |
| U.S. EPA | United States Environmental Protection Agency |
| U.S. FWS | United States Fish and Wildlife Service |
| UV | Ultraviolet |
| VOC | Volatile Organic Compound |
| West Basin | Long Beach Harbor West Basin |
| WESTDIV | West Division |
| WIFM | Waterways Experiment Station Implicit Flooding Model |
| ww | wet weight |



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SECTION 1

# INTRODUCTION

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# Section 1
# INTRODUCTION

This document, Technical Memorandum No. 6 (TM6), has been prepared by Bechtel National, Inc. (BNI) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) II Program. BNI is conducting a Remedial Investigation/Feasibility Study (RI/FS) of the Long Beach Harbor West Basin (West Basin), located within the Long Beach Naval Complex (LBNC). As a substantial portion of the Remedial Investigation (RI), BNI conducted an extensive site assessment during the summer of 1994. The purpose of the site assessment was to provide site-specific data relating to potential environmental contamination in marine sediment and organism tissue in the West Basin, which are the target media for this RI.

At the present time, the analytical data have been validated, and data evaluation is in progress. The discussions presented herein, as well as the results of the evaluations being conducted, will be contained in the RI Report to be prepared and issued at the conclusion of the work.

TM6 was prepared as an informational document to provide an interim status of the RI in progress for the West Basin. It describes the purpose of the work and activities already completed, such as sampling and analysis. It also discusses the findings of the field sampling and laboratory analysis programs. Essentially, most of the TM6 contents will be incorporated as part of the RI Report.

The West Basin is confined by the Long Beach Naval Shipyard (LBNSY) and the former Long Beach Naval Station (NAVSTA) which comprise the overall LBNC, as shown on Figure 1-1. The West Basin has been jointly used by the LBNSY and the former NAVSTA and, as such, it is the subject of this RI under the CLEAN II Program.

## 1.1 BACKGROUND DOCUMENTS

Southwest Division Naval Facilities Engineering Command (BNI 1994c) issued a facilitywide Risk Assessment Work Plan on 30 January 1994, which provided a conceptual framework for assessing ecological and human health risk potentially associated with the sediment and fish of West Basin. Subsequently, a Fish Sampling and Analysis Plan (FSAP) for the West Basin, dated 30 January 1994 (BNI 1994b), was submitted both to the California Environmental Protection Agency (Cal-EPA) and the United States Environmental Protection Agency (U.S. EPA) Region IX. The FSAP discusses the approach planned for assessing potential human health effects associated with consumption of contaminated fish.

Subsequent to the issuance of these documents, a series of discussions and workshops were held with the oversight agencies comprising Cal-EPA, U.S. EPA Region IX, the United States Fish and Wildlife Service (U.S. FWS), and the National Oceanographic and Atmospheric Administration (NOAA). These discussions were held for the purpose of refining the conceptual framework related to investigating the reported sediment contamination in the West Basin and to determine data needed to support this framework. One of the key developments of these discussions was the agreement that the water column in the West Basin need not be evaluated; water column analysis is included in the CLEAN I Work Plan (JEG 1993a). The oversight agencies agreed to the concept of



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"triggering" water column investigations, based on findings from the sediment investigation. The agencies also agreed to limit the proposed investigation relating to trophic interactions (e.g., food web modeling contained in the CLEAN I Work Plan). In summary, it was agreed with the oversight agencies that the focus of the RI for the West Basin would remain on the sediment, with limited fish collection as well, and that additional characterization would be required only if these data indicate a potential problem.

As a result of these discussions, the oversight agencies deemed that the two documents referred to above provided only general guidance for addressing the conceptual framework for investigating and evaluating risk in the West Basin. In response to these concerns, BNI issued TM4 and TM5 as implementation plans in June 1994 (BNI 1994d) and August 1994 (BNI 1994e), which provided detailed procedures to be used for sampling and analysis of bottom sediments and fish, respectively.

The sampling and analysis implementation plans (BNI 1994d,e) which described how sediment and fish samples would be collected and analyzed, were followed by a comprehensive document entitled Addendum to RI/FS Work Plan and Risk Assessment Work Plan (RAWP; BNI 1995). The RAWP described how the acquired data would be evaluated and used to support the focused ecological risk assessment and human health risk assessment. The objectives of the RAWP are to:

- bring together elements individually discussed in the earlier plans and memoranda;
- provide guidelines for evaluating project data;
- provide insight into how ecological and human health risk assessment could best be conducted; and,
- discuss how findings and conclusions will be integrated into the RI and subsequently the feasibility study (FS) as well.

Cumulatively, these five documents (Risk Assessment Work Plan, CLEAN I Work Plan, but more significantly the latter three: sediment and fish sampling/analysis implementation plans, and the RAWP) comprise the essence of how the RI, including both the ecological and human health risk assessments, would be conducted for West Basin.

## 1.2 PURPOSES AND SCOPE OF THE REMEDIAL INVESTIGATION

The purposes of the RI are to: (1) identify chemicals of potential concern (COPCs) associated with the West Basin sediments; (2) identify areas of potential concern (AOPCs); (3) rank these AOPCs; (4) assess which of the AOPCs need sediment remediation and identify appropriate cleanup levels, and (5) assess whether further investigation is warranted for the remaining AOPCs. The planned approach to achieve these objectives involves conducting focused ecological risk assessment and baseline human health risk assessment, using standardized procedures to the extent they are available.



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The purpose of the ecological and human health risk assessment is to evaluate whether chemical contaminants associated with the West Basin sediments could potentially represent a hazard to the environment or human health. Where such potential hazards exist, the risk assessment is further intended to determine whether adverse effects resulting from ecological or human health exposures to chemical contaminants would warrant remediation of West Basin sediments.

The focal point of the ecological risk assessment is to provide a basis for decisions related to whether sediment remediation is warranted. The human health risk assessment will be used to evaluate potential effects associated with consumption of fish caught from West Basin waters.

## 1.3 FACILITY LOCATION AND DESCRIPTION

The LBNC is situated on the south side of Terminal Island within the Los Angeles and Long Beach Harbor districts, approximately 3 miles west of downtown Long Beach, California. The LBNC is bounded by the oil fields and container yards of Terminal Island to the north, parts of Los Angeles Harbor to the west, San Pedro Bay to the south, and Long Beach Harbor Channel to the east. The Long Beach Harbor West Basin, which has been jointly used by the NAVSTA and the LBNSY, is bounded to the west by the former NAVSTA, to the south by the Navy Mole, to the north by LBNSY, and to the east by the ship turning basin, which is part of the Port of Long Beach (POLB) complex. Figure 1-2, Facility Plan, shows the specific location of West Basin.

Eleven piers, constructed for the purpose of ship docking for maintenance and loading, are present in the West Basin. These piers are generally constructed with concrete pilings, and are approximately 30 to 125 feet wide and 250 to 1,200 feet long. Piers 1, 2, and 3 are located along the northern seawall of the West Basin and used by the LBNSY. The other eight piers are used by the NAVSTA and include: Piers 5 and 7 located along the northern seawall of the West Basin; Pier 9 located in the northwest corner of the West Basin; and, Piers 10, 11, 12, 15, and 16 located in the southern portion of the West Basin along the Mole. A pipeline system delivers fuel from the Defense Fuels Supply Point in San Pedro to Pier 12. A marina is located near the southwest corner of the West Basin. Three dry docks are located at the LBNSY.

## 1.4 OPERABLE UNIT DESIGNATION

The LBNC has been divided into 13 sites under the Installation Restoration (IR) Program, which have been grouped into three operable units (OUs). Operable units represent areas in which discrete remedial response actions may be implemented to manage migration of contaminants, eliminate or mitigate releases of contaminants, which in turn is intended to reduce or eliminate potential pathways of exposure. Operable units are typically defined as:

- areas with similar media or found to have similar types of contaminants,
- areas that are geographically contiguous,



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- areas that could be remediated using similar techniques,
- areas which could be remediated within a parallel time frame, and
- areas that are amenable to being managed in a single RI/FS.

The RI/FS Work Plan for LBNC (JEG 1993a) identified the West Basin as Site 7, comprising OU-3, since harbor sediments are unique among the 13 IR Program sites. With the exception of Site 7, all IR Program sites are land-based sites, wherein the media of concern consist of soil and groundwater. Site 7, however, is defined as those subtidal sediments found in the West Basin of Long Beach Harbor, representing an area of approximately 700 acres.

## 1.5 FACILITY HISTORY AND PREVIOUS INVESTIGATIONS

This section discusses the history of operation and previous environmental investigations conducted at the LBNC in general, and the West Basin in particular.

### 1.5.1 History

In 1935, the U.S. Navy negotiated a 30-year lease with the City of Los Angeles for property to be developed into a naval facility. In 1938, construction of the NAVSTA main base began. The majority of the LBNC land was reclaimed through hydraulic fill operations conducted between 1938 and the early 1940s. During this time, the Mole was extended out into San Pedro Bay and completed in 1944. Construction of NAVSTA and the Mole created the West Basin in its present form.

By 1946, the NAVSTA was chartered to maintain facilities for the operation and berthing of tugboats, barges, and similar vessels. In 1948, the NAVSTA changed its name from the U.S. Naval Base, Terminal Island, to the U.S. Naval Station Long Beach. At that time, the NAVSTA provided support for active service ships and inactive ships of the Reserve Fleet. The NAVSTA, which closed 30 September 1994, was one of the 11 military installations in California scheduled for closure under the Base Realignment and Closure Act (BRAC) II. The LBNSY provided logistical support for assigned ships, performed authorized work on ships, and performed manufacturing research, development and test work.

### 1.5.2 Previous Investigations

Since the 1950s, several environmental investigations have been conducted at the Los Angeles/Long Beach (LA/LB) Harbor Complex. Few, however, have related specifically to West Basin sediment. An overview of the key investigations relevant to the IR Program is provided below in chronological order.

#### 1.5.2.1 1954-1975 BENTHIC COMMUNITY STUDIES

Benthic biological data using invertebrates as biomarkers specific to West Basin were collected in 1970-1971 (Hill and Reish 1975). These data complemented or were



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comparable to benthic data collected during earlier years from other locations of the LA/LB Harbor Complex. These and other similar environmental studies concluded that the inner harbor waters, including West Basin, were severely polluted, (i.e., that specific benthic taxa were either absent or showed evidence of severe stress, and that dissolved oxygen [DO] levels, another direct indicator of water and sediment quality, were depressed). These investigations also found that outer harbor stations indicated healthy benthic communities and adequate DO levels.

The pollution abatement program within the LBNC, following a similar program conducted LA/LB Harbor-wide, was initiated in the mid-1970s. Prior to implementing this program (e.g., in the 1950s and 1960s), wastes discharged within LBNC included petroleum products, wastewater from naval ships, and stormwater runoff. Following its implementation, these wastes, except stormwater, were collected, treated, and discharged elsewhere. As an example of surface water discharges contributing to changes or degradation in benthic communities, prior to 1971, much of the benthos in the West Basin was dominated by the pollution-tolerant polychaete worm *Capitella capitata*. Following the implementation of the pollution abatement program, this species virtually disappeared and the benthos became dominated by a wide variety of species, with healthy zone indicators dominating benthic communities (Hill and Reish 1975; Reish 1978). This important finding is consistent with many similar investigations conducted within the LA/LB Harbor during this period (e.g., Soule and Oguri et al. 1974).

### 1.5.2.2 1969 INDUSTRIAL WASTE STUDY

The Department of Navy (DON), Southwest Division (SWDIV), conducted an Industrial Waste Study at LBNC (SWDIV 1969). Among the objectives of this study was to determine the nature and amount of all liquid and solid industrial wastes being discharged into the storm drain system, directly into the harbor, or buried into the ground. This was the first known environmental investigation of "industrial" (now generally considered "hazardous") waste at LBNC. This study reported the discharge of industrial wastewater into the West Basin, burial of industrial waste liquids and sludges in disposal pits on the Mole, and the landfilling of solid waste and sandblast grit to enlarge the Mole.

### 1.5.2.3 1983 INITIAL ASSESSMENT STUDY

An Initial Assessment Study (IAS) for the LBNC was completed in August 1983 (NEESA 1983). The IAS was similar to a Preliminary Assessment (PA) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. The purpose of this IAS was to identify and assess potential threats to human health and the environment caused by past hazardous materials storage, handling, or disposal practices at Naval installations. As such, the IAS was the first comprehensive study by the DON to identify contaminated areas at LBNC resulting from past operations. The study included information on waste generating sources, waste handling practices, storage and transportation procedures, waste processing practices, and descriptions of disposal sites and potentially contaminated areas.



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The IAS included a review of available records, aerial photographs, surface and aerial surveys, and personnel interviews. Based on information obtained from the study, 12 potentially contaminated sites were identified at LBNC (JEG 1993a), one of which was Site 7, West Basin sediments. Each of the 12 sites was assessed with regard to contamination characteristics, migration pathways, and potential receptors. The study concluded that none of the 12 sites posed a sufficient threat to human health or the environment to warrant a confirmation study, but recommended various precautionary measures (JEG 1993a).

#### 1.5.2.4 1989 RCRA FACILITY ASSESSMENT

The Resource Conservation and Recovery Act of 1976 (RCRA) Facility Assessment (RFA) of the LBNC, was prepared by the Cal-EPA Department of Toxic Substances Control (DTSC), formerly the Department of Health Services (DHS 1989). The RFA was performed to identify and evaluate solid waste management units (SWMUs) and other areas of concern at LBNC. A records review, evaluation of existing data, personnel interviews, and a visual site inspection were conducted to evaluate the potential for releases of hazardous constituents from identified SWMUs. The RFA recommended further action at the 12 SWMUs identified in the IAS.

#### 1.5.2.5 1992 SITE INSPECTION

Two Site Inspections (SIs) were conducted concurrently in 1991 at the NAVSTA and LBNSY; reports for these SIs were finalized in November 1992 (JEG 1992a and 1992b). The objectives of the SI, which typically follows the PA in the CERCLA process, were as follows:

- Verify the presence of hazardous substance contamination at the 12 sites identified by the IAS.
- Assess whether contamination at the sites exists at concentrations which warrant further action.
- Evaluate potential contaminant migration pathways and potential targets for scoring under the U.S. EPA Hazard Ranking System (HRS).

The NAVSTA SI addressed Sites 1 through 7, which lie within the NAVSTA's boundaries, and the LBNSY SI addressed Sites 7 through 12, which lie within the LBNSY's boundaries. Site 7 is shared by both the NAVSTA and LBNSY; therefore, portions of the site contiguous with the NAVSTA and the LBNSY were designated as Sites 7A and 7B, respectively, and were addressed in separate SI reports.

To accomplish the SI objectives at Site 7, a total of 15 sediment core samples were collected as part of the field effort. No surface sediment collections (uppermost 10 cm or less) or biological samples were collected as part of this effort. No sediment sampling was conducted under the piers in the West Basin. Fourteen of the sampling locations were targeted to be as close to the stormwater outfalls as possible (along the northern seawall), and a background sample was taken just off the end of the Mole. Sampling locations and



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results of the laboratory analyses are described in the RI/FS Work Plan (JEG 1993a). The results of the laboratory analyses conducted on these samples were used to evaluate contaminant releases via various pathways in accordance with U.S. EPA guidance. Field data indicated the presence of numerous organic contaminants in sediments, in particular polynuclear aromatic hydrocarbons (PAHs), at moderate to high levels, and several metals in sediments at low to moderate levels. Because of the limited number of samples collected and the restricted spatial coverage, further investigation was recommended for Site 7.

### 1.5.2.6 1993 RI/FS WORK PLAN

The RI/FS Work Plan (JEG 1993a) is a facilitywide document which outlines a program for evaluating potentially contaminated areas at the NAVSTA as part of a RI/FS process. The following tasks were performed to develop a RI/FS approach for each of the sites identified within the LBNC:

- Review of existing data;
- Development of a conceptual model representing site conditions and potential exposure pathways;
- Performance of a screening-level assessment to identify where risk-based or regulatory-based protectiveness criteria may have been exceeded; and
- Determination of whether the site required further investigation or warranted a removal action.

The Work Plan detailed the data evaluation and reporting activities necessary to complete the RI/FS. Tasks included developing conceptual site models, assessing the baseline risk, developing screening levels, evaluating remedial alternatives, and preparing both RI and FS reports.

Existing sediment chemistry data specific to West Basin (JEG 1992b and 1993a) were reviewed as part of the Work Plan development process. Field work, conducted as part of the SI, resulted in the identification of potential compounds of concern, such as PAHs, polychlorinated biphenyls (PCBs), pesticides [e.g., dichloro-diphenyl-trichloroethane (DDT)], arsenic, copper, lead, mercury, and zinc. The SI results indicated that measured concentrations of these chemicals in sediment exceeded sediment screening-level criteria. The screening levels included: effects range - low (ER-L), effects range - median (ER-M), and equilibrium partitioning (EP) (Long and Morgan 1990); and the Puget Sound Standards of minimum cleanup levels (MCL) and screening levels (SL). As a result of this screening evaluation, it was determined that further evaluation of sediment toxicity would be required prior to specifying remediation of sediment.

The conceptual site model prepared for West Basin sediments identified potential exposure pathways via bottom sediments and surface water. Potential human receptors were identified as those individuals who consume fish caught in West Basin. Significant aquatic receptors were identified as invertebrates (including polychaete worms and



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crustaceans) and fish. A sediment transport conceptual model was also developed to describe sediment mobilization and transport within West Basin.

The Work Plan also presented an approach to characterize risk associated with contaminated sediments. This approach was based on evaluation of sediment chemical analysis, bioassay, and tissue bioaccumulation test results to determine the need for sediment remediation. Potential remediation scenarios proposed in the Work Plan included capping, dredging and disposal, and natural recovery.

## 1.6 LAND USE

General land use in the vicinity of the LBNC consists primarily of port-related, commercial, industrial, or recreational activities. Facilities in the vicinity of the LBNC include tank farms, automobile terminals, cement terminal, cargo handling and storage, and cargo terminals. On Terminal Island, the areas west and east of the facility are used for commercial shipping, liquid bulk handling, heavy industrial activities, and commercial fishing activities. The area north of the LBNC (on Terminal Island) is used for oil production activities. Terminal Island is west of POLB and east of the Port of Los Angeles (POLA). These ports participate in heavy shipping traffic, container storage, cargo handling, dredging activities, and loading/offloading operations.

## 1.7 COMMUNITY RELATIONS

The DON has initiated an environmental investigation and cleanup effort at the LBNC, commonly referred to as the IR Program. A Community Relations Plan (CRP) was prepared in August 1993 to be implemented concurrently with the RI/FS phases of work performed under the IR Program. The CRP describes the public participation program designed to assure involvement by the local community.

In April 1992, a Technical Review Committee (TRC) was formed for the IR Program at the LBNC. The TRC was comprised of the DON and environmental regulatory agency representatives. The purpose of this TRC was to review IR Program documents and comment on the cleanup activities.

In April 1994, the LBNC formed a Restoration Advisory Board (RAB) to invite members of the public to become involved in the environmental restoration program. The RAB expanded the TRC by including members of the public in the existing committee of regulatory agency representatives and Navy personnel. Since April 1994, the 20-member RAB has met regularly, and has participated in site tours and educational workshops.

## 1.8 REGULATORY STATUS

Although the West Basin (Site 7) is not listed on the U.S. EPA National Priorities List (NPL), the DON's current policy is that response actions at both NPL and non-NPL sites be accomplished in accordance with the National Contingency Plan (NCP)/CERCLA. The DTSC has agreed to accept CERCLA remedial action documents under the corrective action provisions of the LBNSY's RCRA permit (RCRA Corrective Action Program),



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since these provisions will be addressed in the environmental response actions taken at the West Basin. The DON is the lead federal agency for the implementation of these actions, and the DTSC is the lead state agency.

## 1.9 REPORT ORGANIZATION

TM6 is divided into 13 sections. The following paragraphs introduce the main topic of each section, followed by the focus of the subsections.

Section 1 is the introduction to TM6. Section 1.1 discusses background documents. Section 1.2 introduces the RI and presents the purpose. Section 1.3 describes the facility location and a general overview of the facility. Section 1.4 identifies the Operable Unit Designation. Section 1.5 summarizes facilitywide history and previous investigations related to dredging, oceanographic surveys, environmental monitoring, or remedial activities. Section 1.6 summarizes land use; Section 1.7 presents an overview of the community relations strategy; and Section 1.8 discusses the regulatory status of the facility.

Section 2 presents a description of the West Basin, including its operational history, use of the harbor, and vessel operations (Section 2.1). Section 2.2 provides an overview of regional climate and Section 2.3 of geology and how it relates to the West Basin. Section 2.4 provides an overview on the oceanography of Site 7 and the surrounding area, including physical (e.g., bathymetric properties and circulation patterns), chemical, and biological oceanography. Section 2.5 presents a discussion on sedimentology.

Section 3 provides a discussion of source identification issues related to the West Basin and the LA/LB Harbor areas. Section 3.1 discusses discharges to the LA/LB Harbor areas in general. Section 3.2 discusses historical sources of contamination, including land-based discharges, ship-related discharges, spills occurring into or adjoining the West Basin, and dredging projects where dredged materials could constitute a contaminant source to West Basin sediments.

Section 4 summarizes previous investigations related to West Basin sediments. Such investigations are comprised of scientific surveys that define regional ambient conditions related to physical oceanography, and chemical and biological surveys (Section 4.1). Section 4.2 provides an overview of dredging investigations conducted both in the outer LA/LB Harbors and within the West Basin.

Section 5 includes a rationale for the sampling design (Section 5.1), review of sample collection plan (Section 5.2), laboratory analysis (Section 5.3), and selection of project reference areas and a discussion of chemical and biological performance criteria used to evaluate the applicability of project reference data used as part of the project (Section 5.4).

Section 6 provides an overview of the field methods used to conduct the sampling, including mobilization, which involves site clearance and health and safety practices (Section 6.1), navigation and positioning (Section 6.2), and collection of sediment and biological samples (Section 6.3). Section 6.4 discusses sample documentation procedures.



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Section 6.5 discusses sampling equipment decontamination procedures and Section 6.6 discusses collection, storage, and disposal of investigation-derived waste.

Section 7 provides an overview of the laboratory methods, including those used to analyze surface sediment (Section 7.1), including physical and chemical analyses, bioassay testing, and benthic community analysis. Section 7.2 discusses analysis of subsurface sediment, and Section 7.3 provides a discussion of methods used to analyze clam and fish tissue.

Section 8 provides an overview of how data quality was assured throughout various aspects of the project, including data quality objectives (Section 8.1), field measures (Section 8.2), and laboratory Quality Assurance/Quality Control (QA/QC) measures (Section 8.3). Section 8.4 describes the verifications and validation of chemical data, and Sections 8.5 and 8.6 discuss the validation and verification measures taken to assure quality of biological data. Section 8.7 discusses data usability issues with reference to conducting the RI and risk assessment, and Section 8.8 provides an overview of database management issues.

Section 9 presents preliminary results of the site assessment. An overview of the nature and extent of contamination is presented in Section 9.1. Section 9.2 provides the results for sediment physical data, Section 9.3 for sediment chemistry data, Section 9.4 for sediment toxicity data, Section 9.5 for benthic community data, and Section 9.6 for fish and clam tissue bioaccumulation data.

Section 10 presents preliminary evaluation results and identifies the work in progress. Section 10.1 describes chemical data evaluation methodology. Section 10.2 describes preliminary biological data evaluation results. Section 10.3 provides a preliminary evaluation matrix. Section 10.4 describes the work in progress which comprises the benthic community analysis, data evaluation, statistical analyses, ecological risk assessment, human health risk assessment, and preparation of the RI Report. Section 11 contains a listing of the references, and Section 12 provides a glossary of terms used in TM6.



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## SECTION 2

# SITE DESCRIPTION

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# Section 2
# SITE DESCRIPTION

This section describes the operational history of the LBNC and the West Basin, and provides a description of the setting of Site 7 with respect to climate, geology, oceanography, and sedimentology.

## 2.1 OPERATIONAL HISTORY / HARBOR USE

Approximately 60 percent of the land occupied by the LBNSY and NAVSTA has been reportedly reclaimed through fill operations. After taking ownership of Terminal Island in 1938, the DON proceeded to construct the seawall that currently forms the northern boundary of the West Basin. The area between the seawall and the former shoreline was filled with dredged material.

The West Basin was created when the Mole was extended out into San Pedro Bay between 1938 and the early 1940s. The Mole forms the western and southern boundaries of the West Basin. Construction activities of the Mole were completed in 1944 (NEESA 1983). Since the creation of the West Basin, dredging has been conducted during construction or relocation of the piers (see Figure 2-1). Maintenance dredging has also been conducted between the piers. The piers and dry docks were constructed for ship maintenance activities and fueling (JEG 1993a).

In the late 1940s, NAVSTA provided support for active service ships and inactive ships of the Reserve Fleet (SWDIV 1994). From the early 1940s to the mid-1970s, drainage from various industrial areas and from cleaning and process tanks was discharged into the West Basin. Wastes were discharged through the storm drain system and from flushing of the dry docks (JEG 1993a). These past practices, along with leaks and spills from ships, may have resulted in areas potentially hazardous to human health and the environment (JEG 1993b).

Currently, the West Basin harbors an active berthing and repair shipyard. The primary use of the West Basin is for Naval and other activities such as providing maintenance facilities for the berthing operations of tugboats, barges, and similar vessels. A small craft marina is also located in the southwest corner. The West Basin is not used for recreational swimming. The Mole and other areas within the harbor are used for recreational fishing. The LBNSY provides logistical support for assigned ships, performing work in connection with construction conversion, overhaul, repair, alteration, drydocking, and fitting out of ships. Manufacturing research, development, and test work has also been conducted at the LBNSY (JEG 1993a). Ships leaving the POLB use the entrance to the West Basin as a turning basin.

## 2.2 CLIMATE

The climate is classified as Mediterranean, characterized by warm, dry summers and mild winters. Most of the precipitation throughout the year occurs between the months of November and March, with an average annual rainfall of about 12 inches. Heavy rains occasionally contribute to flooding and significant sediment discharge from adjoining



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streams and rivers. Because of the relatively arid climate, annual evaporation is 63.6 inches (National Weather Service 1982). The dominant wind direction is westerly, with prevailing winds blowing off the ocean. At night, air cooled from the surrounding hills typically produces a gentle offshore flow (JEG 1993a).

The Eastern Pacific high (EPH) pressure system, and the moderating effect of the cool Pacific Ocean are the major influences on the regional climate (LA/LB Harbor Departments and U.S. Army Corps of Engineers [U.S. ACOE] 1990). In the summer, the EPH is at its strongest, most northerly position and is centered west of northern California. The EPH shelters southern California from polar storm systems. Descending air due to the EPH produces an elevated temperature inversion with a base of (1,000 to 3,000 feet). Marine air trapped within the inversion is condensed into fog and stratus clouds by the cool temperature of the ocean, which typifies summer weather in San Pedro Bay. Stratus clouds formed offshore move onshore during the evening hours, but burn off to the coastline during the morning hours when land temperatures rise. Summer tropical storms may also infrequently move in from the west coast of Mexico.

During winter, the EPH weakens and shifts to the south, thereby allowing polar storm systems to pass through the region. The storms are characterized by strong, shifting winds and occasionally heavy precipitation. Winter storms are followed by low pressure troughs that are characterized by clear skies, cool temperatures, and gusty west to north winds as the systems move eastward. Simultaneously with the EPH, a thermal low persists in the interior desert region of southern California which results in a westerly, onshore flow of air for most of the year. Easterly winds are due to nocturnal and wintertime land breezes; daytime heating reverses the flow back onshore. During the fall and winter, the EPH often combines with high pressure over the continent resulting in extended periods of light winds and inversion conditions. Excessive buildup of high pressure can produce "Santa Ana" conditions characterized by warm, dry, northeasterly winds.

The average high and low temperatures, recorded from the Long Beach Airport, are 83°F and 63°F in July and 66°F and 44°F in January (LA/LB Harbor Departments and U.S. ACOE 1990).

## 2.3 GEOLOGY

Fill material used to reclaim land represents a significant unit which overlays the stratigraphic column in the Long Beach Harbor area. Very little native material, whether subtidal or terrestrial, is exposed because of extensively using nonnative materials as fill material.

The West Basin is located in the northern portion of the Peninsular Range Geomorphic Province which is dominated by northwest trending geologic structures. The dominant structural feature in the Long Beach area is the Newport-Inglewood Structural Zone (NISZ). Data indicate that geologic structures associated with the NISZ have a tendency to act both as groundwater barriers and structural oil traps.



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The influence of the NISZ is locally expressed at the surface by the presence of a chain of elongated low hills and fault scarps caused by northwest-trending, left-stepping, en-echelon faulting (Randell et al. 1983). Some of the smaller northwest-trending faults are believed to pass through the eastern portion of the NAVSTA.

## 2.4 OCEANOGRAPHY

Understanding the physical processes (e.g., currents, tides, and waves), chemical characteristics (e.g., naturally occurring chemical constituents in water and sediment), biological habitats, and indigenous organisms allows for a comprehension of the specific oceanographic characteristics of the West Basin. Physical characteristics, such as transparency and temperature, may reflect overall water quality. Currents, tides, and waves are responsible for water circulation patterns, which in turn affect the concentration and distribution of chemical compounds within West Basin. Water chemistry, including dissolved oxygen, pH, salinity, metals and organic compound concentrations, is also an indication of overall water quality and is closely related to biological activity. Important marine biological components of West Basin include plankton, plant life, benthic invertebrates, fish, and marine birds.

The West Basin is located in the San Pedro Bay region of the Southern California Bight. This region, which lies southeast of Santa Monica Bay, is defined oceanographically as the submarine shelf bounded by the Palos Verdes peninsula to the north, the Newport Submarine Canyon to the south, and the mainland shelf break extending 18 miles seaward (south) of Long Beach. The Bight itself is a 100,000 square mile submerged continental borderland of the Pacific Ocean bounded on the north, east and southeast by a large mountainous reach of the North American coastline. The Bight extends from Point Conception, California, south 575 km (360 miles) to Cabo Colnett, Baja California, Mexico (Dailey et al. 1993). The west is bounded by the inner border of the southward-flowing California Current and by the outer edge of the continental shelf. The prominent distinguishing feature of the Bight is the eastward indentation of the coastline that allows for a northward flowing return eddy, the Southern California Countercurrent. As a result of its unique circulation patterns and complex bathymetry, the Bight acts as a trap for warm, equatorial water, a reservoir for chemical components entering from the land, air and sea, that together form an enclave of region-specific populations of marine life.

### 2.4.1 Physical Oceanography

Very few physical oceanographic surveys of the West Basin area have been conducted. Of these, the principal ones have been conducted by the U.S. ACOE's Waterways Experiment Station (McAnally, Jr. 1975; Seabergh and Outlaw 1984; Sargent 1989; Vemulakonda, Chou, and Hall 1991). In general, these studies found that water circulation in the West Basin is restricted due to: 1) the relative absence of sedimentation from riverine inputs due in part to low rainfall levels, and, 2) seawalls, breakwaters, and other obstructions which impede circulation.



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Depths within the West Basin range from 9 meters close to the shore to 21 meters at the entrance to West Basin. This entrance also acts as a turning basin for Navy and POLB ships. Water depths at the piers within West Basin average about 14 meters, except at Pier 9, where the water depth averages 11 meters. Figure 2-1 shows bathymetric contours in the West Basin.

Tidal currents create water circulation patterns. Rising tides, which vary with the phase of the moon, enter Long Beach Harbor and flow up the various channels and basins; flows reverse during falling tides. Little circulation occurs in the West Basin; its configuration and location results in less mixing of water than in the outer harbor. The tidal range is greatest during spring tides, (i.e., during new and full moons) resulting in the strongest currents. Tidal range is least during neap tides (i.e., during first and third quarter moons) resulting in the weakest currents. The mean ebb and flood flow volume during one tidal cycle for the West Basin is estimated at 277 x $10^6$ $ft^3$ (LA/LB Harbor Departments and U.S. ACOE 1990).

Sediments within most of the West Basin are subject to disturbance by vessel operations (JEG 1993a). The net effect appears to be transport out of the West Basin, although sediments disturbed by vessels turning at the entrance to the West Basin may produce inward transport from that location. Properties influencing the movement of sediment particles are size, shape, and composition.

The temperature within the West Basin water column varies by season. It is cooler in the winter and warms up during the spring and summer. In addition to climatic conditions, water temperature of the West Basin reflects the proximity of open ocean, port facilities, and surface water discharges. Temperatures measured in the West Basin during June 1988 (POLB 1988) indicate a water surface temperature of 16.3°C and a 20-foot depth temperature of 14.0°C. Mean water temperatures, as measured by the POLB at two stations within West Basin between 1971 and 1991, were 17.6°C at the surface and 16.6°C at a 20-foot depth (JEG 1993a).

Water transparency, a measure of vertical visibility in depth below surface, is affected by suspended materials from runoff, dredging activities, and shipping operations. It is also affected seasonally by plankton blooms. As a representative data point for the West Basin, transparency was measured to be 12 feet during June 1988 (POLB 1988). As recorded monthly by POLB between 1971 and 1991 in West Basin mean transparency, was measured at 12.2 feet (JEG 1993a).

Southern California coastal tides are semidiurnal, with two low and two high tides of unequal height every 25 hours. The mean tidal maximum velocity is about 0.6 ft/s (LA/LB Harbor Departments and U.S. ACOE 1990). Minimal velocities, representative of limited circulation patterns of up to 0.46 ft/s, occur in the inner areas of Long Beach Harbor. Waves and swells in the Long Beach Harbor are small due to abundant seawalls and breakwaters throughout the harbor complex, with wave periods of 1 to 3 seconds and swell periods of 10 to 20 seconds. Seiche waves occur in the Long Beach Harbor with periods of 30 seconds to greater than 1 hour. Regular seiching is estimated to occur at



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intervals of 1.25 hours and equals 5 percent of the total tidal exchange (LA/LB Harbor Departments and U.S. ACOE 1990).

## 2.4.2 Chemical Oceanography

Aspects of chemical oceanography considered in this section include: DO, pH, salinity, nutrients, and metals. These measurements provide background levels with which to compare potentially adverse effects caused by discharges to the West Basin.

DO levels vary by area, water depth, and season. Low levels of DO may occur due to a number of factors, including eutrophication (e.g., localized phytoplankton blooms) as a result of various types of discharge. In June 1988, the DO concentration of West Basin surface waters was found to be 9.3 mg/L and 7.0 mg/L at 20 feet below surface (POLB 1988). Mean DO levels within West Basin, as recorded monthly between 1971 and 1991 by POLB, have been reported as 8.4 mg/L at the surface and 8.1 mg/L at 20 feet. These DO levels are above the 5 mg/L level recommended for marine environments to maintain a healty aquatic habitat (U.S. EPA 1986).

The pH of Long Beach Harbor waters ranges from 7.0 to 8.7 (LA/LB Harbor Departments and U.S. ACOE 1990). Higher values occur at the surface during warm weather periods and lower readings are found in deeper, cooler water. The measured pH levels in the Long Beach Harbor are within the pH range of 6.5 and 8.5 necessary in marine waters to maintain a healthy aquatic habitat (U.S. EPA 1986).

Salinity in harbors is influenced by the influx of ocean water, evaporation, precipitation, freshwater runoff, and wastewater discharges. The salinity of Long Beach Harbor waters ranges from 10.0 to 34.2 parts per thousand (ppt) (LA/LB Harbor Departments and U.S. ACOE 1990). Mean salinity of the inner harbors of Los Angeles and Long Beach has been reported as 33.5 ppt (Allan Hancock Foundation 1975), which is similar to the salinity of open ocean water. This is reflective of relatively little freshwater input into the receiving waters of LA/LB Harbor.

Nutrient levels are highly variable in harbor waters due to varying types of discharges and climatic conditions. Nutrient concentrations tend to increase dramatically during periods of heavy rainfall, and may provide a nutrient base for localized algal blooms. This phenomenon, in turn, may lead to eutrophication and severe pollution episodes. During a survey of nutrient concentrations conducted in 1978, concentrations in Long Beach Harbor ranged from 0.12 to 120 mg/L for ammonia, up to 5.4 mg/L for nitrite, up to 83 mg/L for nitrate, and 0.17 to 12 mg/L for phosphate (LA/LB Harbor Departments and U.S. ACOE 1990). Some of these concentrations could be problematic if sustained over a period of time, but no time-series measurements of nutrients in water are known to have been made in the LA/LB Harbor Complex.

Concentrations of U.S. EPA priority pollutant metals have been measured in the past in association with different surveys, including the receiving waters of eastern Long Beach Harbor in support of the Pier J expansion project (LA/LB Harbor Departments and U.S. ACOE 1990). These measurements provide a backdrop for more current water column



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measurements, should such measurements be taken at a later date. Values ranged from 1.9 to 16 µg/L for chromium, 8.7 to 14 µg/L for copper, 0.21 to 0.26 µg/L for lead, up to 0.4 µg/L for nickel, up to 0.7 µg/L for silver, and 6.2 to 9.6 µg/L for zinc. Some of these metals concentrations, especially copper, exceed federal ambient water quality criteria (2.9 µg/L for copper). Without time-series measurements, however, it is difficult to determine changes in such concentrations over time.

## 2.4.3 Biological Oceanography

The Long Beach Harbor area contains a variety of marine habitats and marine life. The various marine habitats may be subdivided into hard substrate, soft bottom, water column and specially designated habitats. Hard substrate habitat is abundant due to riprap (boulders, concrete rubble), walls, and wood and cement pilings. These different habitats support diverse types of biota, which are dominated by invertebrates. Barnacles, mussels, echinoderms and seaweed dominate hard-substrate habitat in the Southern California Bight, while polychaetes, amphipods, and other burrowing infaunal invertebrates dominate sandy or soft bottom substrates. The water column generally is inhabited by fish and various plankton species. A variety of bird species also inhabit the West Basin area, the most common of which include Hermann's gull (*Larus hermanni*), California brown pelican (*Pelicanus occidentalis californicus*), and Western gull (*Larus occidentalis*).

The West Basin and the outer areas of LA/LB Harbor are characterized as soft bottom and open water greater than 9 meters (30 feet) deep. The outer Mole may generally be characterized as rocky shoreline with some soft bottom. Kelp beds associated with hard substrate habitats constitute nursery habitats for fish such as blacksmith (*Chromis punctipinnis*), kelp bass (*Paralabrax clathratus*), barred sand bass (*Paralabrax nebulifer*), senorita (*Oxyjulius californica*), and surfperches (*Embiotocidae*).

The soft bottom habitat supports organisms that burrow into sediment (infauna), such as worms, and those that inhabit on the surface of the harbor floor (epifauna), such as starfish and sea urchins. Diverse benthic species typical of other southern California bays and harbors exist in the Long Beach Harbor. Annelid worms dominate the soft bottom habitat with other abundant phyla, including molluscs, arthropods, and echinoderms. The inner harbors of LA/LB generally have a reduced number of taxa, higher densities, and more stress-tolerant species than the outer harbor areas. The inner Los Angeles Harbor benthic organism densities average 75 g/m$^2$ wet weight (LA/LB Harbor Departments and U.S. ACOE 1990). This may be compared to organism densities in the outer Long Beach Harbor (78 g/m$^2$), outer Los Angeles Harbor (127 g/m$^2$), Fish Harbor (35 g/m$^2$), and outer LA/LB Harbor breakwaters (78 to 197 g/m$^2$). Annual seasonal infaunal densities are expected due to physical and climatic changes, as well as influences from chemical discharges.

The water column habitat is defined as the area of water from the surface to the harbor bottom. Plankton can be characterized as small floating or weakly swimming organisms. The outer harbor exhibits seasonal phytoplankton patterns with diatoms dominating in the spring and dinoflagellates in the fall. The most dominant phytoplankton species found in



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Long Beach Harbor include *Chaetoceros sp.*, *Asterionella japonica*, and *Skeletonema costatum*; while red tides are mainly attributed to *Gonyaulax polyhedra*. Dominant zooplankton organisms include copepods and cladocerans (JEG 1993a). The average density of zooplankton in the outer harbor is 3,000 to 4,000 organisms/$m^3$.

Long Beach Harbor contains a large and diverse population of fish. Both pelagic and demersal fish are well-represented by this population. The dominant fish in terms of both abundance and biomass is the white croaker (*Genyonemus lineatus*). The distribution and abundance of fish varies by season and location within the harbor. Population peaks generally occur in the spring and early summer, while populations tend to decrease in the late summer and fall. A greater diversity of fish species is found in the outer portion of Long Beach Harbor than in the inner and middle areas (JEG 1993a).

The productivity of Long Beach Harbor ichthyofauna is estimated at being 1.7 to 1.9 g/$m^2$ dry weight of water surface per year. Other in-shore and estuarine habitats yield one-fifth to one-half the productivity of Long Beach Harbor. Long Beach Harbor is a nursery for all species of fish that reside there as adults (MEC 1988a), as all fish collected as adults have also been collected as larvae.

The Harbor habitat is used by both marine and land birds, especially migratory and wintering water birds. The greatest abundance of birds occurs between September and March. MBC Applied Environmental Sciences documented 85 species of birds (67 water- and 18 land-associated) during a 1983 -1984 Long Beach Harbor biological survey (MBC 1984). The most abundant bird species were Hennann's gull, California brown pelican, western gull, surf scoter, Brandt's and double-crested cormorants, ring-billed gull, black-bellied plover, and western grebe. This high diversity is due to a variety of habitat and food resources within Long Beach Harbor.

A few of the bird species known to reside in or that frequent the LA/LB Harbor area are endangered. The California least tern (*Sterna antillarum browni*) is on the federal endangered species list. It migrates from Mexico to southern and central California in the spring (early April) to breed and migrates again in August. Least tern's migration is linked to onshore movement of the Northern anchovy, topsmelt, and jacksmelt. It nests in coastal areas adjacent to shallow marine and estuarine habitats. California least tern nests have been reported to exist on Terminal Island, and they are known to forage in Long Beach Harbor (LA/LB Harbor Departments and U.S. ACOE 1990).

The California brown pelican is on both the state and federal endangered species lists. It forages along the California coast year-round. The highest densities of the pelican occur in the LA/LB Harbor area from early July through early November (LA/LB Harbor Departments and U.S. ACOE 1990). The American peregrine falcon (*Falco peregrinus*) is a state and federal endangered species. Long Beach Harbor is also part of their habitat range, but they are rarely sighted (LA/LB Harbor Departments and U.S. ACOE 1990).

The Western snowy plover (*Charadrius alexandrinus nivosus*) is a candidate species for the federal threatened or endangered list. It resides on coastal sandy beaches and shores of salt ponds and alkaline lakes. It feeds at the water's edge or among scattered debris on



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sandy beaches, but sightings of this bird near Long Beach Harbor are sporadic and infrequent (LA/LB Harbor Departments and U.S. ACOE 1990). The long-billed curlew (*Numenius americanus*) is a candidate species for the federal threatened or endangered list also which, during migration and in the winter, can be found near marshes, mudflats, sand bars, and shorelines. It is an infrequent transient to the Long Beach Harbor area (LA/LB Harbor Departments and U.S. ACOE 1990).

## 2.5 SEDIMENTOLOGY

The redistribution of bottom sediments requires the initial mobilization of sediment, which may be caused by a number of factors such as resuspension caused by propellor action and subsequent transport by currents. The intensity of currents required to initiate sediment motion is far greater than that required for subsequent transport. For the West Basin, the overall circulation (i.e., persistent currents) in the area is not strong enough to mobilize sediment. However, there are other mechanisms that can mobilize the bottom sediments and make them available for transport by relatively weak currents (JEG 1993a).

Vessel operations and dredging activities form the major mechanisms for suspension or resuspension of harbor sediments. The induced turbulence from ship propellers are capable of mobilizing bottom sediments. The maneuvering of large cargo ships at the entrance of the West Basin by vessels entering or leaving POLB may result in disturbance of these sediments by the ships' propellers. Construction and dredging activities are relatively localized and of short duration. Once sediments are mobilized and suspended in the water column, currents caused by tides and wind are potentially capable of transporting the sediments. The suspended sediments susceptible to such transport generally consist of silts and fine sands (JEG 1993a).

Sediment particle size is a characteristic that determines the extent of sediment dispersion throughout the West Basin as a result of ship propeller disturbance, storm events, tides and currents, and other phenomena. Particle size characteristics throughout the West Basin have been observed to be highly variable, ranging from depositional areas characterized by fine particulates to coarse sands in open areas, especially where maintenance dredging is conducted. Part of this sediment may have as its origin the fill materials brought in during the 1930s and 1940s to construct the Mole and other portions of the LBNC.

The areas beneath the piers of the West Basin represent the most significant depositional areas within the harbor, with accumulated shell hash observed due to concentrated mussel populations colonizing pier pilings. These depositional areas are characterized by fine surface particles, the presence of shell hash, and a strong odor probably caused by anaerobic degradation of organic matter. In general, sediments have been described as dark, wet, micaceous silt with some sand, gravel, and shell fragments (JEG 1993a).



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## SECTION 3

# SOURCE IDENTIFICATION

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# Section 3
# SOURCE IDENTIFICATION

Source identification is a major element of the RI as it attempts to identify sources of discharge with respect to areas of contamination within the West Basin. Source identification includes points of origin, facility operations, discharge generators, and locations of discharge points within the receiving waters of the West Basin. This information is utilized to further delineate the nature and extent of contamination because it specifically relates to the sources of such potential contaminants.

References investigated to identify potential contamination sources to the West Basin included: CLEAN I RI/FS Work Plan (JEG 1993a), RCRA Facility Assessment (DHS 1989), Site Investigation (JEG 1992a and 1992b), Initial Assessment Study (NEESA 1983), Stormwater Pollution Prevention Plan (Brown and Caldwell 1992b), Stormwater Discharge Management Plan (WWC 1993), Historical and Recent Water Quality Conditions in the Port of Long Beach (MBC 1992), and various other historical documents and navy personnel interviews. The types of data collected and which formed the basis of source identification for West Basin included:

- LBNC operations, land-based or ship-based, that identified the source location, potential releases, and engineering characteristics that could be important in the evaluation of remedial actions;
- records relating to waste characteristics, to the extent possible, such as the types and quantities of contaminants that may be contained in or released to the harbor;
- water quality conditions in the LA/LB Harbor areas with respect to the various industries operating in the area; and,
- the physical or chemical characteristics of hazardous wastes present at these sources.

## 3.1 DISCHARGES TO THE LA/LB HARBOR AREAS

Southern California's large, diverse urban population has facilitated input of many types of contaminants into the waters of the Southern California Bight. Contaminant inputs have resulted through spills, sewage discharges, power plant cooling water discharges, various industrial discharges, atmospheric deposition, and runoff from flood control channels. Historically, sewage outfalls have been considered the principal sources of contaminants to the Bight due to limited levels of required treatment of effluent. Inputs from sewage discharges have significantly decreased over the past two decades, however, as a result of enforcement of the 1972 Clean Water Act and its statewide counterpart, the Porter-Cologne Act by the California State Water Resources Control Board (SWRCB) and the U.S. EPA Region IX. This enforcement has resulted in much greater regulation of effluent discharge into the receiving waters of the Bight. Consequently, sources such as dredge material disposal, atmospheric deposition, and surface runoff have surpassed those of sewage outfalls, and are currently considered of greater importance to Bight water quality (Mearns et al. 1991).

Various industries present in areas surrounding the LBNC are capable of adversely affecting the water quality as well as the biological community of the LA/LB Harbor.



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These include point sources such as the Terminal Island Treatment Plant (TITP), the Long Beach Generating Station, petroleum refineries, and manufacturing plants that may affect the LA/LB Harbor area. Nonpoint sources would include aerial fallout, advective transport, ocean dumping, and boating and shipping activities. Specifically, the following sources which could potentially impact the LA/LB Harbor waters were identified:

- surface runoff from piers and docks;
- surface runoff from storm drains that drain the Los Angeles basin; drainage channels of the Los Angeles and San Gabriel rivers and the Dominguez Channel;
- industrial wastes that have been discharged into San Pedro Bay; and
- ballast water and other contaminants that may be introduced into the LA/LB Harbor by marine traffic (recreational, commercial, and naval) operating in the LA/LB Harbors (MBC 1992).

Bioassay tests of TITP effluent conducted in the early 1980s indicate no evidence of toxicity or bioaccumulation. No adverse effects to the biological community in the LA/LB Harbor receiving waters, due to potential contaminants in the effluent, have been found. Monitoring surveys, conducted and reported since 1979 under the National Pollutant Discharge Elimination System (NPDES) program, do not indicate adverse impacts to the receiving water or associated biota as a result of cooling water being discharged by the Long Beach Generating Station (MBC 1992).

Various types of dredging equipment are used to remove sediment for routine maintenance. The type of dredging equipment used would affect the amount of resuspension of sediments. The extent of sediment resuspension associated with dredging activities is of concern in areas where sediments have been contaminated with chemicals. Resuspended sediments are capable of migrating due to water currents. This effect is of particular concern when contaminated sediment is being dredged.

Dredging operations are frequently associated with increases in turbidity, resuspension, and migration of contaminated sediment, and decreases in dissolved oxygen. Contaminated sediments mobilized during dredging activities are capable of migrating and settling in unimpacted areas. In addition, resuspension of such sediment could affect the water column when the contaminants desorb from sediment particles (U.S. ACOE 1983).

Dredging activities in the LA/LB Harbor are conducted in accordance with monitoring requirements dictated by the particular dredging permit. During dredging activities, water column samples are collected and analyzed for various chemicals in accordance with U.S. EPA, U.S. ACOE, and the Regional Water Quality Control Board (RWQCB) requirements. The appropriate regulatory agency is notified if specific chemical concentrations exceed the permit requirements (RWQCB - Los Angeles Region, [LARWQCB] 1994).

As a result of such monitoring, it is not expected that significant quantities of sediments become resuspended and mobilized during dredging activities since additional attention is given to using equipment and methods which collectively act to minimize resuspension



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Dredging of contaminated sediment is, therefore, not expected to significantly affect the water column and thereby contaminate other portions of West Basin, or the LA/LB Harbor.

## 3.2 DISCHARGES TO THE WEST BASIN

Primary sources of contamination in the West Basin were found to occur from numerous land- and ship-based activities, such as lead caulking, painting or paint removal, boiler cleaning, and pipe-flushing operations (JEG 1992b and 1993a). Stormwater discharge and flushing of dry docks represent past primary release mechanisms and sources of chemicals of potential concern in West Basin sediments.

As a result of disposal and accidental releases of hazardous substances used in support of the LBNC operations (Figure 3-1), some areas of the West Basin may have been contaminated from approximately the mid-1930s to 1980. Hazardous substances have, in the past, been discharged to the harbor via the outfalls of the storm drain system. These past practices, together with leaks and spills, may have resulted in some areas of contamination that may potentially pose some level of risk to human health or the environment (WESTDIV 1991a).

Most of the sources of contamination entering the West Basin are historical, whereas currently identifiable sources are generally under permit. Pollution control measures during the past years, including the California Porter-Cologne Act and federal Clean Water Act, have been enacted to reduce or eliminate new contaminant sources into the marine environment.

The identified sources of contamination, discussed within this section, are presented according to the following general categories:

- land-based discharges,
- ship-related discharges,
- accidental spills, and
- dredging activities.

### 3.2.1 Land-Based Discharges

Land-based discharges are identified as the stormwater drainage system and the sewer system. Both point and non-point sources are included in land-based sources. This investigation included long-term and short-term sources, as well as historical and current sources, as discussed below.

#### 3.2.1.1 POINT SOURCES

The single largest source of wastes discharged to the West Basin was from the blowdown and flushing of utility shop boilers, water softeners, and cooling systems. The majority of contaminants in these waste streams, which are expected to have contained disinfectants



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(e.g., chlorine) to prevent algal growth, are easily dispersed, soluble in water, and considered nonhazardous at low concentrations (WESTDIV 1991b).

According to an Environmental Engineering Survey conducted in 1976 at the NAVSTA, untreated sanitary and industrial wastewaters from the Mole were disposed into the West Basin at that time under a U.S. EPA permit, or into the ground by means of septic tanks and leach fields. Wastewater discharges into the West Basin were discontinued when facilities were constructed in late 1976 to collect and transport sanitary, industrial, and shipboard wastewater from the Mole and the piers northerly for disposal through the pumping facilities located on the mainland. These Navy construction projects (P-122 - Mole Sewer and P-131 - Ship Wastewater Collection Ashore, Piers 9, 11, and 15) extended the sewage collection system to include the Mole and adjoining piers (WESTDIV 1991b).

On 31 December 1973, and in accordance with provisions of the Water Pollution Control Act, the DON was granted a conditional permit (CA 0002356) by the U.S. EPA, authorizing temporary discharge of untreated sewage from 12 individual installations located at the LBNC and the Mole to the waters of the United States at the Long Beach Harbor. Based on the permit conditions, the cessation of all untreated sewage discharge into Long Beach Harbor was required by 30 September 1975. Elimination of discharge from locations associated with the Mole was delayed due to the construction of the sewer improvements on the Mole.

During the early 1970s, after passage and implementation of the Federal Water Pollution Control Act, the DON began connecting some industrial discharges to the sanitary sewer system. By 1975, all industrial discharge outfalls to the West Basin were connected to sanitary sewer lines, thus reducing or eliminating the discharge of industrial waste to the West Basin. The NPDES program, administered through the LARWQCB, manages the discharge of stormwater related to the industrial activity at the LBNC. Direct ocean discharges have been regulated since July 1977 under NPDES Permit No. CA0003786. This permit limits both the total discharge flow and concentrations of specified pollutants carried in effluent streams.

The LBNSY has reduced its discharge from a maximum of 8.0 million gallons per day (mgd) to a maximum of 6.2 mgd by eliminating some discharges. As a result, eight outfalls have been eliminated, and one outfall has been re-routed. As of July 1993, only seven outfalls into the harbor remain. The LBNSY NPDES permit, dated 19 July 1993, specifies that up to 6.2 mgd of wastes, associated with the operation of three dry docks for ship repair and refitting, can be discharged into the West Basin. The discharged wastes consist of single-pass, noncontact cooling seawater from air compressors, single-pass cooling water from docked ships, groundwater and seawater seepage from hydrostatic pressure relief wells, and caisson seawater leakage from dry docks. The seawater used for cooling is drawn from the shipyard's fire protection system which contains zinc plumbing fixtures for corrosion prevention (LARWQCB 1993).



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### 3.2.1.2 NON-POINT SOURCES

From the early 1940s until the mid-1970s, unregulated drainage from the various industrial areas and from cleaning and process tanks were discharged to the West Basin, directly through the stormwater system and from flushing of the dry docks. As of 1987, there were 16 stormwater outfalls from the LBNC discharging directly into the West Basin. Historically, these 16 outfalls released wastes, such as unknown quantities of PCBs, acid, solvents, oil and grease, from various industrial areas directly into West Basin. Solvents, such as 1,3-dichlorobenzene used as a cleaning agent for ordnance on ships, may have been inadvertently discharged from ships docked at the LBNC into the harbor.

Much of the waste discharged from these stormwater system outfalls may have sorbed onto the harbor sediments and settled to the harbor bottom. About 350,000 gallons annually (from 1963 through 1978) of sodium nitrite, hydrazine, solvents, and other chemicals were discharged to the stormwater system. Prior to 1960, about 300 to 400 gallons of rust preventative and up to 60 gallons of red lead caulking material from dry dock operations were discharged into the harbor (JEG 1992b).

In 1992, a stormwater discharge survey was conducted for the LBNSY to identify illicit connections and discharges to the stormwater drainage system. Sixty-two illicit surface and subsurface discharge connections were identified at the LBNSY. The majority of these discharges are aboveground and often involve steam condensate from leaking plumbing, or inappropriate releases to the ground surface. All subsurface discharges were reportedly of a steam/water nature, and did not appear to be potentially significant in terms of introducing pollutants to stormwater runoff (Brown and Caldwell 1992a). Some of these illicit discharges are related to Dry Dock No. 1 operations (SWDIV 1992a).

Other nonstorm water discharges to the storm water drainage system include vehicle washing, direct discharge of bulk water to the storm drain system, cooling water discharges to the ground surface, and equipment washing near a storm drain inlet (SWDIV 1992a).

LBNC is founded on soils which are mainly fill material deposited after 1938. Soils and groundwater characterization of the LBNC was conducted as part of the RIs conducted for NAVSTA and LBNSY. In general, groundwater at NAVSTA reportedly does not contain high levels of contamination, based on analysis of groundwater samples collected from the monitoring wells installed along the periphery of the West Basin. Groundwater flow direction at the LBNSY was reported to be in a northeasterly direction, away from the West Basin. It can be inferred from this information that contaminants entering the groundwater regime beneath LBNSY would tend to move in a direction away from the West Basin. On the basis of these observations, it is not anticipated that groundwater along the periphery of the West Basin would have a significant impact on the harbor bottom sediments.



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## 3.2.2 Ship-Related Discharges

Ship-related sources are identified as resulting from dry dock operations and ship-related activities conducted at the piers, including welding, painting, loading, and other operations. The sources reviewed included long-term and short-term sources, as well as historical and current sources, as discussed in the following paragraphs.

### 3.2.2.1 DRY DOCK OPERATIONS

Drydocking operations are conducted at LBNSY as part of the routine and emergency operations on naval vessels. These operations involve the flooding and dewatering of the dry dock to perform maintenance below the water line of ships. The dock is opened to the West Basin by removing the caisson between the dock and the West Basin. After the docking operations are complete, the caisson is put back into place, and the water in the dock is pumped out (SWDIV 1992b).

The dry docks at the LBNSY are potentially major long-term sources of chemical contamination. The dry docks are used to repair and paint vessels. Paint chip fragments, as well as chemicals and solvents used in the maintenance and decommissioning of vessels, may have a direct path to West Basin sediments as the water level in the dry docks are lowered and raised during its operation. Chemical products used at the dry docks, including a wide range of organic compounds and metals, may potentially be evident in the sediments found near these areas. Discussions with shipyard personnel indicate that sediments in the vicinity of the dry docks and several of the piers are believed to contain elevated chemical concentrations due to historical shipyard activities.

Before 1975, discharges to the West Basin included hydrostatic leakage, cooling tower blowdowns, sanitary wastewater, and industrial waste associated with maintenance of vessels. Hydrostatic leakage is infiltration of water through dry dock walls and floor; this water drains to a sump and is discharged to the local receiving water. Hose-down and general cleanup of the dry dock floor results in significant amounts of wastewater. Analyses conducted in 1975 on the hydrostatic leakage, hose-downs, and cleaning of the dry docks indicate high concentrations of copper and zinc. Concentrations of copper and zinc could indicate leaching from the copper slag sandblast and zinc-containing paint residue. Samples from various locations on Dry Dock Nos. 1, 2, and 3 taken in 1975 also indicate concentrations of biochemical oxygen demand (BOD), total suspended solids, settleable solids, oil and grease, and fecal coliform, possibly indicating discharge of sanitary wastes onto the dry dock floor (Chan and Saam 1975).

Studies conducted by the naval environmental support office confirm that significant amounts of zinc and copper leach from the sandblast residue in contact with seawater. Two possible sources for the sandblast residue are the paint chips from sandblasting operation and the sandblast material itself. The volume of water in contact with the sandblast residue appears to have little effect on leaching rate. Heavy metals are more readily leached out in seawater than in freshwater. Relatively high concentrations occur when small amounts of seawater are exposed to residue (Chan and Saam 1975).



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### 3.2.2.2 PIER ACTIVITIES

Historically, ship-based sources are attributed to maintenance and repair operations while docked at various piers at the LBNC. According to information provided by representatives of NAVSTA, current industrial activities conducted onboard U.S. Naval vessels (with exception of repair ships or tenders) are limited to minor repairs of ship facilities. Typical activities conducted on the ships include chipping and painting, valve maintenance, electrical motor repair, pipe and pump repair, and welding. Waste generated during the repair activities primarily consists of bilge water which is removed from ships by barge or waste oil raft for appropriate treatment or recycling (WESTDIV 1991b).

Current maintenance and repair operations conducted on ships home-ported at LBNC require that all industrial wastewater generated onboard be transferred from the ship's holding and collection tanks to the pier through a flexible hose to a pier rise, where it flows into the sanitary sewer collection system. A 1991 industrial wastewater discharge report prepared by SCS Engineers found that the wastewater generated from ships contained elevated concentrations of total metals, copper, zinc, and dissolved sulfide. These concentrations, however, fall below the City of Los Angeles Bureau of Sanitation specific limitations for discharges to Publicly-Owned Treatment Works (POTWs). It has been suggested that the source of elevated concentrations of copper and zinc in ship wastewater may be from natural deterioration of shipboard piping or seawater carrying elevated concentrations of copper and zinc which is introduced into the ship's wastewater stream through flushing (toilet) water (WESTDIV 1991b).

When a ship arrives in port, the oily waste holding tank, the contaminated oil storage tank, the waste oil tank, and the ship's bilges typically contain substantial volumes of waste oil and oily waste. Upon berthing, these tanks are off-loaded, usually within the first 24 hours in port. During the period of time the vessel remains docked, oily wastes continue to be produced from daily ship operations. Leaky seals, accidental oil spills, and ship washdown waters all eventually drain to the bilge. The bilges are pumped out daily. Before July 1991, the oily wastes and the bilge water were pumped directly into a "donut" (oil disposal raft) on a daily basis (WESTDIV 1984). After July 1991, the use of donuts was eliminated, and the oily wastes and bilge water were removed by submersible or diaphragm pump through a piping system which transferred the wastes to a holding facility, which in turn tests the quality of the liquid wastes for disposal.

Two types of donuts, with open and closed bottoms, were used at the LBNSY. The open-bottom donut was a 4.5-meters (15-foot) deep oval-shaped steel raft that floated, and it was open to the West Basin waters through 46-cm (18-inch) diameter holes in its bottom plates. As the oily waste was discharged into the open-bottom donut, it mixed with seawater partially filling the donut. The oil separated from the waste water and floated to the top while the water, containing emulsified and dissolved oily wastes, escaped through the bottom of the donut Closed-bottom donuts generally operated on the same principle as open-bottom donuts However, water was accumulated inside the donut and discharged through a collector pipe extending to the bottom of the donut, whereas oily waste floating on top of the water was discharged through separate piping.



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Once the donut was filled, it was towed to Pier 6 where an oil barge was permanently moored. The oily waste in the donut was then pumped into an oil/water separator, with the oil being discharged to an oil storage compartment on the barge and, the water separated from the oily waste being discharged to another donut and ultimately to the West Basin. The use of the donuts, whether open- or closed-bottom, may have been a pathway of hydrocarbons and soluble chemicals into the West Basin sediments, via West Basin waters.

Another type of waste that is generated by ships and that may have been historically discharged into the harbor is boiler cleaning and tank cleaning waste. When a ship comes into port for servicing, repair, or overhaul, its tanks and boilers are drained, repaired and cleaned prior to the ship leaving the harbor. This type of waste is normally generated shoreside by an outside contractor who is responsible for the removal of the waste from the LBNSY. When the boilers of the ships are heavily scaled after returning to the LBNSY, highly acidic solutions are used to remove the scale (WESTDIV 1984).

### 3.2.3 Accidental Spills

The piers at the NAVSTA and LBNSY are used primarily for ship moorage and less intensive repair and fabrication. Based on the various types of activities conducted on the piers, incidental spills, such as fuel spills, may have occurred over the years. Based on the review of documents listed in the reference section, no reports of major accidental spills in the West Basin were found.

### 3.2.4 Dredging Activities

Since 1979, the West Basin has been dredged every 2 to 3 years, and fairly regularly prior to 1979. Sediment samples reportedly have been collected and analyzed for pesticides, heavy metals, organohalides, and bioassay. No record of chemical analysis of West Basin sediment was found during a review of available WESTDIV files, conducted as part of the IR Program. No relevant information was available from the Los Angeles office of the U.S. ACOE (JEG 1992b).



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## SECTION 4

# SUMMARY OF PREVIOUS INVESTIGATIONS

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# Section 4
# SUMMARY OF PREVIOUS INVESTIGATIONS

This section provides a summary of previous investigations conducted either within the West Basin specifically or the LA/LB Harbor area and coastal southern California in general. First, scientific surveys are reviewed and summarized to define chemical and biological regional ambient conditions. The ambient conditions provide a basis for comparison and interpretation of the results of this investigation. Secondly, previous dredging investigations are reviewed to provide support for the ensuing Feasibility Study.

## 4.1 SCIENTIFIC SURVEYS AND RESULTS

This section presents an overview of some of the key scientific investigations, emphasizing physicochemical or biological characterization, conducted specifically within the West Basin or, where available, those conducted within the LA/LB Harbor area and the southern California Bight. Areas within the southern California Bight, outside the LA/LB Harbor area, are appropriately comparable to West Basin, especially those areas with similar land/water use and contaminant sources/inputs, (e.g., San Diego Bay). The Bight's unique geography and hydrography results in a regionally specific marine ecosystem that extends from Point Conception, Santa Barbara County, California to Cabo Colnett, Baja California, Mexico.

Regional ambient (background) conditions are discussed in this section. The discussion is focused, as is the overall RI, upon data from sediment and biological tissue and provides an understanding of environmental conditions:

- prevailing in the surrounding area at the present time, and
- as they have changed relative to past years.

Dailey et al. (1993) report that the LA/LB Harbor area may have been studied and characterized more thoroughly and for a longer time than any other similar body of water in the world. The first comprehensive survey of environmental conditions in the LA/LB Harbor area was performed in 1951 (Anon 1952) and included analyses of water, sediment, and benthic populations. A more detailed seasonal study was conducted in 1954 (Reish 1959) using bottom conditions, species composition, and water characteristics as a basis for documenting environmental quality at the time. This survey distinguished "polluted" zones and "very polluted" zones through identification of specific benthic organisms inhabiting the bottom. Generally, the most "polluted" zones occurred in the slips within the NAVSTA as well as other locations within the LA/LB Harbor area.

Various pollution abatement programs were initiated by the state of California, beginning in Dominguez Channel in 1968, which extended throughout the LA/LB Harbor area during the 1970s. Complying with these orders, the improvement in biological conditions was immediate (Dailey et al. 1993). One factor contributing to the recovery was that many of the local species have extended reproductive periods throughout the year as a result of the mild climate, and such reproductive capability undoubtedly played an important role in the rapid recovery of the polluted harbor. Benthic species which were

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formerly dominant and known to be resistant to pollution gave way to more sensitive species; species diversity increased dramatically as well during this time. This improvement has been documented by a series of publications edited by Soule and Oguri (Soule and Oguri 1974; 1975; 1976; 1978a, 1978b; 1979; 1980; 1986; 1987; 1990). Improvements in biological conditions were accompanied by decreases in chemical and total organic carbon concentrations in sediment as a result of discontinuing waste discharges into LA/LB Harbor receiving waters and sediment. Investigations conducted between 1973 and 1978 have chronicled changes over time in the LA/LB Harbor, with decreases in cadmium, nickel, lead, and total PCB concentrations. Other contaminants remained about the same, although arsenic concentrations were shown to increase to a small extent.

### 4.1.1 Physical Oceanographic Surveys

As previously discussed, relatively few investigations of physical oceanography have been conducted within the West Basin and its environs. The most extensive investigation of LA/LB Harbor hydrodynamics has been conducted by the U.S. ACOE. This investigation involved the use of a two-dimensional, depth-averaged, second order finite-difference model to determine tidal circulation patterns for spring, mean, and neap tidal conditions (Seabergh and Outlaw 1984); tidal verification was previously conducted by McAnally Jr. (1975). The fluid flow equations used in the numerical tidal circulation model, the Waterways Experiment Station Implicit Flooding Model (WIFM), were derived from the Navier-Stokes equations. Based on the model verification and simulation, the mean tide within the West Basin was determined to have a maximum range of 5.5 feet, a maximum tidal discharge of 23,333 $ft^3/s$ (flood flow discharge) and 19,444 $ft^3/s$ (ebb flow discharge), an average flow volume of 278 x $10^6$ $ft^3$/tidal cycle and 277 x $10^6$ $ft^3$/tidal cycle (flood and ebb flow, respectively), and a net flood flow volume per tidal cycle of 1 x $10^6$ $ft^3$. The maximum velocity at the entrance to the LA/LB Harbor was estimated at 0.54 ft/s for ebb tide and 0.46 ft/s for flood tide. Velocity magnitudes throughout the LA/LB Harbor Complex in general are small, usually less than 1 ft/s (Seabergh and Outlaw 1984). Circulation patterns within West Basin were identified as clockwise. The small differences in tidal elevations (5.5 feet for West Basin), which normally govern water flow patterns, led Seabergh and Outlaw (1984) to propose other factors (e.g., wind), as having influence on circulation within inner LA/LB Harbor areas such as West Basin. The WIFM predictions were verified using dye tests conducted in the outer LA/LB Harbor Complex (Seabergh and Outlaw 1984).

The U.S. ACOE also investigated harbor oscillations caused by long waves using a finite element numerical model (Sargent 1989) and determined where ship motion problems were most likely to develop. Numerical modeling of tide- and wind-driven circulation of LA/LB Harbor was conducted by applying a three-dimensional, hydrodynamic model called CH3D (Vemulakonda et al. 1991), the results of which were used to drive a water quality model. Flushing rates, water circulation, and DO levels were compared at various stations throughout the LA/LB Harbor. The CH3D model was calibrated and verified using field data collected in 1987 (surface elevation data, current measurements, current



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velocities, drogue study) (McGehee et al. 1989). Comparison of the CH3D model results with the 1987 observed surface elevation and currents indicated that the model reproduced prototype behavior (i.e., the calibration and verification proved successful [U.S. ACOE 1990]).

Tracer studies of the LA/LB Harbor were conducted by the U.S. ACOE to determine flushing rates of the inner basins. The flushing studies consisted of inserting a tracer and observing its movement and dilution with time. Results of the tracer simulation for West Basin indicated that dilution to 20 percent of the initial tracer concentration was achieved in 16 days (Hall 1990). This moderate level of dilution is suggestive of the flushing rates predicted by the models summarized above. Tracer simulations for the East Basin channel of LA Harbor, which is more restricted by land than West Basin, and Seaplane Anchorage (the area between West Basin of Middle Harbor and Fish Harbor) of LA Harbor, which is less restricted by land than West Basin, were conducted; results revealed 20 percent of initial tracer concentration remained after 25 and 10 days, respectively.

## 4.1.2 Chemical Surveys

The following section provides an overview of water column chemical surveys and sediment and marine fish tissue contaminant monitoring studies conducted both within and in areas surrounding West Basin.

### 4.1.2.1 WATER COLUMN SURVEYS

A general summary of what is known of chemical oceanography in West Basin was provided above. This discussion summarized data on DO, pH, salinity, nutrient levels, and trace metals concentrations in surface water sampled from the West Basin during various periods of time. The literature review conducted for water column data indicated that the POLA and POLB, with their corresponding Harbor Departments, have most frequently taken these measurements, although most were taken outside of the immediate West Basin area. It is difficult to apply historical water column data to the understanding of current conditions in the West Basin due to its dynamic state, and the fact that most of the contaminant inputs have changed over time as well.

### 4.1.2.2 SEDIMENT SURVEYS

In 1973, Chen and Lu (1974) analyzed surface sediment samples for trace metals and organochlorine compounds (DDT, PCBs and dieldrin) within the LA/LB Harbors as part of the Harbors Environmental Projects sponsored by the University of Southern California's Allan Hancock Foundation. More sampling and analysis within the Harbor Complex was conducted for trace metals, DDT, and PCBs in 1974 (Allan Hancock Foundation 1975), and Soule and Oguri (1980) produced analytical data for metals, DDT, and PCBs from the LA/LB Harbor Complex in 1978. The general trend, as documented by the Allan Hancock studies, in chemical concentrations over time is that while arsenic and zinc concentrations seem to be increasing, cadmium, chromium, lead, total PCBs, and



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total DDT concentrations have actually decreased within the LA/LB Harbor Complex. Copper and mercury levels remained the same throughout the 1970s.

The Southern California Coastal Water Research Project (SCCWRP), a scientific body established to study the effects of pollution in the southern California marine environment, has conducted several major surveys of chemical and biological conditions in reference areas off the coast of southern California in the last 15 years (1977, 1985, and 1990). The objectives of these surveys were to determine distribution of marine pollutants within the Southern California Bight, to evaluate potential biological effects, and to evaluate potential sources of these problems. Sampling stations are located along the 30-, 60-, and 150-meter isobaths of the mainland shelf and bracket the major ocean municipal wastewater discharges (Thompson 1992). As a result of these surveys, SCCWRP has found that trace metal concentrations are at or near background levels and are similar among the different depths sampled. Concentrations of total DDT, as measured in 1990, were highest at the northern 60-meter and 150-meter sites. Total PCB (Aroclor 1254 + Aroclor 1260) concentrations were highest off Point Dume and Dana Point. Total PAH concentrations resulting from the 1990 survey were highest off Oxnard (Thompson 1992).

The State Water Resources Control Board (SWRCB), through its Bay Protection and Toxic Cleanup Program (BPTCP), and National Oceanic and Atmospheric Administration (NOAA) (SWRCB and NOAA 1994) undertook a 3-year cooperative study effort to characterize the magnitude and extent of potential contaminant-induced biological effects in LA/LB Harbor and other areas of southern California. The BPTCP used 35 replicated sampling sites, including both chemical and sediment bioassay testing, to determine which areas could be potentially impacted by chemical contaminants. Part of the significance of this study is that three of the established study sites (Sites 40010, 40018, 40032) in the BPTCP were adapted as reference stations for the present RI. These stations are situated in the outer portion of San Pedro Bay, outside of the West Basin. The concentrations of several sediment contaminants were significantly correlated with amphipod survival and abalone development using a sediment porewater test.

Observed PAH concentrations were higher, relative to threshold exposure limits (TEL) and permissible exposure limits (PEL) screening levels, in samples from the LA/LB Harbor than in samples collected from other southern California areas. The highest levels of PAHs were measured in samples from Los Angeles and Long Beach inner harbors; Fish Harbor and Long Beach outer harbor (Station 40018) had lower levels of PAHs (Figure 4-1). Significant amphipod toxicity was also observed at many LA/LB inner harbor sampling sites (Figure 4-2). Undiluted porewater toxicity was widespread throughout the 35 sampling stations (Figures 4-3, Abalone 100 percent porewater toxicity tests). Most of the pore water toxicity at 50 percent dilution was observed in Long Beach middle harbor, (entrance to West Basin) and off Cabrillo Beach (Station 40010) (Figure 4-4). The amphipod and diluted pore water bioassays collectively identified Huntington Harbor, the entrance to West Basin, Los Angeles Harbor Consolidated Slip, and portions of Alamitos Bay as areas that were most toxic (SWRCB and NOAA 1994).



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NOAA is currently monitoring a surface sediment station in Long Beach Harbor as part of its National Status & Trends (NS&T) Mussel Watch program. The NS&T program's objectives include defining the geographic distribution of contaminant concentrations in tissues of marine organisms and sediments, and evaluating potential biological responses to contamination. Samples have been collected since 1984 under the Benthic Surveillance Project, and since 1986 under the Mussel Watch Project, the two components of the NS&T program. Surface sediment samples have been collected and analyzed at all sites for both components (Mearns et al. 1991). Chemicals and related parameters measured in sediment include chlorinated pesticides, PCBs, PAHs, trace elements, grain size, and TOC (NOAA 1991). Figures 4-5 and 4-6 show total PAH and metals concentrations in southern California Bight surficial sediments collected between 1984 and 1986. The NS&T program concentrates considerable effort in southern California, with 20 of its approximately 200 sampling sites nationwide located within the Bight.

As a result of data gathered during 1986 through 1988, NOAA found 14 chemicals, sampled from stations located within the Bight, whose mean concentrations were at the "high" end of the overall, national log-normal distribution (i.e., greater than one standard deviation above the geometric mean). West Santa Monica Bay had the greatest number of chemicals with "high" concentrations (11), with South San Diego Bay having 10 chemicals and Palos Verdes having 9 chemicals exhibiting "high" concentrations in surface sediments. The Long Beach station had "high" concentrations of lead, total DDT, and total PCB.

#### 4.1.2.3 FISH TISSUE SURVEYS

Several investigators have surveyed and continue to survey fish tissue concentrations within the LA/LB Harbor Complex and the Bight in general. This extensive database is expected to provide a viable means of comparing project-specific data and evaluating ecological conditions within the West Basin. In 1972, as part of a nationwide program, Butler and Schutzmann (1978) began a 4-year analysis of organochlorines (PCBs and DDT) in whole juvenile estuarine fish from three southern California sites including LA/LB Harbors. Species collected included California halibut (*Paralichthys californicus*), queenfish (*Seriphus politus*), white croaker (*Genyonemus lineatus*), walleye surfperch (*Hyperprosopon argenteum*), and northern anchovy (*Engraulis mordax*). In 1978, SCCWRP launched the first of several studies to examine the potential for biomagnification of organochlorine compounds, trace elements, and other chemicals in various marine ecosystems of the Bight. Kelp, clam, and three fish species from LA Harbor were sampled and analyzed for metals and benzo(a)pyrene in 1979 as part of the Harbor Ecosystem Survey (Mearns and Young 1980; Goeders 1982). At the same time, Gadbois and Maney (1983) analyzed PCBs in fin fish muscle collected by the University of Southern California within and outside of LA Harbor as part of the nationwide NOAA Microconstituents Survey. Organic contaminants in Los Angeles area fish muscle and liver were analyzed for PCBs, DDT, other pesticides, and metals by the LARWQCB in 1985 (Risebrough 1987).



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More recently, the U.S. EPA's National Study of Chemical Residues in Fish (previously referred to as the National Bioaccumulation Study) was initiated in 1986 as an outgrowth of U.S. EPA's National Dioxin Study. Composite fish samples were collected primarily in 1987 from approximately seven sites along the southern California coast, including the LA/LB Harbor area. The fish were analyzed for dioxins, furans, PCBs, pesticides, and mercury (U.S. EPA 1992b). Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA) conducted a comprehensive study and risk assessment of chemical contaminants (PCBs, DDT, chlordane, mercury, and tributyltin) in fish species, including California halibut and white croaker, in Southern California (Cal-EPA 1991). Fish were collected in 1987 from numerous sampling sites along the Southern California coast, with several sites located within the LA/LB Harbor Complex. California halibut contained very low levels of chemical contaminants; few composite samples had quantifiable levels of DDT or PCBs (Aroclor 1254 + Aroclor 1260). The highest levels of DDT or PCB in white croaker were found at White's Point, Point Vicente, and Malibu. White croaker sampled from Belmont Pier and Pier J of Long Beach Harbor had the lowest DDT and PCB concentrations. Concentrations of chlordane in white croaker were relatively high at Point Dume, Malibu, White's Point, Point Vicente, and Cabrillo Pier. Mercury concentrations in California halibut were low. Tributyltin was detected in white croaker tissues collected from Marina del Rey. NOAA also surveys fish liver for metals, PAHs, PCBs, and pesticides from six sampling sites located between Santa Monica Bay and San Diego Harbor as part of their NS&T benthic surveillance program.

### 4.1.3 Fish and Benthic Biological Surveys

Numerous marine biological investigations have been conducted in LA/LB Harbor and surrounding areas. This section focuses on those surveys which evaluate potential biological effects in benthic biota and demersal (bottom-dwelling) fish rather than those inhabiting the upper water column. As noted in the previous section, the University of Southern California's Allan Hancock Foundation published a series of comprehensive studies on LA/LB Harbor biota, called the Harbors Environmental Projects, including a detailed 1971-1974 biological baseline assessment of LA/LB Harbor (Allan Hancock Foundation 1976). This assessment was supplemented and updated by Soule and Oguri in 1980.

A number of investigators have conducted fish surveys as part of biological studies, including Chamberlain (1973), Long Beach Harbor Consultants (1976), and Horn and Allen (1981). Specific harbor development projects were frequently preceded by biological studies including those by Reish (1971), Environmental Quality Analysts and MBC (1978), Hill and Reish (1975), Loi (1981), and MBC (1984). In addition to summarizing earlier studies of the two harbors, the biological baseline surveys of Long Beach outer harbor and Queensway Bay by MBC Applied Environmental Sciences (1984) and of Los Angeles Harbor and adjacent waters by MEC (1988a) included sampling methods and quantitatively described biological communities found in the Harbor Complex.



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SCCWRP has conducted three surveys of biological conditions in reference areas off the coast of southern California in the last 15 years (1977, 1985, and 1990). The results of the biological component of these studies indicate that the macrobenthic communities (organisms greater than 1 mm in length) of the Southern California mainland shelf are dominated by variations of the *Amphiodia urtica-Spiophanes missionensis* assemblage. Megabenthic invertebrates (large, motile invertebrates) are dominated by asteroids (*Astropecten verrilli*), sea urchins (*Lytechinus pictus and Allocentrotus fragilis*), and prawns (*Sicyonia ingentis*). Speckled, longfin, and Pacific sanddabs (*Citharichthys sp.*) represent the majority of demersal fish at the 30-meter and 60-meter isobaths. The species composition of macro- and megabenthic invertebrates and demersal fishes collected in 1990 were similar to those collected in the 1977 and 1985 reference surveys (Thompson 1992).

Benthic samples have been collected throughout the LA/LB Harbor Complex from 1951 through 1968, and benthic data specific to West Basin were collected in 1970-1971. At that time, these and other environmental studies concluded that the inner LA/LB Harbor waters, including West Basin, were severely polluted (i.e., benthic communities were either absent or stressed) (e.g., dominated by the polychaete *Capitella capitata*), and there was little to no available dissolved oxygen (see Figure 4-7). The outer LA/LB Harbor, however, indicated adequate DO levels and benthic communities were rich, diverse, and healthy. These general benthic conditions remained static until the late 1960s.

In 1968, a pollution abatement program was initiated by the State of California to control industrial, domestic, and storm water wastes; this program was initiated within the LBNC during the mid-1970s. Benthic studies of the Los Angeles Long Beach Harbor Complex began again in 1971 and continued on a regular basis throughout the 1970s (Soule and Oguri 1975, 1976, 1978a, 1978b, 1979). As a result of the pollution abatement program, benthic conditions greatly improved except for the West Basin of Los Angeles Harbor, Dominguez Channel, Fish Harbor, and a few blind-ending slips in the LA/LB Harbor Complex. West Basin of Long Beach Harbor was resampled in 1978 and was found to support a healthy benthic community more in common with the relatively unpolluted outer LA/LB Harbor Complex than those associated with traditional polluted marine harbor areas, as shown on Figure 4-8 (WESTDIV 1986). Benthic conditions of this post-pollution abatement period may be considered a more recent basis for defining baseline conditions and evaluating possible environmental changes within the LA/LB Harbor Complex, including West Basin of Long Beach Harbor.

### 4.1.4 Summary of Survey Results

This section describes regional chemical concentrations in sediment and fish tissue. West Basin benthic biological data most recently characterized in 1978, are also presented. Data deemed appropriate to describe regional ambient conditions are those which have been obtained from the West Basin itself, LA/LB Harbor, and certain areas of the Southern California Bight (i.e., areas with similar land/water use and contaminant sources/inputs like San Diego Bay). These data define regional ambient conditions for



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West Basin, and provide a basis for comparing to project-specific sediment and tissue data.

#### 4.1.4.1 CHEMISTRY

Contaminant concentrations in the Southern California Bight have been measured in sediments, invertebrates, and fish tissue since the early 1960's as a result of at least 150 local, state, and federal surveys. The most current, comprehensive contaminant monitoring program is conducted by NOAA under the NS&T Program for Marine Environmental Quality.

As a result of the data collected through the NS&T Program as well as from various other monitoring programs, Mearns et al. (1991) identified contaminants of greatest potential concern within the Southern California Bight in general, and LA/LB Harbors specifically. Contaminants causing the most concern are those that have the following characteristics:

- the ability to accumulate to toxic levels in water or sediments;
- the ability to accumulate to excess amounts in living organisms either to the detriment of fish or to human consumers;
- the ability to biomagnify (i.e., show higher levels in organisms that are higher in the food chain); and,
- inputs of such chemicals are currently increasing or, in the case of persistent compounds, have caused concern during past years.

Contaminants determined by Mearns et al. (1991) to be of regional concern for both sediment and marine organisms include DDT, PCBs, PAHs, mercury, arsenic and lead. Specific metals in LA/LB Harbor sediment were identified as having exceeded the effects range low (ER-L) or effects range median (ER-M) concentrations: chromium, copper, and zinc. In addition, data from NS&T and other surveys reveal total tin concentrations to be elevated in fish livers taken from various areas of the Bight, including the LA/LB Harbor, and thus is considered a regional contaminant of concern. Cal-EPA's OEHHA identified DDT, PCBs, tributyltin (TBT), and mercury as being chemicals of concern in fish based on a comprehensive study of chemical contamination of marine fish from southern California (Cal-EPA 1991).

The remainder of this section provides a brief review of ambient contaminant concentrations in surface sediment and fish tissue. Several key documents were reviewed to define regional ambient chemical concentrations (NOAA 1991; Cal-EPA 1991; Thompson 1992; U.S. EPA 1992b). One document in particular, prepared by NOAA, provided a comprehensive synopsis of key contaminant monitoring studies to date conducted within the Southern California Bight: "Contaminant Trends in the Southern California Bight: Inventory and Assessment" (Mearns, et al. 1991). This key document provided much of the regional data presented in this section. Tables 4-1, 4-2, and 4-3 provide an overview of contaminant concentrations measured in surface sediment, white croaker tissue, and California halibut tissue, respectively.



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### PAHs

Historical sources of PAHs into the LA/LB Harbor have included spillage and discharge of drilling wastes and refinery effluents. A review of the literature has revealed high PAH contamination in LA/LB and San Diego Bay, with concentrations in the sediment well exceeding the background levels of 1 to 100 µg/kg (Mearns et al. 1991). Low molecular weight PAHs (LPAHs) are generally more prevalent in LA/LB Harbor, while high molecular weight PAHs (HPAHs) are more prevalent in San Diego Bay. PAH concentrations ranged from less than 0.09 to 69 µg/kg at SCCWRP reference station sediments during 1990 (Thompson 1992), with the highest concentrations found at stations near Oxnard. PAH concentrations are low in fish tissue analyzed from the Bight (2 µg/kg, Mearns and Young 1980), although these contaminants have been found in the fish stomach contents. In addition to high sediment concentrations, PAH metabolites have been found in the bile of fish collected from LA/LB Harbors and San Diego Bay.

### PCBs

There are three areas of the Southern California Bight where PCB concentrations in sediment are elevated. These consist of San Diego Bay, the coastal shelf along the Palos Verdes peninsula, and LA/LB Harbor. The lowest sediment concentration of PCBs was found at Point Loma shelf in 1985 (0.0002 mg/kg dry weight [dw], Mearns et al. 1991), and the highest concentrations were found at San Diego Harbor in 1983 (34.2 mg/kg dw, Ladd et al. 1984). PCB concentrations in sediment from the NS&T Long Beach station were found to be high (greater than 0.20 mg/kg) by NOAA (1991). SCCWRP found PCB concentrations to average between less than 0.005 to 0.031 mg/kg at their reference stations during 1990 (Thompson 1992), with the highest concentrations found at Point Dume and Dana Point. Concentrations in white croaker fish tissue range from 0 to 10 mg/kg wet weight (ww) in the Bight. The highest concentrations were found in fish from Palos Verdes during a 1975 survey by Young et al. (1978). Fish (all species) collected at southern California sites during 1987 as part of U.S. EPA's National Study of Chemical Residues in Fish were analyzed for PCBs, and concentrations ranged from 0 to 1.0 mg/kg (U.S. EPA 1992b).

### DDT

DDT has been a major contaminant of marine organisms of the Bight for more than 40 years. The highest DDT concentrations in fish were found in white croaker collected in 1975 from Palos Verdes (Young et al. 1978). Maximum concentrations were as high as 175 mg/kg wet weight (ww). A later survey conducted by Schafer et al. (1982) in 1980 indicated that maximum concentrations had decreased to 13 mg/kg ww.

The highest sediment concentrations were found along the mainland shelf, with the Palos Verdes shelf samples collected in 1977 being the highest (175 mg/kg dw, Word and Mearns 1979), although these concentrations decreased by a factor of 3 by 1985 (Mearns et al. 1991). The lowest DDT concentrations detected in sediment were found at Marina del Rey in 1987 (0.001 mg/kg dw, Soule and Oguri 1987). High concentrations (greater



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than 0.04 mg/kg) of DDT were measured at the NS&T Long Beach sampling station by NOAA in 1984/1985 (NOAA 1991). SCCWRP reference stations during 1990 were found to have DDT concentrations ranging from less than 0.005 to 0.039 mg/kg; concentrations were highest at the northern stations (Thompson 1992).

### *Butyltin*

Relatively few data from California Bight sediment and fish tissue exists because contamination by butyltins has only recently been acknowledged. Analytical techniques have been developed more quickly for water than for sediment and tissue and have not yet been standardized (Richard and Lillebo 1988). Butyltin concentrations ranged up to 0.056 mg/kg dw within Bight sediments (Marina del Rey county dock). Most harbor sites were found to be below 0.01 mg/kg dw except Marina del Rey, Santa Barbara Harbor (0.038 mg/kg dw), Channel Islands Harbor (0.014 mg/kg dw), and Redondo Beach King Harbor (0.0014 mg/kg dw).

### *Arsenic*

Limited sediment data suggest that major point or non-point sources of arsenic have resulted in sediment contamination at the Palos Verdes shelf and possibly in the LA/LB Harbor area, where concentrations average 2 to 5 times higher than background of 10 mg/kg dw. The highest concentration of arsenic found in sediments was from the Palos Verdes shelf in 1974 at 130 mg/kg dw (Stull and Baird 1985) and the lowest concentration was 2.7 mg/kg dw from sediments at upper Newport Bay in 1971 (Young et al. 1975). In California halibut tissue, concentrations of arsenic ranged from 0.18 mg/kg ww at Palos Verdes in 1976 (Goeders 1982) to 1.65 mg/kg ww from the San Diego area in 1976 (Goeders 1982). High concentrations of arsenic were found in marine organisms in remote areas just as frequently as those found near Palos Verdes. No correspondence is apparent between arsenic concentrations in sediments and tissues. Arsenic levels tend to be lower in marine organisms residing near shore and higher in organisms residing offshore; the trend in sediment concentrations is reversed (Mearns et al. 1991).

### *Chromium*

The Southern California coastal shelf estimate of a natural background concentration of total chromium along the 60 m isobath is 29 mg/kg dw (Word and Mearns 1979). Background levels for bays, lagoons, and harbors are much lower, near 6 mg/kg dw (Mearns et al. 1991); chromium concentrations vary with sediment type and increase with depth of water. Most areas sampled within the Bight were at or near background levels, except for Palos Verdes, San Diego Bay and Los Angeles Harbors, Santa Monica Bay, and Marina del Rey. Concentrations in these locations were elevated above background greater than 10 times, 3 times, 2.5 times, and 7 times, respectively. The lowest sediment concentrations of chromium have been measured in the Tijuana Estuary in 1988 (0.05 mg/kg dw, Gersberg et al. 1989) and the highest has been from the Palos Verdes shelf in 1977 (60 mg/kg dw, Word and Mearns 1979), but these concentrations declined



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50 percent in 1985 (Mearns et al. 1991). Seven reference stations from Word and Mearns' 60-meter survey (1979) and Thompson et al.'s 1985 reference survey (1987) were resampled by SCCWRP for their 1990 reference survey; average chromium concentrations in sediment were 26 mg/kg (Thompson 1992). There is no apparent correspondence between chromium concentrations in sediment and fish; contaminant trends do not follow the same gradient. Also, there is no evidence of biomagnification; data indicate that concentrations decrease with trophic level.

### *Copper*

The highest levels of copper have been reported in harbors and at Palos Verdes. The high levels found in harbors are due to vessel activities and boat yards, locally dominant sources, because copper is found in vessel coatings. Background concentrations were estimated at being 10 mg/kg dw along the coastal shelf. The lowest copper concentrations were found at the Santa Barbara shelf in 1977 (2.3 mg/kg dw, Word and Mearns 1979) and the highest concentrations were found at the Newport shipyards in 1972 (20,300 mg/kg dw, Liu and Schneider 1988). A later survey in 1986 revealed concentrations had decreased in the shipyards by a factor of 35 (Liu and Schneider 1988). Average copper concentrations were found to be 9.2 mg/kg in sediments collected during the 1990 SCCWRP survey (Thompson 1992). There are no indications of fish contamination corresponding to major sediment contamination areas. Also, the data do not show biomagnification; copper concentrations actually decrease with trophic level.

### *Lead*

The highest concentrations of lead are reported in marinas and harbors at which the primary source is atmospheric deposition and the secondary source is sewage and surface runoff. Katz and Kaplan (1981) estimate a background level of 10 mg/kg dw in sediments. After reviewing data from all sites within the Bight, the lowest concentrations of lead were found at inner Bolsa Bay in 1978 (1 mg/kg dw, Riznyk and Mason 1979) and the highest concentrations were found at San Diego Harbor in 1974 (4,440 mg/kg dw, Young et al. 1975). However, levels had decreased by a factor of 14 by 1984 (Ladd et al. 1984). NOAA found high concentrations of lead (greater than 89 mg/kg dw) in sediments from the NS&T Long Beach station collected in 1984/1985 (NOAA 1991). SCCWRP data, collected in 1990, indicate average lead concentrations in sediment of about 6.9 mg/kg dw (Thompson 1992). It is difficult to evaluate lead data for fish tissue, since the quality of past local and regional monitoring surveys are reportedly unreliable for lead analysis as a result of sample contamination in the laboratory. It can be determined, however, that lead undergoes biodepletion in the food web. Mean concentrations of lead in fish livers range from 0.01 mg/kg ww in white croaker at Dana Point to 0.10 mg/kg ww in hornyhead turbot at San Diego Bay (Varanasi et al. 1988).

### *Mercury*

Areas most contaminated by mercury are located near sewage discharges in Santa Monica Bay and Palos Verdes, and in areas of LA/LB Harbor, Marina del Rey, and San Diego



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Bay. The sediment background level has been determined by Eganhouse et al. (1976) to be 0.05 mg/kg dw. The lowest concentrations of mercury are found at Point Loma shelf (0.01 mg/kg [Eganhouse et al. 1976]) and the highest concentrations were found at the Newport shipyards in 1972 (157 mg/kg dw); these values had decreased by a factor of 13 by 1986 (Liu and Schneider 1988). Mercury biomagnifies and occurs at elevated concentrations in large fish and sharks near known point sources. Concentrations of mercury in relevant fish tissue range from less than 0.050 mg/kg ww for California halibut at Point Dume to 0.437 mg/kg ww in white croaker at Dana Point (Cal-EPA 1991). Average mercury concentrations in fish collected as part of U.S. EPA's 1987 National Study of Chemical Residues in Fish, were somewhat elevated above regional background levels at 0.5 mg/kg ww.

***Nickel***

High concentrations of nickel, defined as greater than 69 mg/kg dw by NOAA (1991), have not been found in sediments analyzed as part of current monitoring programs. However, nickel is one of the heavy metals consistently present in oily sludges generated at naval installations (Lysyj and Karr 1983). Concentrations of nickel in surface sediment collected in 1986 through the NS&T Program ranged up to 58 mg/kg dw in San Pedro Harbor. The mean surface sediment concentration at the NS&T Long Beach station in 1984 was 27 mg/kg dw.

***Silver***

Although not considered a regional chemical of concern by NOAA (Mearns et al. 1991), high concentrations of silver, defined as greater than 1.2 mg/kg dw by NOAA (1991), have been measured in sediments throughout the Bight, particularly in Central San Diego Bay, Palos Verdes, West Santa Monica Bay, Marina del Rey, and Point Dume. High concentrations of silver are generally associated with sewage outfall areas; background concentrations at non-outfall areas range from 0.01 to 0.10 mg/kg dw (Mearns et al. 1991). A review of the literature indicated that sediment silver concentrations in southern California range from 0.01 mg/kg dw in sediments collected from Port Hueneme in 1985 (Thompson et al. 1987) to 18 mg/kg dw in sediments collected from the Palos Verdes shelf in 1977 (Word and Mearns 1979). Biological tissue data provide no evidence that silver biomagnifies (U.S. EPA 1986). Given the limited data on silver concentrations in fish, there is no indication that silver is a major contaminant of fish muscle tissue in the Bight.

***Zinc***

Although not usually considered to be highly toxic, zinc is an indicator of anthropogenic contamination. This metal has accumulated in sediments at Palos Verdes, Rhine Channel, Newport Bay, and areas of Central San Diego Bay 100 to 1,000 times above background levels. Background levels of zinc in sediments are considered to be 40 to 72 mg/kg dw at the 60-meter isobath from rural coastal shelf areas. The lowest concentrations of zinc have been found at the mouth of the Tijuana Estuary in 1988 (4.2 mg/kg dw, Gersberg et



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al. 1989), and the highest levels were found at the Newport shipyard in 1972 (13,700 mg/kg dw), with levels decreasing by a factor of 53 by 1986 (Liu and Schneider 1988). Zinc concentrations averaged 45 mg/kg dw at SCCWRP reference stations collected as part of their 1990 survey (Thompson 1992).

#### 4.1.4.2 BENTHIC BIOLOGY

The Long Beach Harbor area contains a variety of marine habitats and marine life. A vertical zonation exists, with 503 taxa of algae and macroinvertebrates inhabiting the intertidal and shallow subtidal zones along the outside of the Mole (LA/LB Harbor Departments and U.S. ACOE 1990). The mid-intertidal assemblage is dominated by acorn barnacles (*Balamus glandula*) and limpets (*Acmala sp.*), while the low intertidal to shallow subtidal area is apparently high in species richness, diversity, and biomass.

The soft bottom habitat of West Basin supports a benthic community most recently characterized by Reish in 1978. The results of this survey may be considered a baseline for evaluating possible recent and future environmental changes to West Basin, since benthic invertebrates are widely accepted indicators of marine pollution.

The benthos within West Basin was found by Reish to generally consist of a community of animals dominated by the polychaetes *Capitata ambiseta, Tharyx* sps., and *Haploscoloplos elongatus* (WESTDIV 1986). Although these species predominated, specific trends within this basic community were noted during the 1978 survey: 1) some species were limited to the outer regions of West Basin and were not present between Piers 7 and 9 (piers are shown on Figure 5-1) (e.g., *Cossura candida and Amphideutopus oculatus*); and 2), some species were limited to the region between Piers 7 and 9 (e.g., *Pseudopolydora paucibranchiata, Tagelus subteres, Tellina modesta*, and *Mayarella banksi*). The most diverse benthic population was found at the West Basin entrance. There was also a decreasing trend in the diversity index from the outer to inner reaches of West Basin, where reduced water circulation results in lower DO levels.

## 4.2 DREDGING ACTIVITIES

The following section describes past dredging activities that have occurred within West Basin specifically and LA/LB Harbor generally.

### 4.2.1 Los Angeles/Long Beach Harbor Complex

During recent years, numerous dredging activities have been conducted by the POLA and POLB within the LA/LB Harbor Complex. These dredging activities are related to development of harbor facilities (e.g., construction of new piers), maintenance of harbor facilities which requires deepening of channels, or sampling investigations conducted in support of development or maintenance activities.

The steady growth of the POLA over the past 100 years to the present complex of several thousand acres of docks, piers, channels, basins, and anchorages has changed the character of the natural environment. Dredging and filling have converted former wetlands and



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shallow open water areas to deep channels and slips. Breakwater construction has converted the San Pedro Bay from exposed coastline to a protected embayment with restricted circulation. In addition to these physical changes, the increased urbanization and industrialization of the area and, consequently, the increased discharges of various contaminants, have altered sediment and water quality in the LA/LB Harbor area (MEC 1988a).

Harbor development activities conducted during the 1980s have substantially altered the Los Angeles Harbor. These development activities included deepening of the Main Channel in the Inner and Outer Harbors, filling (approximately 190 acres) of shallow water on the south side of Terminal Island, relocating the Terminal Island Treatment Plant outfall within the Outer Harbor, constructing a marina complex near Cabrillo Beach, creating a salt marsh near Cabrillo Beach, and establishing a kelp bed directly inboard of the San Pedro Breakwater (MEC 1988a).

Very large development projects, collectively known as the POLA 2020 Plan, are currently being planned and implemented to meet anticipated future cargo demands. New terminals are being constructed over land created by dredging and filling areas within the LA/LB Harbor. The channels, basins, and slips are routinely dredged to promote navigation of larger ships.

Sediment sampling and analysis are generally conducted prior to dredging activities. For those dredged materials that are expected to be open water disposed at LA-2, a U.S. EPA dredge material disposal site located 4.7 nautical miles south of the San Pedro Breakwater, chemical and biological testing were conducted in accordance with guidance criteria in the 'Green Book" (U.S. EPA/U.S. ACOE 1991). Only chemical analyses are required for dredged materials suspected not to pass these criteria (Smith 1994).

The following paragraphs summarize a number of dredging activities, associated sampling, and disposition of the dredged materials, conducted in the Ports of LA/LB.

#### 4.2.1.1 PIER E, BERTH 121-122 (RELOCATION OF ARCO TANKER TERMINAL) (1981)

The relocation of the ARCO tanker terminal on Pier E from Berth 118 to the vicinity of Berths 121 and 122, located in the Back Channel of Long Beach Harbor, commenced in June 1981. This relocation activity included dredging and disposal of dredged material, and resulted in a larger facility capable of accepting the larger mid-range tankers. The berthing area was dredged to a depth of -66 feet MLLW, exceeding the adjacent Back Channel depth which varies from -60 to -62 feet MLLW, thereby providing more vessel clearance and increasing available maneuvering room in the Back Channel. A total of 650,000 cubic yards of bottom sediments were removed from the vicinity of Berths 121 and 122 in the Back Channel via dredging. Of this total, approximately 150,000 cubic yards were used as fill material at the project site. The remaining dredged material, approximately 400,000 cubic yards of sediments, were dredged and disposed of at LA-2, the designated U.S. EPA open water ocean disposal site.



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#### 4.2.1.2 SEDIMENT SAMPLING FOR THE PORT OF LONG BEACH COAL TERMINAL PROJECT (1982)

Sediment samples were collected at three dredging areas adjacent to the proposed coal terminal facility along the north shore of Cerritos Channel by the POLB. The three sampling areas consisted of the Cerritos Channel (north side), the Turning Basin, and the Back Channel. Samples were collected and bioassays conducted to assess potential impacts of the disposal of dredged material derived from construction dredging of a berthing slip adjacent to the proposed coal terminal facility. The bioassays were performed on the three phases of dredge material (liquid phase, suspended particulate, and solid phase), as well as chemical analyses of the liquid and solid phases, and assessment of bioaccumulation potential. A control sediment sample was also collected along the perimeter of the LA-2 open water disposal site. Trace metals, petroleum hydrocarbons, and halogenated hydrocarbons (pesticides and PCBs) were detected in the samples. Bioassays conducted using the three phases demonstrated little statistically significant evidence of mortality or other toxic effects. The sediment samples demonstrated statistically significant bioaccumulation potential for specific trace metals and petroleum hydrocarbons (MBC 1982).

#### 4.2.1.3 SEDIMENT SAMPLING IN THE VICINITY OF PROPOSED PIER 400 (1990)

An environmental study in support of the POLA 2020 Plan was conducted to identify regions within the potential dredge areas harboring contaminated sediment or sediment with significant acute or chronic toxicity to marine organisms. Sediment samples were collected at various locations in the vicinity of the proposed Pier 400 for analysis. Metals detected included chromium, copper, lead, mercury, nickel, silver, and zinc. Organics detected included PCBs, PAHs, and DDTs. Test results indicated that concentrations were above action thresholds and the sediments would not pose a problem if they needed to be disposed of at an uplands site (landfill) (Kinnetic Laboratories, Inc. 1991).

#### 4.2.1.4 SEDIMENT SAMPLING FOR THE PORT OF LONG BEACH PIER J EXPANSION SITE (1991)

Sediment samples were collected from the East Channel and the area east of Pier J. Sediment and elutriate chemical analyses, grain-size analyses, liquid/suspended phase bioassays, solid phase bioassays, and an evaluation of the bioaccumulation potential were conducted according to Green Book methods (U.S. ACOE/U.S. EPA 1991). The sediment samples were similar in chemical constituent composition and concentration to other sites within the LA/LB Harbor. Elutriate chemistry analysis indicated no substantial leaching of chemical constituents from sediments to water, and no dissolved concentrations which exceeded water quality standards. Based on these results, the dredge materials were deemed to present no long-term degradation potential if disposed of at the LA-2 open water disposal site (MEC 1992).



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#### 4.2.1.5 SEDIMENT SAMPLING FOR PIER 400 MAINTENANCE DREDGING AND DESIGN PROGRAM (1993)

Sediment samples were collected at various locations within Los Angeles Harbor and its adjoining basins where future maintenance dredging will be required in relation to the Pier 400 design program. Sample analysis results indicated that no single area was highest for all constituents measured. Test results indicated no consistent horizontal trend in the distribution of contaminants between areas or within an area, or vertically throughout the length of the core. This was attributed to the different sources of inputs each of the areas has received and historical deposition of contaminants each has accumulated. No biological testing was conducted as part of this sampling program. Metals detected in the samples included arsenic, cadmium, chromium, copper, lead, mercury, and nickel. Organics detected included total PAHs, DDTs, and PCBs (Kinnetic Laboratories, Inc. 1993).

#### 4.2.1.6 CONSTRUCTION OF PIER 400, POLA (1994)

The POLA current expansion project involves the construction of Pier 400, south of Pier 300. Dredging activities and associated sampling and analysis for the construction of Pier 400 started in September 1994 and are ongoing. During dredging, the water quality is monitored on a weekly basis for dissolved oxygen, light transmittance, temperature, and pH at 2-meter increments throughout the water column. Suspended solids are monitored on a bimonthly basis at the water surface, mid-depth, and bottom. Quarterly monitoring of the water column is conducted at three sample locations, at mid-depth of the water column. The samples are collected at 30.5 meters up-current, and 30.5 and 91.5 meters down-current of the dredge operation. Samples are analyzed for trace metals (arsenic, chromium, copper, lead, mercury, nickel, silver, selenium, and zinc) and organics (DDE, PCBs, PAHs, phthalates, tributyltin, and oil and grease). As part of Pier 400 construction activities, a permanent shallow water habitat will be constructed as mitigation for project-related impacts to the existing shallow water habitat site. The permanent shallow water habitat will be located adjacent to the San Pedro Breakwater and constructed using contaminated sediments, which will capped with clean sediments (LARWQCB 1994).

### 4.2.2 West Basin

Several dredging activities have occurred in the West Basin within the last 15 years; some of these dredging activities may have impacted bottom conditions of sediments through changes in depth or resuspension, and resettlement of particulates. Most dredging activities were associated with the construction or maintenance of LBNC piers supporting vessel operations within the West Basin. Known dredging activities that have occurred within the last 15 years in the West Basin are summarized in this section. To research and investigate each of these dredging activities, a number of historical files were reviewed. These files were obtained from NAVSTA, the LBNSY, the POLB, the Coast Guard, the U.S. ACOE, and the CLEAN I contractor.



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#### 4.2.2.1 MAINTENANCE DREDGING AT PIERS 7 AND 9 (1982)

In October of 1982, approximately 400,000 cubic yards of sediments were dredged from the West Basin at Piers 7 and 9 to conduct a periodic removal of accumulated silt and sediment from the berthing areas. Bioassay results indicated that the dredged material between Piers 7 and 9 should not have a significantly adverse effect on the marine environment after ocean disposal. The dredged material was disposed of at the U.S. EPA open water ocean disposal site, LA-2. The project deepened the area between Piers 7 and 9 to -30 to -35 feet MLLW, plus 2 feet overdredge.

#### 4.2.2.2 FUEL PIER RELOCATION (PIER 12) (1984)

This project included the construction of both a new fuel pier (Pier 12) extending into the West Basin from the Navy Mole at the LBNC, and a pipeline system to deliver fuel from the Defense Fuels Support Point in San Pedro to the new fuel pier. The pipeline system presently crosses the Los Angeles Main Channel in a trench. Dredging was reported conducted at the location of Pier 12 and in the Main Channel. Dredging of approximately 40,700 cubic yards of material from the channel bottom was required for the pipeline construction. Following chemical and biological testing according to "Green Book" (U.S EPA/U.S. ACOE 1977) criteria, the dredged sediments were disposed of at the LA-2 open water ocean disposal site. The project was completed during September 1986.

#### 4.2.2.3 MAINTENANCE DREDGING AT PIER 6 (1986)

This project, known as Project M1-85, involved the maintenance dredging of both sides of Pier 6 to accommodate operational schedules and required berthing for deep-draft vessels. Dredging to a depth of -45 feet MLLW was found to be necessary to prevent fouling of battleships and amphibious landing ships. Bioassay tests were conducted as required by U.S. EPA and U.S. ACOE (1977) regulations to assess the potential toxicity associated with ocean disposal. These tests indicated that the dredged material was acceptable for ocean disposal. Approximately 46,000 cubic yards of dredged material were removed. This dredged material was disposed at the LA-2 open water ocean disposal site. he project was completed in the spring of 1987.

#### 4.2.2.4 MAINTENANCE DREDGING AT THE SOUTH FACE OF PIER E (1991)

This LBNSY project, conducted in 1991, is referred to as Project MI-87 by the DON. This project involved maintenance dredging along the south face of Pier E to prevent the fouling or grounding of battleships and oiler class vessels. The harbor bottom along the south face of Pier E was dredged to an elevation of -47 feet mean lower low water (MLLW) (-45 feet plus 2 feet over depth). The total volume of dredged material was approximately 18,300 cubic yards. The dredging project area extended for about 1,400 feet in the west-east direction along the south face of Pier E, and for a distance of 200 feet in the north-south direction (WESTDIV 1989).

Activities conducted in conjunction with this dredging project included a geotechnical investigation as well as sediment sampling and analysis (chemical, physical, and bioassay



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testing). These pre-dredging activities were required under the Ocean Disposal Program to provide results for submittal to the U.S. ACOE and the U.S. EPA to determine whether the dredged material was suitable for open water disposal.

The geotechnical investigation at Pier E showed that the bottom soil strata between -5 and -18 feet MLLW depth consisted of very loose to loose sandy/clayey soils with some shell hash, and very soft clay layers. These loose and soft soils were found beneath the east end of the pier; they are underlain below the 18-foot depth by medium dense to very dense sands with shell hash. As a result of a geotechnical model, it was concluded that the maintenance dredging project would not significantly affect the stability of the pier (WESTDIV 1989).

Results of the sediment sampling and analysis indicated that sediments were contaminated with moderately elevated levels of heavy metals and petroleum hydrocarbons. PAH concentrations ranged from moderate to high. Bioassay and bioaccumulation results indicated that sediment at the two test sites caused a reduction in sea urchin (echinoderm) development, affected mortality of worms and mysids, and was associated with elevated tissue concentrations of zinc, PAHs, and chromium (WESTDIV 1990). Based on a review of these data, the California Department of Fish and Game and the U.S. EPA determined the dredged material was not suitable for ocean disposal. Upon comparing the sampling results with U.S. EPA ocean dumping criteria in 40 CFR Part 227, the top 7-foot layer of the harbor bottom represented the zone of contamination, and it was determined that the contaminated sediments must first be removed and then transported to an alternative disposal site.

As a result, the dredging project involved dredging at two different locations within the dredging project area, and disposal of the dredged materials in the POLB Ford/Melamed Landfill, according to LBNSY records. According to the dredging permit application filed with the U.S. ACOE, the dredged material that was unsuitable for ocean disposal (3,000 cubic yards) was removed by clam-shell dredge to a depth of -47 feet MLLW, placed on a barge, and disposed of at the landfill. The 3,000 cubic yards of unsuitable material was capped at the landfill with the addition of 15,300 cubic yards of uncontaminated dredged material from the project area. The Navy-dredged material was further capped by 50,000 cubic yards of material suitable for open water disposal.



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## SECTION 5

# RATIONALE FOR SITE ASSESSMENT

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# Section 5
# RATIONALE FOR SITE ASSESSMENT

This section describes the rationale and design of the site assessment and discusses the various types of samples and data collected. It includes a discussion of the individual design elements, a review of specific data collected, designation of West Basin sampling locations, and selection of project reference stations.

## 5.1 SAMPLING PROGRAM DESIGN

The overall sampling program for collection of sediment, benthic invertebrates, and tissue from the West Basin was designed on the basis of using statistical methods to enhance the usability and effectiveness of data elements. To accomplish these objectives, three major elements of statistical representativeness were taken into consideration: randomness; adequate representation of reference conditions; and sample replication. The discussion below provides a summary of the rationale for each of these elements which are intended to strengthen the overall statistical basis of the study design.

### 5.1.1 Randomness

Randomness is an important statistical element because it enhances the representativeness of conditions encountered in the field and reduces sampling bias. The basic program is comprised of a stratified random design. This means that elements of both biased and random sampling were incorporated into the site assessment. Two key examples of random design include the randomly placed point of origin for the sediment sampling grid and the selection of locations of trawl transects used to collect fish within the West Basin. Biased sampling was necessary for example, in order to evaluate whether the piers constitute a potential secondary source of contaminants.

### 5.1.2 Adequate Representation of Reference Conditions

Adequate representation of reference conditions is important because reference data provide a regional perspective for comparing test station data to a local benchmark. The sampling program was designed for statistical comparison between West Basin test stations and reference stations, providing a site-specific evaluation of potential impact. To this effect, reference conditions were characterized by collecting samples from three reference stations located within San Pedro Bay.

### 5.1.3 Replication

Replication in an environmental sampling program is important because it represents the variability inherent in physical and biological systems. Therefore, although test stations were generally sampled only once for chemical and biological measurements, two field measures were taken to represent variability between test stations and reference stations. These measures included: 1) replicating, in triplicate, all chemical measurements at one of the West Basin test stations, Station 1; and, 2) replicating all chemical and biological measurements at reference locations. These replications were conducted to obtain a



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measure of the field variability encountered. In other words, the more intensive sampling conducted at Station 1 and reference locations provided a more complete insight into the natural variability of physical and biological conditions in sediment. When the complete data set becomes available, sediment evaluation zones will be defined, wherein individual test stations will be treated as field replicates within specific areas (sediment evaluation zones) using chemical, physical, or other characteristics to define areas of homogeneity. West Basin test stations will represent replicates within each sediment evaluation zone, and replicates at reference locations will provide an estimate of variation encountered at specific reference locations.

## 5.2 SAMPLE COLLECTION

This section summarizes the rationale used in designating locations for sampling of surface sediment, subsurface sediment, and fish tissue, including both test and reference locations, by data set. This section also provides a review of the samples collected at West Basin and reference stations. Figures 5-1 and 5-2 show the locations from which each sample was collected.

### 5.2.1 Surface Sediment

The objective of surface sediment sampling was to characterize the toxicity and ecological impact of surface sediments in West Basin. To achieve this objective, sediment samples were collected from 45 West Basin sampling stations, nine of which were taken from under Piers 1, 2, 3, 6, 7, 9, 12, 15, and 16, for the purposes of physical and chemical analyses, a suite of sediment bioassays, and benthic community analysis. Some of these stations were sampled for analysis of bioaccumulation in clams as well. Sediment samples were also collected from reference stations 40010, 40018, and 40032, and were subjected to the same testing procedures as the test samples.

The overall sampling design for surface sediment within West Basin, where sediment was collected to a depth of 10 cm to represent conditions in surficial layers, was established as a grid (Figure 5-1), with individual stations placed about 300 meters apart. The point of origin for this sampling grid was randomly selected to enhance statistical representativeness; this selection complied with the procedures described in the RI/FS Sampling and Analysis Plan (JEG 1993b).

### 5.2.2 Subsurface Sediment

The basic purpose of subsurface sampling was to characterize the vertical extent of contamination within different areas of West Basin and at the reference stations, and to assess possible adverse effects associated with potential remedial actions such as dredging. The sampling design included collecting subsurface sediment core samples from 3-meter and 5-meter sediment cores. For this purpose, four 3-meter and 5-meter cores each (total of 8 cores) were taken from within the West Basin. Three of the 5-meter cores were taken from underneath Piers 2, 12, and 15. In addition, two 5-meter core samples were intended to be taken at reference stations 40010 and 40018. However, as a result of



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encountering refusal to penetration of corer because of dense sediment at Station 40010, one 5-meter and one 3-meter core were actually collected. The sediment samples were obtained from the cores in the following manner:

- two subsamples (one from 0 to 1 meter and the other from 1 to 2 meters) each from four 3-meter cores (total of 8 samples),
- five subsamples each (one per 1-meter horizon) from four 5-meter cores (total of 18 samples because one of the cores yielded only 3 samples), and
- five subsamples from one 5-meter reference area core and two subsamples from one 3-meter reference area core (total of 7 samples).

### 5.2.3 Fish Tissue

The purpose of collecting and analyzing fish tissue from the West Basin and reference stations was to determine whether chemicals of potential concern associated with LBNC activities could have potentially contributed to contaminants reported in fish tissue which, in turn, could contribute to ecological or human health hazards. To achieve this purpose it was first necessary to identify appropriate fish species that could be collected in the required numbers. Several key selection criteria were used to select fish species to be evaluated in order to reduce the chances that some species could contribute to underestimation of risk. Potential fish species to be collected were pre-selected based on the following criteria: (1) commonly caught and eaten by human consumers or marine predators at or near the study site; (2) have commercial, recreational, or subsistence fishing value; (3) at least partially bottom feeders in relatively close contact with potentially contaminated sediments, and are therefore more likely to take contaminant residues directly from bed sediments; (4) have a propensity to bioaccumulate contaminants (i.e., have a relatively high tissue lipid content), and (5) are relatively localized rather than highly mobile or seasonally migratory.

Table 5-3 presents the fish species pre-selected for collection, including specific rationale for each species selected. Barred sand bass (*Paralabrax nebulifer*), hornyhead turbot (*Pleuronichthys verticalis*), and California halibut (*Paralichthys californicus*) were identified as the most appropriate species to meet the objectives of the fish sampling and analysis program. Once in the field, however, the actual fish catch was dominated by white croaker (*Genyonemus lineatus*) and California halibut, both of which were therefore retained for whole body and muscle fillet chemical analysis.

Collection of fish from the West Basin was conducted using an otter trawl operated from a sampling vessel, from trawl transects selected using stratified random approach within the West Basin (Figure 5-1). At least one trawl transect each was selected within three areas of West Basin: the NAVSTA, the LBNSY, and the main channel, each representing distinct areas of land or Naval activities within West Basin, with distinct physicochemical characteristics. For example, circulation within the innermost portions of the West Basin is limited and, therefore, particle size distributions are markedly different from other areas of the West Basin, thereby affecting the biological habitat. The trawl transects were



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selected randomly with the intent of preventing bias factors (e.g., contamination levels, land use, and characteristics of bottom sediments), but were also selected in partial consideration of logistics (e.g., where space was available adjacent to piers or other structures). Trawl transects at reference stations 40010 and 40018, however, were not randomly generated, but placed with the intent of representing reference conditions at the same locations from which sediments were collected. A total of 72 fish were collected, both from West Basin and reference stations, in groups of three, in consideration of the need for statistical representativeness (see Table 5-2).

## 5.3 LABORATORY ANALYSES

The evaluation of potential West Basin sediment toxicity relies on chemical analysis, bioassays, tissue bioaccumulation data, and benthic community analysis. The results of these tests are then used to evaluate ecological risk, human health risk, and to determine whether sediment requires remediation. Thus, the rationale for obtaining laboratory analyses of samples included:

- Chemical and physical data from surface sediment to be used in the interpretation of the bioassay, tissue bioaccumulation, and benthic community tests;
- Sediment solid and aqueous (porewater) phase bioassay data to determine if toxicity is associated with West Basin sediments;
- Chemical residue data from fish and clam tissue to determine if potential sediment contaminants have a significant bioaccumulation potential (evaluation of long-term effects);
- Benthic community analyses data to provide a direct index of *in situ* effects of potential sediment contamination to native benthic biological communities; and,
- Chemical and physical data from subsurface sediment to evaluate possible adverse effects associated with potential remedial actions involving dredging.

Figure 5-1 shows the locations of both sediment samples and fish collection transects inside the West Basin; Figure 5-2 shows the locations of reference stations within San Pedro Bay. Table 5-1 summarizes the types of data with associated numbers of samples collected by location within the West Basin, as well as at reference stations. All of the samples described below were collected at both test and reference stations. Data collection included:

- **Surface Sediment Chemistry.** Modified U.S. EPA priority pollutant chemistry, organotins, moisture content, acid volatile sulfide/simultaneously extracted metals (AVS/SEM), total sulfides, and physical characteristics (total organic carbon [TOC] and grain size) of surface sediments were measured (one suite per station, for a total of 56 samples).
- **Subsurface Sediment Chemistry.** Modified U.S. EPA priority pollutant chemistry, organotins, moisture content, and physical characteristics (TOC and grain size) of several subsurface sediment cores to 3-meter and 5-meter depths, with discrete 1-meter horizons taken from most of the cores, were measured (total of 33 samples



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taken from 10 cores). Bioassay and bioaccumulation tests were not conducted on subsurface sediment because of the naturally occurring toxicity associated with anaerobic conditions.

- **Bioassays.** Three invertebrate bioassays were conducted measuring six independent toxicity endpoints. Solid phase sediment and porewater samples were collected at a frequency of one suite per station, for a total of 60 samples. Endpoints measured by the bioassays included mortality (using a suitably representative amphipod, polychaete, and echinoderm), growth (polychaete only), and developmental abnormalities (echinoderm only). Reburial of amphipods was also measured, because it provides information concerning the sublethal response of amphipods. The amphipod and polychaete tests evaluated the solid phase sediment, while the echinoderm development tests evaluated the toxicity of porewater extracted from sediment.

- **Benthic Infaunal Invertebrate Analysis.** Benthos was sieved from sediments (1.0 mm sieve size) and analyzed in the laboratory (one benthic grab per station, for a total of 60 samples).

- **Tissue Residue Analysis.** A 28-day laboratory clam bioaccumulation test was conducted using modified U.S. EPA priority pollutant chemical measurements in tissue (total of 14 samples taken at a frequency of approximately 1 in 4 test stations).

- **Bottom-dwelling Fish Analysis.** California halibut and white croaker were collected, using modified U.S. EPA priority pollutant measurements of whole body tissues, and PAH and metabolite measurements of fish bile (total of 45 whole body samples, 18 bile samples) were collected to address potential ecological concerns. California halibut and white croaker were also collected to address potential human health concerns, using modified U.S. EPA priority pollutant measurements of whole body and muscle fillet tissues (total of 45 discrete whole body samples and 18 muscle fillet samples) (see Table 5-2).

## 5.4 SELECTION OF REFERENCE STATIONS

A two-phased approach was taken to support final selection of reference stations. The approach included: (1) selection of candidate reference stations in the field and sampling the candidate stations; and (2) evaluation of data from each of the candidate reference stations to determine which were most applicable for statistical comparison with West Basin stations. This section summarizes how each of these activities was conducted.

BNI and the DON held a series of meetings with the LARWQCB and telephone conversations with SWRCB and California Department of Fish and Game (CDFG) for the purpose of identifying stations within San Pedro Bay, located in less urbanized settings, for the purpose of defining regional reference conditions. This involved obtaining chemical and biological data from the state-sponsored BPTCP to evaluate whether bioassay organisms appeared to survive and whether chemical contamination was absent. These candidate stations are shown on Figure 5-2. During field activities, sediments collected from these candidate stations were visually inspected to assess whether the



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texture (particle size) appeared to be similar to that of the West Basin (test) sediments. Based on this evaluation in the field, BPTCP stations 40010, 40018, and 40032 were selected as candidate reference stations and sampled (Figure 5-2).

After the laboratory data were obtained, the candidate reference stations were again evaluated for appropriateness in supporting statistically defensible comparisons with data collected from West Basin stations, as follows:

- Grain size and TOC data from candidate reference stations were evaluated for similarity with test stations to determine the applicability for evaluating chemical and biological data.
- Chemical data from candidate reference stations were scanned for the presence of contaminants, and ultimately grouped together to create a pooled project reference database.
- Biological (bioassay) data from candidate reference stations was subjected to comparison with biological performance criteria, based on survival of control organisms, to determine whether the station could be appropriately used as a reference station.

Defining reference conditions for the site assessment is important because they provide a regional benchmark with which physicochemical and biological data from the West Basin can be compared. Reference stations were selected for suitable physical parameters (especially sediment TOC, grain size, and water depth) to assure comparability with specific test stations. These parameters are important because they: 1) determine the nature of the benthic habitat (e.g., through mechanisms of oxidation/reduction, sunlight, currents, and tidal action); and, 2) such properties play a significant role in determining sediment toxicity through mediation of contaminant bioavailability in sediment. In this manner, reference stations most similar in physical characteristics to corresponding West Basin test stations were selected and incorporated into the study design to promote statistically defensible comparisons between test and reference stations. Based on the above process, all reference stations were pooled (n=9) to create a project reference data set for chemical analytes. Of the possible fifteen reference samples collected and tested with the battery of bioassay tests, only those samples which passed the reference sediment performance criterion were retained for further statistical comparison with West Basin samples. The reference sediment performance criteria used in selecting project reference stations are described in subsequent sections.

### 5.4.1 Chemical Performance Screening Criteria

The purpose of pre-defined chemical performance criteria is to determine whether chemical concentrations at regional reference locations are adequate to define ambient chemical conditions. Appropriate chemical criteria would include preliminary remediation goals (PRGs) based on specific exposure pathways or existing numerical criteria. If regional reference concentrations exceed these concentrations, they may not be appropriately regarded as representing reference conditions.



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No such chemical criteria were available or were defined for project reference stations at Site 7, because the stations selected were recommended by the state-sponsored BPTCP as defining reference conditions. Chemical concentrations were generally low, which corresponded to the less urbanized setting encountered in outer San Pedro Bay. In addition, biological performance criteria were defined (see below) to determine whether proposed reference locations appeared to be toxic.

## 5.4.2 Bioassay Performance Criteria

Technical Memorandum No. 4 (BNI 1994b) specifies biological performance criteria for sediment bioassays, presented as a tiered hierarchy for interpreting bioassay test results. These criteria were developed for negative controls to determine whether individual laboratory tests were valid, for positive controls (reference toxicants) to establish the sensitivity of test animals, for reference sediment to determine whether candidate reference locations are appropriate for statistical comparisons with test stations, and for test sediment to determine whether test data are statistically significantly different from reference data. Table 5-4 shows specific biological performance criteria for each test organism.

These criteria are valid assuming a laboratory control organism survival rate greater than 90 percent. Exceeding both of the above performance criteria constitutes a definitive "hit" for bioassay tests, implying that natural variability is screened out as a potential "cause" or indicator of toxicity. As an example, Figure 5-3 shows how biological performance results would be evaluated through a dichotomous key to ultimately lead to a "hit" or "negative" result.

### 5.4.2.1 NEGATIVE CONTROL PERFORMANCE CRITERION

Table 5-4 shows that mean mortality in control amphipod and polychaete organisms greater than 10 percent or abnormal echinoderm development of greater than 30 percent constitutes a test failure. In addition, individual replicate mortality in control polychaete organisms must be less than 20 percent.

### 5.4.2.2 POSITIVE CONTROL PERFORMANCE CRITERION

Control organisms were also exposed to a standard reference toxicant for 96 hours and concentration-response data (lethal concentration for 50 percent of test organisms, $LC_{50}$) evaluated and compared to the overall laboratory mean for that particular species. The reference toxicant used for the purposes of this project was cadmium chloride. The $LC_{50}$ results for each control batch must fall within 2 standard deviations of the overall laboratory mean in order for the bioassay test to be considered valid.

### 5.4.2.3 REFERENCE SEDIMENT PERFORMANCE CRITERION

Table 5-4 shows that the relative difference between reference station and laboratory control values for mean mortality and abnormality (echinoderm) must be less than or equal to 20 percent; the relative difference between mean individual weight (polychaete) in



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reference station and laboratory controls must be less than or equal to 30 percent (see Figure 5-3). Relative mean differences greater than 20 percent or 30 percent, as appropriate, constitute a reference failure and such "failed" reference data cannot be further used in the bioassay data evaluation process.

#### 5.4.2.4 TEST SEDIMENT PERFORMANCE CRITERION

Table 5-4 shows that evaluation of the test sediment, or data interpretation, performance criterion actually involves a two-step evaluation process for each bioassay endpoint. First, the relative mean difference of mortality, mean individual weight (polychaete), and abnormality (echinoderm) between test and reference stations must be determined. The relative mean difference must be less than or equal to 20 percent for mortality and abnormality and less than or equal to 30 percent for mean individual weight in order for the test sediment to have "passed" the bioassay, i.e., relatively little difference between test and reference station toxicity. Second, test and reference station results are statistically compared at the $\alpha$=0.05 level. The results of these two analyses (relative mean difference and statistical comparisons) are then evaluated for each test station to determine the ultimate bioassay test result, i.e., "hit" or "no hit".



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## SECTION 6

# FIELD METHODS

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# Section 6
# FIELD METHODS

This section describes the field equipment and procedures used to collect sediment and tissue samples within the West Basin and at the project reference locations. Discussions also include sample documentation procedures, decontamination procedures, and handling of Investigation Derived Waste (IDW).

## 6.1 MOBILIZATION

Activities conducted prior to mobilization for commencement of field operations included obtaining site clearance and developing site specific Health and Safety procedures. These activities are described in subsequent sections.

### 6.1.1 Site Clearance

As part of mobilization for sampling, clearance was obtained from Naval authorities to assure that Naval activities would not conflict with those planned for sampling, and that known physical obstructions which could prevent the collection of sediment and tissue samples were identified. The appropriate authorities at LBNC were contacted to obtain clearance to sample both sediment and fish tissue within the West Basin, whether by sampling vessel, land-based drilling rig, or by divers. Clearance was obtained through the SWDIV Remedial Project Manager, the Environmental Coordinators for both NAVSTA and LBNSY, the Naval Diving unit at LBNSY, the Operator of the Fuel Pier, and the Shipyard Control Tower which monitors and directs all ship movements within West Basin. All sampling activities were cleared with the appropriate officers prior to undertaking of any sampling.

### 6.1.2 Health and Safety

Field activities were conducted in accordance with the site-specific Health and Safety Plan and the BNI CLEAN II Health and Safety Standard Operating Procedures. A copy of the Health and Safety Plan, excerpted from the Health and Safety Close-Out Report, is included as an Appendix. Health and Safety coverage was provided continuously during field activities, focusing on areas of greatest potential hazards to safety and health such as work over water, extended time periods away from land, heat stress, and exposure to airborne contaminants. Personnel involved in field operations attended a mandatory Health and Safety briefing at the onset of field work. A Health and Safety officer accompanied the field team in its work.

During sediment sampling activities, air monitoring was conducted to assess potential airborne exposures. No air monitoring was conducted during fish collection. Use of appropriate personal protective equipment was required where personnel were expected to handle potentially contaminated sediments.



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## 6.2 NAVIGATION AND POSITIONING

The RV Crusader, a 40-foot survey vessel provided by MEC Analytical Systems, Inc., was used as the sampling vessel. It was equipped with a Magnavox MX 200 differential global positioning system (GPS) unit, and a six-channel receiver/navigator augmented with the Pinpoint AccuPoint differential GPS FM radio band correction for continual tracking. Accuracy was improved with real-time differential correction signal by AccuPoint, which provided ± 2 meter accuracy. A few station locations were slightly shifted during sampling at the request of the field sampling manager (e.g., when moored ships blocked access to stations along piers). To assure the highest degree of accuracy, the antenna receiving the GPS signal was mounted at the apex of an A frame mounted on the stern of the survey vessel, directly above the point from which the sampler is suspended during sample collection. GPS readings were recorded at each sampling location, and are shown on Table 6-1. Readings from the GPS system were recorded at both the beginning and end of each sampling day at the same location (point of departure and arrival at the dock) to serve as a point of calibration for the system.

## 6.3 SAMPLE COLLECTION

Both sediment and fish samples were collected during several sampling events. Depth of sediment samples ranged between the upper 10 cm (surface sediment) and depths of 3 to 5 meters (subsurface sediment).

Surface sediment samples were collected using two different procedures as dictated by site conditions. A box corer, deployed from the RV Crusader, was used in open waters, and divers were used for sampling under piers. The 3-meter subsurface sediment cores and some of the 5-meter subsurface sediment cores were collected using a Vibra-corer deployed from the RV Crusader. For those piers requiring subsurface sediment sampling (5-meter cores at Piers 2, 12, 15), a Vibra-corer operated from a land-based drilling rig was used to sample sediments because of lack of accessibility to the sampling point beneath the piers by the vessel. All fish tissue was collected using an otter trawl deployed from the survey vessel.

### 6.3.1 Surface Sediment

The following discussion summarizes the equipment and procedures used to sample surface sediment.

#### 6.3.1.1 EQUIPMENT

***Box Corer***

A box corer sampling device, having a surface area of 0.1 $m^2$, was used for all surface sediment samples collected using the survey vessel using procedures described below. Box corers are acknowledged to provide an excellent means of yielding undisturbed sediment samples (Mudroch and MacKnight 1991). The box corer was deployed from the A-frame at the stern of the RV Crusader using a hydraulic winch. The box corer operated



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mechanically and was pre-coated with Teflon® inserts to eliminate potential contamination from the sampler surfaces.

***Diver Collection***

Surface sediment samples located under the piers (eleven stations from beneath nine piers, shown on Figure 5-1) were collected manually using divers, as outlined below. The hand-held samplers were fitted with lids to reduce disturbance of sediment samples as the divers ascended to the water surface. The hand-held rectangular plastic scoops, 10 cm deep with a surface area of 0.06 $m^2$, were designed to collect sediment samples with minimal disturbance.

### 6.3.1.2 PROCEDURES

***Box Corer***

Surface sediment samples were collected from the top 10 cm at each of the 45 sampling locations within the West Basin and reference stations, and prepared aboard the vessel for chemical, physical, and biological analysis. These samples were collected using the box corer described above. Pre-measured Teflon® inserts were placed inside the box corer to assure that sediment samples were not contaminated by contacting the metal surfaces of the sampler.

Sampling procedures using the box corer are summarized below:

- The vessel first depolyed a marker buoy at the sampling location, using pre-established GPS coordinates for positioning.
- The vessel was then maneuvered to within a 3-meter radius of the marker buoy and the box corer deployed using an on-board winch and stern-mounted A-frame.
- The GPS coordinates were recorded upon deployment of the sampler, along with the depth of the sampling location.
- Deployment procedures included first dropping the box corer to the bottom of the water column. Upon reaching the sediment surface, the box corer penetrated into the sediment due to its weight. As the sampler was retrieved from the sediment surface, the weight of the sample forced its jaw mechanism to close, thereby extracting a sample of the sediments. The box corer was then lifted to the surface and sealed in a frame mounted on the deck to facilitate sample processing.
- Water overlying the sample was siphoned off from the box corer and discarded overboard.
- The first drop of the box corer at each sampling location was always used for collection of benthic infaunal invertebrates to assure that sediments were undisturbed by previous drops at that location. The surface of each sediment sample was photographed and the field log annotated with the film roll number and frame number. Visual observations concerning the presence of items such as detritus, larger organisms, seaweed, were recorded in the field logbook at the time of sampling. A corer insert, used to sieve benthic invertebrates and to provide a



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sample of 0.06 $m^2$ in surface area and 10 cm in depth, was then pressed into the sediment to assure a standard sample size and depth.

- The sediment from within the insert was removed and placed on the wash table and washed (with a hose) through both 1.0 and 0.5 mm mesh stainless steel sieves. The 1.0 mm sieve was placed on top of the 0.5 mm sieve to assure retention of the entire sample. Once the samples were thoroughly washed through both sieves, the benthic organisms retained on each sieve were collected with forceps and placed in separate jars with 7 percent magnesium chloride salt solution for approximately 30 minutes to promote relaxation of the organisms. The samples were then transferred to a 10 percent formalin solution to preserve the animals. The jars were double labeled, inside the jar and on the lid, (e.g., station location, time of sampling, date, sampler, and sieve mesh size) and placed in storage until transferred to the benthic laboratory.
- Both the box corer and the insert were then rinsed clean with seawater prior to redeployment; the rinse water discarded overboard.
- The box corer was then dropped as many times as needed to achieve the specific sample volumes required for physical, chemical, and bioassay analyses. At each sampling location, the insert was used to measure the amount of sediment sample collected (top 10 cm, 0.06 $m^2$ surface area). A sediment volume of 1,250 mL was collected at each station using large Teflon® spoons for chemistry, 1,000 mL for TOC and grain size, and 5.5 gal for bioassay testing. Sediment collected for the solid phase bioassay (approximately 5 gal) was placed in a clean sample bag, contained in a gallon-calibrated bucket on deck. Sediments collected for the porewater bioassay (approximately 0.5 gal) were sealed in an airtight bucket following nitrogen purging to assure that samples were maintained in an oxygen-free environment.
- For stations requiring bioaccumulation testing, an additional 5 gal of sediment was collected in the same manner as above.
- At the completion of sampling at each station, personnel washed down their boots and gloves with fresh seawater. Chemical sampling implements were decontaminated following the procedures described in a subsequent section.

### *Diver Collection*

For diver-collected surface sediment samples located below the piers, sampling stations (identified on Figure 5-1) were located visually using on-shore landmarks. Divers utilized hand-held rectangular plastic scoops to collect the sediment samples. The sediment samples were collected with minimal disturbance and in a uniform manner, by pressing the scoop into the sediment to the 10 cm mark, gently removing the full scoop from the bottom and covering it with a fitted cap. The diver then brought the filled and capped scoop to the surface. Each sample was inspected at the surface by field personnel to assure that an undisturbed sample was retrieved and that adequate volume had been collected. As with sediment collected from the survey vessel, sediment samples used for benthic infauna were taken first. All samples were processed in the same manner as



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described above for samples collected from the survey vessel, to minimize or eliminate differences caused by the sediment sample collection methods.

## 6.3.2 Subsurface Sediment

The following discussion summarizes the equipment and procedures used to sample subsurface sediment.

### 6.3.2.1 EQUIPMENT

Subsurface sediment samples were collected using a Vibra-corer deployed from both the survey vessel in open waters (3-meter or 5-meter cores) and from the top of piers using land-based drill rigs (5-meter cores only).

The coring system used for vessel-deployed subsurface sediment sampling was the Impact Driven Coring System (IDCS). The IDCS is a hydraulically operated sediment sampling system with a uniquely designed hammer to drive an aluminum core tube assembly into the sediment. The core tube assembly is driven incrementally into the sediment with very high instantaneous velocity. During the coring operation, the penetration of the core pipe was continuously monitored and recorded. The percentage of material recovered for penetration interval was also directly available from the core-acquired data.

The impact-generating hammer was mounted on a lightweight guide/support assembly. An integral, hydraulically operated core-extraction winch was mounted in the base of the guide/support assembly, which generated up to 15,000 pounds of pull-out force after the core tube assembly was driven to the desired depth. The integral core-extraction winch allowed extraction of the core tube without bending, prior to lifting the coring system off the bottom with the vessel-mounted winch. The sampler was equipped with a core-retention device at its leading edge to aid in sample recovery.

The coring system used for sampling sediments located beneath piers comprised a Vibra-corer operated from a Mobile B-61 drill rig. At each pier designated for subsurface sediment sampling, access through the pier deck was cleared and the drill rig positioned over the opening. The access openings at various piers comprised a stillwell for a former tide gauge, a manhole, and an expansion joint. These deck openings eliminated coring through the pier decks.

Stainless steel casing, with 4-inch inside diameter (ID), was advanced through the deck opening and into the sediment below by the vibrating hammer operating at 80 to 150 Hertz. The hammer and the deployment of the casing were hydraulically operated from the drill rig. Upon completion of the desired depth of penetration into the sediment, the casing containing the sediment sample was retrieved.

### 6.3.2.2 PROCEDURES

Sediment samples retrieved using the land-based and vessel-deployed coring systems were uniformly homogenized and combined either for each of the five 1-meter intervals (5-meter cores only) or the upper two 1-meter intervals (3-meter cores only) These



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samples were retained for physical and chemical analyses only; no biological analyses were conducted. Observations of sediment physical properties, such as texture, color and odor, were also recorded during sampling.

### *3- and 5-Meter Cores Using Survey Vessel*

Field sampling procedures for subsurface sediment collected using the survey vessel are summarized below:

- A marker buoy was deployed at the sampling location (Stations 6, 8, 14, 24, 29, and two reference stations; see Figure 5-1), in a manner similar to that used for surface sediment sampling described earlier.
- The vessel was then maneuvered to within a 3-meter radius of the marker buoy. The GPS coordinates were recorded.
- The hydraulic system on the vessel was connected to the corer with hydraulic hose and safety rope, and the corer was driven into the sediment to the appropriate depth (3 or 5 meters).
- When the appropriate depth of penetration was reached, coring was stopped, and the core sleeve assembly, made of disposable aluminum, was then extracted by the guide-assembly-mounted extraction winch.
- After core samples were retrieved, the core was extruded on board the vessel, carefully measured using a tape measure to indicate the depths from which each subsample was taken, and cut into 1-meter long sections. The core was cut using decontaminated equipment to avoid cross-contamination. Sample boring logs were kept to record all observations by specific depth.
- For 3-meter cores, the two upper 1-meter sections were homogenized and sampled, with the lower meter (2- or 3-meter in depth) photographed and recorded in the boring log.
- Each section was placed in a clean 5-gallon bag and homogenized by hand, using sterile gloves. The homogenized samples were then placed into the appropriate sample containers.

### *5-Meter Cores Using Drill Rig (Piers 2, 12, and 15)*

Procedures for sampling of subsurface sediments using the land-based drilling rig were similar to the procedures used for subsurface sediment sampling in open waters, except that the drill rig replaced the survey vessel and the GPS or other navigational system was not used. Sample locations on the three piers requiring drilling had been identified and noted earlier when the divers had collected surface samples from beneath the same piers. Prior to commencement of drilling activities, piers were inspected from both above and below for evidence of piping, structural supports, or other obstructions potentially impeding sampling. Following this reconnaissance, the appropriate authorities were contacted before beginning sampling operations.



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The casing containing the sediment sample was retrieved and placed on a Visqueen® covered surface on the pier deck. The sediment inside the casing was extruded, using compressed nitrogen at a pressure of 10 psi, directly into an aluminum foil covered trough of approximately 4-inch ID and slightly longer than the core expected to be inside the casing. The use of a trough allowed observation of the complete sediment core for purposes such as photography, measurements, and description. Following these tasks, sediment samples were extracted from the core in the same manner as described above for ship-based operation.

One-meter long core sections were scooped into a 5-gallon bucket lined with a disposable plastic bag. The sediment sample was homogenized using disposable trowels and by hand using sterile gloves. The homogenized sample was then placed into the appropriate sample container.

Sample information recorded on the sample data sheet included the sampling date and time, core number, sample interval, vertical distribution of visible contamination (if discernible), description of layering, description of soil (following American Society for Testing and Materials [ASTM] Method D2488-84), lithology, sorting, color, structure, presence of debris or detritus, relative density or consistency, relative moisture content, remarks, and the name of the observer.

## 6.3.3 Fish Sample Collection

The following discussion summarizes the equipment and procedures used to sample fish tissue and collect fish bile.

### 6.3.3.1 EQUIPMENT

Fish were collected using an otter trawl deployed from the RV Crusader using a hydraulic winch. The otter trawl used was a 4.9-meter headrope trawl net with a 2.5-cm mesh and a 1.3-cm mesh cod end liner.

### 6.3.3.2 PROCEDURES

Pre-established transects within the West Basin were trawled for 5 minutes of bottom time (timed from the end of cable payout to start of retrieval) at a speed of approximately 2.0 knots. Wire scope was set according to water depth and the guidelines of Mearns and Allen (1978). Bottom distances trawled were approximately 300 to 380 meters in length plus the distance covered to let out winch wire and retrieve the nets. Thus, about 500 to 700 meters was needed for each trawl, which in the West Basin required extensive maneuvering of the sample vessel. Upon retrieval of the trawling nets, individual fish were identified and enumerated for comparison against the expected numbers and types of each species (see Table 5-2). This approach was used to assure that adequate numbers of each species were collected as replicates for statistical purposes. An attempt was made to collect three species from each transect at which fish were collected, including those taken from the West Basin and from reference areas as well.



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Planning of trawl paths included considerations of the desired sampling area, bathymetry, and the total distance required to deploy, trawl, and recover the net. Positions and times were recorded for initial net deployment, where the net began to "fish" along the bottom, and where the net recovery was started. In several cases, significant debris was collected by the net, but slight variations in the subsequent trawl tracks permitted valid sampling.

Upon retrieval of the net, the trawl sample was emptied into a large tray. After the fish were identified by species, they were weighed and measured, using standard length measurements, and visually inspected by an on-board specialist for the presence of lesions, parasites, or deformities. These visual observations were recorded in the field logbook. This sampling was conducted by maneuvering the sampling vessel away from cables, avoiding areas which appeared contaminated, and performing sections away from areas potentially exposed to airborne stack exhaust. Whole body samples were taken by sacrificing the animal using impact to avoid blood loss, and muscle fillet samples were taken using sterile, disposable scalpels. Both types of samples were wrapped in clean aluminum foil, bagged in Ziploc® baggies, appropriately labeled, and immediately cooled on blue ice in coolers.

Quality control in the field was maintained by visual examination of the net and the samples, in particular, checking for invertebrates in the net (benthic invertebrates which could only be collected by proper trawling of the net along the bottom) and ensuring proper scope of trawl line to depth ratio (5:1) was used.

### *Fish Species Collected*

Collection of fish tissue was based on (1) pre-determined candidate species, and (2) the availability of these species during the sampling time period (August-September 1994). During the sampling event, predominantly two species of fish, the California halibut *Paralichthys californicus* and the white croaker *Genyonemus lineatus*, were found in the trawl net at all transects. On the basis of selecton criteria described above, these two species of fish were collected and sampled for whole body (45 samples) and muscle fillet (18 samples). In addition, 18 halibut were used for the purpose of extracting bile from the gall bladder of each specimen.

An attempt was made to collect three specimens of the desired species per trawl. If after three attempts this number of specimens had not been collected, the sampling vessel was instructed to proceed to the next transect.

### *Fish Bile*

Of the 18 California halibut used to obtain samples of bile, nine were used to obtain samples of muscle fillet as well. This reduced the numbers of fish sacrificed and improved the database by providing additional information (muscle tissue body burden and bile concentrations) from the same nine fish. Fish were carefully resected in the field using a sterile, disposable scalpel and a visual determination made by inspection of the gall bladder to determine whether a minimum of 50 µL of bile, a bright green fluid, appeared to reside within the gall bladder. If so, the bile was extruded from the gall bladder of the live fish



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using a sterile, disposable syringe and transferred into 3 mL amber vials for chemical analysis of PAH metabolites. Sample vials were immediately labeled and frozen on dry ice in preparation for immediate shipment to the chemical laboratory.

## 6.4 SAMPLE DOCUMENTATION

This section describes the field logs and chain-of-custody (COC) forms used to document sample collection, description, and shipment.

### 6.4.1 Field Logs

Relevant sampling information was documented in the field logbooks, including detailed visual observations. Sample logs included:

- date and time of sampling;
- sampling conditions;
- visual observations of the sediment collected (both surface and subsurface), including the presence of detritus, detectable odors, and physical characteristics;
- obstructions, such as logs, ships, or buoys, affecting sample placement or retrieval;
- detailed boring logs for the sediment cores collected;
- activities at or adjacent to the piers where sampling was conducted;
- water depth, turbidity, the presence of sheens or other characteristics; and
- Naval or other ship traffic.

### 6.4.2 Chain-of-Custody Forms

COC forms were filled out at the time of sampling for every sample taken. These forms accompanied the samples from the sampling location to the respective laboratories, depending on the type of sample collected and the type of analysis required. BNI retained a copy of the COC forms for completeness of records, and transmitted the original form to the laboratory representative for shipment along with the samples to the laboratory.

## 6.5 SAMPLING EQUIPMENT DECONTAMINATION

For many types of sampling, disposable equipment was used whenever possible because it precludes the need for decontamination and because the chances for cross-contamination are virtually eliminated. Disposable equipment was used for vessel-deployed subsurface sediment sampling (disposable core barrel) and for all of the fish tissue sampling (scalpels and syringes). The remainder of the surface and subsurface sampling required decontamination of implements used to sample for sediment chemistry. Minimal decontamination was required for biological samples; it was necessary only to remove visible sediment particles from the implements that could affect the results of biological testing.



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The typical decontamination sequence for surface and subsurface sediment sampling (chemical samples only) was as follows:

- seawater rinse of all visible residual sediment (rinse discarded overboard),
- wash with nonphosphate detergent (i.e., Liquinox, discarded overboard),
- tap water rinse of all exposed surfaces (rinse discarded overboard),
- deionized/distilled water rinse (rinse discarded overboard),
- pesticide grade methanol rinse of all surfaces for organic chemical scans only (rinseate retained onboard in carboy), and
- organic-free water (HPLC grade) deionized/distilled water rinse (twice, rinse discarded overboard).

After decontamination, implements were wrapped with oil-free aluminum foil and/or plastic to prevent recontamination before further sampling. Two decontamination pads, one for the NAVSTA and one for LBNSY, were set up to decontaminate coring sleeves separately. All IDW was retained separately at the NAVSTA and LBNSY pads for ultimate disposal.

## 6.6 COLLECTION, STORAGE, AND DISPOSAL OF INVESTIGATION DERIVED WASTE

The two types of IDW obtained during sampling activities consisted of methanol-based rinseate, obtained from decontamination of sediment sampling equipment, and sediment cuttings obtained during drilling and sampling operations performed from Piers 2, 12, and 15. Because the latter was classified as a hazardous waste activity, gloves, Tyvek® outerwear, Visqueen® tarpaulins, and miscellaneous sampling detritus were also discarded as IDW. Disposable equipment was used exclusively for the fish sampling; therefore, no decontamination was required. All IDW from Site 7 sampling operations was stored in 55-gallon barrel drums, and disposed of after analysis of contents.



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SECTION 7

# SUMMARY OF LABORATORY METHODS

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# Section 7
# SUMMARY OF LABORATORY METHODS

Laboratory analyses involved physical, chemical, and biological tests performed on sediment, benthic infaunal invertebrate, fish tissue, and fish bile samples. Tests for physical properties included total organic carbon and grain size determinations. Concentrations of U.S. EPA priority pollutant metals, butyltin compounds, total sulfides, acid volatile sulfides, simultaneously extracted metals, pesticides, semi-volatile organic compounds (SVOCs), and PCBs were measured in sediment samples. Fish tissue samples (whole body homogenate and muscle fillet) were analyzed for concentrations of lipids, U.S. EPA priority pollutant metals, butyltin compounds, PAHs, pesticides and PCBs. Fish bile samples were analyzed for equivalent concentrations of selected PAH compounds. Clams that were exposed to sediment samples in the laboratory were tested for concentrations of lipids, U.S. EPA priority pollutant metals, pesticides, PCBs, and PAHs, along with butyltin compounds.

In addition to these analyses, biological testing was conducted on sediment samples. Biological tests included acute and chronic bioassays using collected sediment samples, and benthic community analysis using benthic infaunal invertebrates sieved from sediment.

This section summarizes the procedures used to conduct laboratory analyses. Analytical methods described in Test Methods for Evaluating Solid Wastes (SW-846) (U.S. EPA 1990) were used where applicable. Other methods were used for tests that are not described in SW-846. Laboratory methods and any method modifications, where applicable, are summarized in this section and listed in Tables 7-1 and 7-2 for sediment and fish tissue testing, respectively.

## 7.1 SURFACE SEDIMENT ANALYSIS

Sediment chemical analyses were performed by Pace Environmental Laboratories, Inc. (Pace), located in Camarillo, California. Pace is a California state-certified environmental testing laboratory (Department of Health Services). Chemical analyses were performed at Pace using methods and quality control criteria specified in SW-846 (U.S. EPA 1990). Sediment physical analyses were performed by MEC Analytical Systems, Inc. located in Carlsbad, California. A list of analytes by method of analysis is shown in Table 7-3.

### 7.1.1 Physical Methods

All physical testing of surface sediment samples was conducted at the MEC Analytical Systems, Inc. laboratory in Carlsbad, California. Following is a brief summary of the analytical protocols used to measure TOC and grain size distributions in test and reference sediment.

#### 7.1.1.1 TOTAL ORGANIC CARBON

Sediment samples were analyzed for TOC following the method described by Menzel and Vaccaro (1964). Homogenized sediment samples (0.018 to 0.02 g) were digested in concentrated phosphoric acid at room temperature and diluted with distilled water followed by potassium persulfate. Samples were then heated to 259°F at 17 to 19 psi for 6 hours after purging with purified oxygen and cooled overnight in a sealed ampoule.

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Ampoules were then broken, and the carbon dioxide released from the remaining organic carbon was measured with an infrared detector.

#### 7.1.1.2 GRAIN SIZE

Methods developed by Plumb (1981) were used for grain size analysis. A 30 to 40 g wet weight (ww) subsample was transferred to a 240 mL bottle, mixed with 150 mL of deflocculent (sodium hexametaphosphate), and allowed to stand overnight. The deflocculated sediment sample was sieved through a 64 micron sieve (U.S.A. Standard Testing Sieve No. 230) to separate the sand size fraction from the silt-clay size fraction. The sand size fraction was dried and shaken through a series of eleven U.S.A. Standard Testing Sieves, which ranged from -1.0 to +4.0 phi in 0.5 phi intervals. The phi value describes the grain size diameter and it is calculated as $-\log_2$ of grain size in micros. The fraction of the sample retained on each sieve was weighed on a digital electronic balance. The silt-clay size fraction, between +4.0 to >9.0 phi, was measured in whole phi intervals by standard pipette timed-withdrawal methods, and weights for each phi interval were calculated. These two methods provided fractional weights for each interval measured.

### 7.1.2 Chemical Analyses

All chemical analyses of surface sediment samples were conducted at the Pace laboratories in Camarillo, California. Following are brief summaries of the analytical protocols used to measure chemical contaminants in test and reference sediment.

#### 7.1.2.1 PRIORITY POLLUTANT TRACE METALS

Sediments were analyzed for the standard U.S. EPA suite of 13 priority pollutant metals (Table 7-1). Approximately 40 g of sediment was acid digested (U.S. EPA Method 3050A). Beryllium, cadmium, chromium, copper, lead, nickel, and zinc were analyzed using inductively coupled plasma emission spectrometry (ICP) (U.S. EPA Method 6010). Antimony, arsenic, selenium, silver, and thallium were analyzed using atomic absorption with a graphite furnace (AA/GF). Mercury was analyzed using the cold-vapor extraction following U.S. EPA Method 7470. The method references are shown in Table 7-1.

#### 7.1.2.2 AVS/SEM AND TOTAL SULFIDES

Acid volatile sulfides (AVS) were analyzed following a U.S. EPA draft method (Allen et al. 1993) for determination of acid volatile sulfide in sediment. The AVS in sediment was first converted to hydrogen sulfide ($H_2S$) by acidification with concentrated hydrochloric acid at room temperature. The $H_2S$ was purged from the sample and trapped in a sodium hydroxide aqueous solution. Once in solution, the sulfide reacted with n-n-dimethyl-p-phenylenediamine to form methylene blue. Quantification of AVS was performed by measuring the spectrophotometric determination of methylene blue.

Simultaneously extracted metals (SEM) were analyzed following the same U.S. EPA protocol as used for AVS. Sediment samples were analyzed for five divalent priority pollutant trace metals which consisted of cadmium, copper, zinc, lead, and mercury.



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Metal analysis was performed on the acid digest from the AVS procedure, referred to as the SEM fraction. After release of the $H_2S$, the acidified sediment sample was membrane filtered. The sample digest was then analyzed for the trace metals using the same method as summarized above for the analysis of total metals.

Total sulfides extracts were prepared following U.S. EPA Method 9030. The impingate collected using this method was quantitated according to U.S. EPA Method 376.2 on a Lachat Flow Injection Analyzer Model 80.

#### 7.1.2.3 BUTYLTINS

Butyltins were analyzed from sediment samples using a GC equipped with a flame photoionization detector (FPD) following the method of Uhler and Durell (1989). Secondary confirmation was performed using gas chromatograph/mass spectrometer (GC/MS). Sediment extraction procedures followed a modification of U.S. EPA Method 3550. After extraction by sonication in hexane-tropolone chelation, the sample was filtered and the filtrate concentrated in a Kuderna-Danish apparatus. The concentrate was then spiked with the surrogate, tripentyltin chloride, and derivatized with a Grignard reagent. The Grignard reaction was quenched after 15 to 20 minutes using acidified water. The organic layer containing the derivatized organotins was collected in a 30 mL screw-topped vial and concentrated using a nitrogen blow-down apparatus. The sample was then subjected to gel permeation chromatography (GPC) or florisil column chromatography cleanup using hexane as the extraction solvent. The sample was concentrated to 0.200 mL and analyzed by GC/FPD.

#### 7.1.2.3 SVOCS, PESTICIDES, AND PCBS

Sediment samples were prepared for both SVOC (U.S. EPA Method 8270) and pesticides and PCBs (U.S. EPA Method 8080) analyses by ultrasonic extraction (U.S. EPA Method 3550). Aliquots of 40 to 100 g of sediment were extracted with methylene chloride. The extracts were concentrated in a Kuderna-Danish apparatus. The pesticides/PCBs extract was solvent-exchanged into hexane. Procedural blanks, matrix spikes, matrix spike duplicates, and standard reference materials were analyzed in the laboratory at a frequency of one per 20 samples. Deuterated surrogates and internal standards were analyzed for every sample.

Sediment samples were analyzed for 19 chlorinated pesticides and seven PCB Aroclors using a gas chromatograph (GC) equipped with an electron capture detector (ECD) (U.S. EPA Method 8080). Compound confirmation was performed using GC/MS. U.S. EPA priority pollutant SVOCs were analyzed by GC/MS following U.S. EPA Method 8270.

### 7.1.3 Bioassay Methods

All bioassay and bioaccumulation testing was conducted at the MEC Analytical Systems, Inc. laboratory in Tiburon, California. Following is a brief summary of each bioassay test protocol used to measure toxicity caused by sediments (solid phase or pore water).



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### 7.1.3.1 POREWATER ACUTE TEST (ECHINODERM)

The purpose of this test was to determine the percent of abnormally developed echinoderm larvae over a 72-hour test period, using sand dollar (*Dendraster excentricus*) larvae as the test organism. Porewater was extracted from collected sediment within 24 hours of collection using centrifugation, and five test concentrations (6.25, 12.5, 25, 50, and 100 percent) in 5 mL samples were used for each test. Each dilution was run with three replicates. Clean seawater was used for sample dilutions. The passing performance criterion for each test was $\geq$ 70 percent normal development in the control. Survival and development data were used to estimate $LC_{50}$ values (lethal concentration for 50 percent of test organisms), $IC_{50}$ (inhibitory concentration for 50 percent of test organisms), and NOEC (no observable effects concentration) for each level of dilution.

### 7.1.3.2 SOLID PHASE ACUTE TEST (AMPHIPOD)

The purpose of this test was to determine the percent mortality in adult marine amphipods over a 10-day test period, using the standard sediment test amphipod, *Rhepoxynius abronius*, as the test organism. The solid phase was used as collected, with five laboratory replicates run per sample, using 2 cm of test sediment per container. Because it was an acute test and survival rates in test organisms were expected to be relatively high, the passing performance criterion for each test was $\geq$80 percent survival in the negative control. Because bulk sediment was used, no serial dilutions were necessary, and therefore, $LC_{50}$ or $IC_{50}$ values were not calculated as for the porewater acute test. Instead, the percentage of organisms surviving was averaged over the five laboratory replicates. As an additional data point, the percentage of surviving organisms which were capable of reburying in the sediment was also reported as a measure of the vigor of the surviving organisms. Reburial is often considered to be a viable toxicological endpoint for assessing sediment infaunal organisms.

### 7.1.3.3 SOLID PHASE CHRONIC TEST (POLYCHAETE)

The purpose of this test was to determine the percent mortality in adult polychaete worms and their growth rates over a chronic (28-day) exposure period. This test was conducted using the standard sediment test polychaete worm, *Neanthes arenaceodentata*, as the test organism. The solid phase was used as collected, with five laboratory replicates run per sample. Because it was a chronic test, survival rates in control organisms were expected to be low relative to those used in an acute test; thus the passing performance criterion for each test was $\geq$ 70 percent survival in the negative control. Because bulk sediment was used, no serial dilutions were necessary, and therefore, $LC_{50}$ or $IC_{50}$ values were not calculated as for the porewater acute test. Instead, the percentage of organisms surviving was averaged over the five laboratory replicates. As an additional data point, somatic growth rates were also reported by averaging the weights of dried organisms at the conclusion of the 28-day exposure period. Growth is considered to be a viable toxicological endpoint for assessing the health and viability of sediment infaunal organisms.



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#### 7.1.3.4 CLAM BIOACCUMULATION TEST

The purpose of this test was to determine the tissue residues of select chemical analytes in clams which have been exposed to site sediments for a 28-day exposure period. This test was conducted using the standard sediment test clam, *Macoma nasuta*, as the test organism. The solid phase was used as collected, with five laboratory replicates run per sample. Although the primary purpose of the test was to conduct chemical analyses, the test was a bioassay and included a measurement of the toxicological response of the clams as well. Because it was a chronic test, survival rates in control organisms were expected to be low relative to those used in an acute test; thus the passing performance criterion for each test was $\geq$ 70 percent survival in the negative control. Because bulk sediment was used, no serial dilutions were necessary, and therefore, $LC_{50}$ or $IC_{50}$ values were not calculated as for the porewater acute test. Instead, the percentage of organisms surviving was averaged over the five laboratory replicates. At the end of the exposure period, the clams were sacrificed, the tissue extracted (see chemical method below), and subjected to chemical residue analysis in tissue.

### 7.1.4 Benthic Infauna

At the time of preparation of this document, data for benthic infaunal invertebrates were not yet generated. Findings will be included in the RI Report.

## 7.2 SUBSURFACE SEDIMENT ANALYSIS

The chemical procedures followed for surface sediment chemical analyses, described above, were also followed for the subsurface sediment samples. However, biological tests, total sulfides, and AVS/SEM analyses were not conducted on subsurface sediments because of the naturally occurring toxicity associated with anaerobic conditions. A list of analytes by method of analysis is shown in Table 7-4.

## 7.3 TISSUE CHEMISTRY

Fish tissue (whole body and muscle fillet) and clam tissue samples were analyzed for bioaccumulation of chlorinated pesticides, PCB Aroclors, PAH, butyltins, priority pollutant trace metals, and percent lipids (Table 7-5). Analyses were also performed on fish bile material for parent PAH metabolite compounds.

### 7.3.1 Fish Tissue Analyses

Chemical analyses were performed on fish and clam (*Macoma nasuta*) tissue by Pace. Analyses consisted of the following suite of organic and inorganic analytes: chlorinated pesticides, PCB Aroclors, PAH, butyltins, priority pollutant trace metals and percent lipids. Extraction and analytical methodologies followed the methods and quality control criteria specified in SW-846 (U.S. EPA 1990) with appropriate modifications for tissue, as mentioned in the following subsections.



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#### 7.3.1.1 LIPID ANALYSIS

Lipid analysis in fish was conducted using a Soxhlet extractor with freon to digest the tissue, following U.S. EPA Method 9071. This method specifies 20 g of tissue, but this amount was not always available, especially when analyzing clams. A gravimetric determination was used to calculate percent lipids for both clam and fish.

#### 7.3.1.2 PRIORITY POLLUTANT TRACE METALS

Tissue samples were analyzed for the same 13 priority pollutant metals quantified in sediment samples. The same U.S. EPA methods described above for sediments were utilized for tissue except for lead. Lead was analyzed using AA/GF following U.S. EPA Method 7421. A 5 to 10 g tissue sample was homogenized and digested with concentrated nitric and perchloric acids prior to analysis by ICP or AA/GF (Tetra Tech 1986).

#### 7.3.1.3 BUTYLTINS

Tissue samples were analyzed for organotins using the GC/FPD method described in the above sediment section. In addition, a gel permeation chromatography or florisil clean-up was performed to achieve the practical quantitation limit of 1 µg/kg and reduce viscosity of the extract for injection onto the GC.

#### 7.3.1.4 SVOCS, PESTICIDES, AND PCBS

The methods for tissue extraction and analysis generally followed those used for sediment, except that additional cleanup methods and changes in instrumentation were made to minimize interferences from salts and non-polar fatty acids. Tissue samples were prepared for both SVOC, pesticide, and PCB analyses by Soxhlet extraction (U.S. EPA Method 3540). Aliquots of 10 to 100 g of tissue mixed with anhydrous sodium sulfate were prepared with a 1:1 mixture of methylene chloride and acetone. The extracts were then passed through a large anhydrous sodium sulfate column and concentrated in a Kuderna-Danish apparatus. The sample extracts were then subjected to alumina column (U.S. EPA Method 3610) and GPC (U.S. EPA Method 3640) cleanup.

Chlorinated pesticides and seven PCB Aroclors were analyzed in tissue samples, using the same U.S. EPA method (U.S. EPA Methods 8080) used for sediment samples. Analysis of PAH was performed using GC/MS (U.S. EPA Method 8270) and modified by operating the GC/MS in the selective ion monitoring mode. The SW-846 methods were modified to include use of the Soxhlet extraction, alumina cleanup, and GPC cleanup with the tissue sample matrix (Tetra Tech 1986).

### 7.3.2 Fish Bile Analysis

Fish bile analysis was performed by Battelle Ocean Sciences located in Duxbury, Massachusetts. All PAH metabolite analyses were performed in accordance with Battelle Standard Operating Procedure (SOP) 5-199 (Polynuclear Aromatic Hydrocarbon Metabolite Analysis of Bile and Tissue Samples using a high performance liquid



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chromatograph [HPLC]). This method is based on Krahn et al. (1986), and has been applied in a series of PAH metabolite investigations over the past several years. Quality assurance requirements specified in the protocol were followed throughout the testing procedure.

Four PAH homologues were analyzed, which included, two-, three-, four- and five-ring compounds and their metabolites represented by the surrogates: naphthalene, phenanthrene, pyrene and benzo(a)pyrene, respectively. The initial instrument calibration was established and the correlation coefficient of the calibration was determined by analyzing a continuing calibration check standard approximately every 12 samples. Pure methanol "samples" were analyzed as method blanks to monitor background signal. The methanol blank was considered acceptable if no resolved analytes, or unresolved components, were detected at greater than three times the detection limit in the chromatographic region of interest. A set of matrix spike and matrix spike duplicate samples were analyzed with the field samples, as was one set of field sample triplicates.

The samples were logged into the laboratory according to Battelle standard protocols (Battelle SOP 5-199). Samples were stored in a freezer at approximately -20°C until the day they were removed for analysis. Residual samples are currently stored at -20°C at the Battelle.

Following extraction from halibut gall bladders in the field, bile samples were placed in 2 mL glass sample vials. The samples were submitted for instrumental analysis with minimal sample preparation. The sample was vortexed and a subsample transferred to a 200 mL autosampler vial prior to analysis. An average density of the bile was determined, which can be used to convert the data to a weight basis by accurately weighing a 50 or 100 mL subsample from four separate bile samples.

The PAH metabolite analysis was performed using a HPLC. The method employs a gradient HPLC separation on a 25-cm long, 4.6-mm inner diameter, octadecylsilane (i.e., C-18), reverse-phase column with acetic acid/water and methanol as the mobile phases (Battelle SOP 5-199; Krahn et al. 1986a, 1986b, 1987). A Hewlett-Packard 1050 series quaternary gradient HPLC system, coupled with a Hewlett-Packard 1046A fluorescence detector, was used for the analysis. A sample injection volume of 5 mL was used. The instrument was calibrated with multilevel calibration. Two-, three-, four-, and five-ring metabolites, represented by naphthalene, phenanthrene, pyrene, and benzo(a)pyrene, were determined by four separate HPLC analyses of the samples using detector wavelength settings applicable to the four target PAHs.

Detector excitation and emission wavelengths were pre-selected to levels of high sensitivity and specificity on the fluorescence detector, each optimized specifically for the four parent PAH homologues. The analysis of primarily two-ring metabolites, expressed as naphthalene equivalents, was performed with a detector wavelength pair setting of 286/328 nm (excitation/emission). The analysis of primarily three-, four-, and five-ring metabolites, as phenanthrene, pyrene, and benzo(a)pyrene equivalents was accomplished with detector wavelength pair settings of 258/359, 318/378, and 364/430 nm, respectively.



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PAH metabolites were quantified by an external standard method, using the response of the parent PAH for quantification. The detection limit was approximately 0.01 to 0.05 µg/mL for the unresolved PAH metabolite component. The total PAH metabolite concentrations determined and reported in this study are based on the total resolved and unresolved area in the applicable chromatographic region.



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## SECTION 8

# OVERVIEW OF QUALITY ASSURANCE / QUALITY CONTROL PROCEDURES

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Section 8

# OVERVIEW OF QUALITY ASSURANCE / QUALITY CONTROL PROCEDURES

Quality assurance and quality control (QA/QC) were consistently emphasized throughout every phase of the RI, including data collection in the field, transmittal of samples to laboratories, and verification of procedures and findings. Physical and chemical data were subject to validation using these procedures by the Naval Energy and Environmental Support Activity (NEESA).

At the time of this writing, data validation had just been completed, and the findings of the validators were in the process of being transmitted to BNI. Consequently, the data validation results are not included in TM6 and will, therefore, be incorporated in the RI Report. Brief discussions and an overview of the QA/QC procedures employed in this RI are presented in this section.

## 8.1 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) are qualitative and quantitative statements that specify the quality of data required to support important decisions needed as part of RI/FS activities. DQOs are determined based on the end use of the data to be collected.

The DQO process, undertaken during the planning stage, resulted in a sampling and analysis plan that detailed the sampling approach and stated the confidence required to make the appropriate decisions using the field data. This process involved identification of the minimum quantity of data required to attain the stated objectives, development of a conceptual site model, and refinement of decision types required during the RI/FS process. The process also involved determining criteria for making decisions, and identifying and selecting analytical and sampling approaches required to support those decisions. These components were then integrated into an overall sampling design to achieve statistical objectives.

## 8.2 FIELD SAMPLING

Field QA/QC procedures followed those specified in the Sampling and Analysis Plan (JEG 1993b) and Quality Assurance Project Plan (QAPP, JEG 1993b). These procedures included taking field duplicates for surface and subsurface sediment samples, and rinsate and field blanks for subsurface sediment samples. Other field QA/QC procedures included decontamination of sediment sampling implements as well as rinsing implements used to conduct biological sampling with seawater.

Samples were placed into jars or other appropriate containers in the field, and stored in coolers with blue ice until shipped to the laboratory. COC forms were carefully filled out and accompanied each sample until its analysis was complete. COC forms represent an important QA step because they represent a record of all entities handling or receiving the sample into custody at every stage of sample processing.



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## 8.3 LABORATORY ANALYSIS

Each of the laboratories implemented internal laboratory-specific QA/QC procedures for physical, chemical, and biological tests, and followed standard protocols which specified laboratory QA/QC procedures to improve precision and accuracy from these analyses. For example, all chemical analyses of surface/subsurface sediment and tissue required the use of laboratory procedural blanks, matrix spikes, matrix spike duplicates, and standard reference materials analyzed at a frequency of one per 20 samples. Deuterated surrogates and internal standards were used as additional QA procedures as well. For bile analysis, matrix spike, matrix spike duplicates, and internal standards were analyzed with the field samples, as was one set of field sample triplicates.

## 8.4 CHEMICAL DATA VERIFICATION / VALIDATION

In addition to compliance with internal laboratory QA procedures, physical and chemical test results were subjected to formal data validation following NEESA guidelines. This validation procedure was conducted by an independent contractor (Laboratory Data Consultants in Carlsbad, California) to assure objectivity in evaluating laboratory-generated data.

Separately from validation of data, internal data verification for physical, chemical, and biological data was also conducted. The hard copy database was checked against the electronic database for transcription or other errors which could affect data quality, since the electronic database would be used extensively during data evaluation and calculations. In addition to internal QA verification conducted by the individual laboratories, verification of calibration curves, where appropriate, and evaluation of matrix spike (surrogate recovery) were conducted to assess that these data met project DQOs, as specified in the Data Management Plan (BNI 1994e).

The project QAPP (JEG 1993b) notes that both NEESA Levels C and D (U.S. EPA Level III and Level IV, respectively) data support packages would be prepared for harbor sediments, although it is not possible to report both levels for the same data. Because it was inappropriate to report Level D for sediments, due in part to the use of certain non-standard analytical methods, Level C was used as a reporting level for all sediment chemistry data. This is consistent with U.S. EPA guidelines (1992b), which state that Level C is adequate to support baseline risk assessment and delineate remedial action objectives. Nevertheless, 10 percent of the data were subjected to Level D validation and the remaining 90 percent were subjected to Level C validation. This level of validation provided an additional rigorous spot check for laboratory data. Validation included a check of the adequacy of sensitivity for individual testing sequences (i.e., whether analytical detection limits were adequate).

Analyses of AVS metals, total sulfide, and butyltin in sediment were also reviewed by Laboratory Data Consultants, Inc. using NEESA Levels C and D guidelines, as appropriate. The results were validated following generally accepted methodology for



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conducting data validation, as documented in NEESA (1988), U.S. EPA (1988), U.S. EPA. (1991a), and Allen et al. (1993).

## 8.5 BIOASSAY DATA VERIFICATION

Bioassay test data were verified using a project-specific, multi-step approach designed to identify potential data inaccuracies or inconsistencies. The verification approach included:

- a spot check to verify that raw data were accurately transferred to the data summaries,
- a check of test water quality data (e.g., DO levels, temperature, salinity, ammonia, sulfides),
- a check of exposure conditions, including acclimation of the organisms, length of exposure, feeding protocols, and
- a check of the survival data for test organisms, using both negative and positive control tests, to assure the viability of each test.

## 8.6 BENTHIC COMMUNITY DATA VERIFICATION

At the time of preparation of this document, data for benthic infaunal invertebrates were not yet generated. Findings will be included in the RI Report.

## 8.7 DATA USABILITY

Guidance for overall data usability in risk assessment was based on U.S. EPA (1992d) Guidance for Data Usability in Risk Assessment. This guidance document, designed to address chemical analytical data, identifies several data quality issues which are frequently encountered and need to be addressed in risk assessments. Five criteria are defined by the U.S. EPA and used to evaluate data usability for risk assessment, which include:

- data sources,
- documentation,
- analytical methods and adequate detection limits,
- data review, and
- reports to the risk assessor.

The manual provides guidance on interpreting the impact of sample collection, analytical techniques, and data review procedures on the usability of analytical data in risk assessment.

These data usability criteria were applied in RI planning to guide the design of sampling plans and select analytical methods for the data collection effort. This includes guidance concerning how to determine the degree of confidence in the risk assessment based on the



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level of uncertainty of the analytical data determined, using the usability criteria. For the data generated and validated for Site 7, data usability criteria extend to:

- how far outside the method-specified QC limits the various parameters were measured,
- the fraction of samples affected by any specific excursion,
- accuracy and reliability of the data estimates,
- adherence to detection limits were met during analysis,
- whether data precision goals were met (e.g., a relative percent difference [RPD] between matrix spike and spike duplicates of less than or equal to 35 percent), and
- whether independent methods for analysis of specific compounds were confirmatory e.g., analyzing specific metals by both AA/GF and ICP).

## 8.8 DATABASE MANAGEMENT

Following verification and validation, the data generated during the course of the Site 7 RI were input into a centralized, relational database maintained by BNI. This database houses physical, chemical, and biological data, and is designed to allow queries by specific data fields for the purpose of conducting the functions required to complete the RI and the risk assessment. The format and structure of this database are compatible with those of other Contract Task Orders being performed by BNI for CLEAN II. Any changes required for project data would be input through this centralized location in order to eliminate the possibility of conflicting data sources.



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## SECTION 9

# PRELIMINARY RESULTS OF SITE ASSESSMENT

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Section 9

# PRELIMINARY RESULTS OF SITE ASSESSMENT

Sediment and fish tissue samples were collected from locations within the West Basin and at three reference locations in outer San Pedro Bay. Samples were analyzed for physical characteristics, U.S. EPA Priority Pollutants, toxicity, infaunal community structure, and bioaccumulation. This section presents the results of the data collection effort and includes a discussion of the distribution and spatial patterns of the physical, chemical, and biological data found at Site 7. The results presented herein are based on preliminary and unvalidated data. Validation of data has just been completed at the time of this writing, and thus the results of validation had not yet been reviewed and incorporated into the database. All results of sediment analyses are presented below as dry weight units, and all results of tissue analyses are presented as wet weight units.

## 9.1 NATURE AND EXTENT OF CONTAMINATION

Sediment data were analyzed for physical, chemical, and toxicological parameters, which will be used to describe the nature and extent of sediment contamination. Physical measurements (i.e. TOC and grain size), which are known to influence both sediment toxicity and contaminant distribution in sediment, provide an understanding of the character of the sediment. While chemical analytes provide direct measures of contaminant distribution, bioassay toxicity tests are used to evaluate the potential toxicological effect of sediment contamination. Benthic community analysis evaluates the infaunal invertebrates found in the sediment, which are sensitive to and useful indicators of various disturbances to the benthic environment. Tissue bioaccumulation tests of resident fish and bioassay clams are useful in evaluating the potential for contaminant uptake in the tissues of marine organisms from the sediment.

This section reviews the data collected during the site assessment, and provides a preliminary assessment of the magnitude and distribution (nature and extent) of sediment contamination. This evaluation was conducted both by area within the West Basin and also by data type (surface sediment, subsurface sediment, toxicity data, fish tissue, clam tissue), and it was intended to provide direct support for the risk assessment process.

The distributions of physical, chemical, and biological characteristics of sediment in the West Basin generally appeared to follow a predictable pattern, based on factors such as sediment deposition patterns and proximity to specific shore-based features such as piers, seawalls, ship moorings, and stormwater outfalls. Sediments beneath the piers generally exhibited fine-grained particles (consisting of higher percent silt and clay), contained greater levels of sulfides, and were higher in organic content than sediment from open water areas of the West Basin. This latter observation is consistent with sediments that are not well oxidized, and may be associated with poor light penetration and water circulation.

Concentrations of chemical contaminants in sediments underneath the piers were generally higher than those of the open areas of the West Basin and project reference stations Contaminants probably accumulated in sediment beneath the piers because these areas are low energy locations and generally favorable for sedimentation; these sediments have remained relatively undisturbed after the piers have been constructed, and numerous



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activities which occur on or near piers (fueling, loading, painting, and ship repair) likely contribute to contaminant discharge into the sediment beneath the piers as well as into the overall West Basin.

The sediments in areas along the seawall of the NAVSTA, the LBNSY, and the Navy Mole contained concentrations of chemical contaminants generally higher than those of the central areas of the West Basin, and somewhat greater than project reference concentrations as well. Higher levels of contaminants in sediments near the seawall may be related to local stormwater drains or discharges associated with activities conducted near the seawall and piers.

## 9.2 SEDIMENT PHYSICAL DATA

Sediment physical data were obtained for all surface sediment and subsurface sediment samples collected from West Basin stations. Sediment physical data include the results of total organic carbon (TOC) and grain size analyses.

### 9.2.1 Surface Sediment Physical Data

Surface sediment from beneath 11 pier stations, from 34 other stations in the West Basin, and from ten reference stations were analyzed for TOC and grain size (Table 9-1).

Results of analyses for TOC in sediments from the West Basin (excluding piers) range from 0.07 to 1.8 percent. Concentrations of TOC in sediments from beneath the piers range from 1.3 to 2.3 percent. The highest concentrations of TOC were detected at test stations beneath piers and at stations near land and the Mole. TOC in sediments at reference stations ranges from 0.43 to 1.9 percent.

Surface sediment grain size for West Basin ranged widely from fine-grained sediments (93 percent fines) to coarse-grained sediments (79 percent sand). Grain size data are presented in Table 9-1 as percent clay, silt, sand, and fines (the sum of percent clay and silt). Two other parameters of grain size distribution are also presented, which are median phi and mean phi. The phi value describes the grain size diameter and is calculated as $-\log_2$ of grain size in microns.

Grain size data were evaluated to identify areas of similar sediment physical characteristics. Because historical dredging activities have altered the normal distribution of sediment grain size, median phi and mean phi values are not consistently representative of the sediments. The percentage of fine sediments was used as an indicator of sediment grain size characteristic.

Sediments from stations near Piers 1, 2, 3, 15, and 16 had similar levels of percent fines, ranging from 82 to 94 percent, and exhibited the finest sediment grain size (greatest percentage of fines) inside the West Basin. The coarsest sediment grain size in the West Basin were found in the northwest section (Stations 1, 2, 5, 6, 7, and 8) and at the eastern opening of the West Basin (Stations 24, 25, and 32).



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The grain size of sediments beneath the piers has a range similar to the range of grain size of sediments of the open areas of the West Basin. The fraction of fine-grained sediments at stations located beneath the piers ranged from 38 to 94 percent.

Sediments at two of the reference areas, Stations 40010 and 40018, exhibited predominantly fine-grained sediments; percent fines ranged from 67 to 96 percent and 68 to 83 percent, respectively. Sediments at the reference area represented by Station 40032 exhibited coarser grain size than sediments at the other two reference areas, where fine grain size ranged from 15 to 17 percent.

### 9.2.2 Subsurface Sediment Physical Data

Subsurface sediment from beneath three pier stations, from five other stations in the West Basin, and from two reference stations were analyzed for TOC and grain size (Table 9-2).

Results of subsurface sediment TOC analysis in West Basin samples (excluding piers) range from 0.06 percent for the 1- to 2-meter sample at Station 29, to 0.43 percent for the 0- to 1-meter sample at Station 24. TOC was higher in the 0- to 1-meter sample than the 1- to 2-meter sample at all stations. TOC levels in the top two meters of sediment were lowest at Station 29. At Station 6, TOC percentage decreased with depth of sample, except that the 2- to 3-meter sample had a higher TOC percentage than the other core samples at this station.

Subsurface sediment from beneath the piers showed TOC levels ranging from 0.20 percent for the 4- to 5-meter sample at Station 46 (Pier 12), to 2.39 percent for the 2- to 3-meter sample at Station 51 (Pier 2). Sediment core samples at stations beneath the piers showed a general trend of decreasing TOC with depth of core sample.

Reference stations generally had similar TOC levels (0.05 percent at 4- to 5-meter depth to 3.63 percent at 0- to 1-meter depth) as the West Basin stations, but lower TOC levels than the pier stations.

Subsurface sediment in the top 1-meter core ranged from 8 percent fines at Station 8 to 66 percent fines at Station 24. In the 1- to 2-meter core of subsurface sediment, sediment fines ranged from 6 percent at Station 8 to 70 percent at Station 14. Sediment at Station 8 had higher sand content in the upper two meters than the other West Basin Stations. Station 14 showed lower sand content in the upper two meters than the other West Basin Stations. Station 6, which was sampled to a depth of 5 meters, showed a high percentage of sand in the 2-meter core of subsurface sediment and a low percentage of sand in the 3-meter range. The highest clay percentage and the highest silt percentage were both reported from Station 24.

Subsurface sediment beneath the piers had a higher percent of fine grain size than sediment from the other West Basin areas. Percent fines ranged from 34 percent at Station 46 (Pier 12) to 84 percent at Station 51 (Pier 2). Sediment core samples taken from Station 46 generally had higher percentages of sand than did the core samples from Stations 43 and 51. Subsurface sediment from beneath the piers had a higher content of gravel than did the subsurface sediment taken from the other West Basin areas. Gravel content was



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higher in the mid-depth core sample (3-meter) than in the upper two core samples (1-meter, 2-meter) or the lower two core samples (4-meter, 5-meter). Gravel content at the 3-meter depth was 30 percent at Station 43 and 21 percent at Station 51.

Subsurface sediment grain size in West Basin samples showed more variation with sample depth than those from the project reference areas. Sediment fines content in core samples ranged from 83 percent to 99 percent at Station 40010, and from 50 percent to 65 percent at Station 40018. Grain size distribution at the project reference stations appears to change little with depth of the core sample.

## 9.3 SEDIMENT CHEMICAL DATA

Surface sediment and subsurface sediment samples were analyzed for metals, butyltins, polynuclear aromatic hydrocarbons, PCBs, pesticides, and semivolatile organic compounds. Surface sediment samples were also analyzed for total sulfides and acid volatile sulfides with simultaneously extracted metals.

### 9.3.1 Surface Sediment Chemical Data

This section presents the general distribution of chemical compounds in surface sediments of the West Basin by location (station number) and analyte. The analytical results indicate the presence of 35 chemical compounds in West Basin sediments, including ten high molecular weight PAHs (HPAH), three low molecular weight PAHs (LPAH), eleven priority pollutant trace metals, two butyltin isomers, one PCB Aroclor, five chlorinated pesticides, phenol, and two phthalate esters (Table 9-1).

Surface sediments beneath the piers harbor 34 individual chemical compounds, including ten HPAH, six LPAH, ten trace metals, three butyltin isomers, one PCB, two chlorinated pesticides, phenol, and one phthalate ester. Preliminary analytical results of physical and chemical analyses of surface sediments in West Basin and reference stations are summarized in Table 9-1.

#### 9.3.1.1 METALS

Arsenic levels were detected in all of the sediment samples from the West Basin. Concentrations of arsenic ranged from 7.7 to 15 mg/kg in sediments beneath the piers and from 1.6 to 19 mg/kg in sediments from the open area of the West Basin. Higher concentrations were detected in samples beneath Pier 7, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Mole. The lowest concentrations were reported from Station 6 sediment samples in the northwest area of the West Basin and from Stations 24, 25, and 29 near the opening to the West Basin.

Chromium was detected in sediments at all the stations in the West Basin. Levels of chromium ranged from 34 to 330 mg/kg in sediments beneath the piers and from 10 to 88 mg/kg in sediments from the open area of the West Basin. Higher concentrations of chromium were detected in samples beneath the piers, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Mole.



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Copper was detected at all stations in West Basin ranging from 120 to 330 mg/kg in sediments from beneath the piers and from 13 to 530 mg/kg in sediments in the open areas of the West Basin. Copper was detected at higher concentrations in samples beneath the piers, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Mole. The highest concentration (530 mg/kg) was reported from Station 17 along the seawall near Piers 2 and 3.

Concentrations of lead were detected at all stations in the West Basin ranging from 54 to 94 mg/kg in sediments from beneath the piers and from 5 to 180 mg/kg in sediments in the open areas of the West Basin. The higher concentrations of lead were detected in samples from beneath the piers, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Mole. The highest concentration (180 mg/kg) was reported from Station 17 along the seawall near Piers 2 and 3.

Mercury was detected at all stations in the West Basin, except Station 24 located near the center of the West Basin. Concentrations of mercury range from 0.27 to 0.88 mg/kg in sediments from beneath the piers and up to 1.8 mg/kg in sediments in the open areas of the West Basin. Mercury was detected at higher concentrations in samples beneath the piers, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Mole. The highest concentration (1.8 mg/kg) was reported from Station 17 along the seawall near Piers 2 and 3.

Concentrations of nickel were detected at all stations in the West Basin (Table 9-1) ranging from 19 to 35 mg/kg in sediments from beneath the piers and from 8 to 41 mg/kg in sediments in the open areas of the West Basin. Nickel was detected at higher concentrations in samples beneath the piers, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Mole. The highest concentration (41 mg/kg) was reported from Station 22 along the seawall near Piers 1 and 2.

Selenium was detected in only one sediment sample from West Basin stations. Station 21, located along the northern side of the Mole between Piers 15 and 16, reported a concentration of 1.6 mg/kg.

Concentrations of silver were detected at all stations in the West Basin, except at Station 24 near the center of the West Basin. Silver concentrations ranged from 1.5 to 4.1 mg/kg in sediments from beneath the piers and up to 19 mg/kg in sediments in the open areas of the West Basin. Concentrations of silver were higher in samples from beneath the piers, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Mole. The highest concentration (19 mg/kg) was reported from Station 26 near Pier 16 and the Mole.

Zinc was detected at all stations in the West Basin ranging from 190 to 620 mg/kg in sediments from beneath the piers and from 33 to 480 mg/kg in sediments in the open areas of the West Basin. Zinc was detected at higher concentrations in samples beneath the piers, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Mole. The highest concentration (620 mg/kg) was reported from Station 50 beneath Pier 3.



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### 9.3.1.2 TOTAL SULFIDES AND AVS/SEM

The results of total sulfide analysis of sediments from the West Basin sampling sites range from 1 to 5,400 mg/kg (Table 9-1). Concentrations of total sulfide were greatest at sites beneath piers, ranging from 360 to 5,400 with a mean of 3,800 mg/kg. Concentrations of total sulfide in West Basin sediments, excluding pier sites, ranged from 1 to 400 mg/kg. Concentrations of total sulfide in sediments from the reference areas ranged from 17 to 250 mg/kg.

### 9.3.1.3 BUTYLTINS

Monobutyltin and dibutyltin were each only detected in one surface sediment sample from the West Basin. Tributyltin was not detected in surface sediment of the West Basin. Monobutyltin was detected at Station 43 beneath Pier 15. Dibutyltin was detected in sediments from Station 47 beneath Pier 9.

### 9.3.1.4 POLYNUCLEAR AROMATIC HYDROCARBONS

Sediments from the West Basin were analyzed for 16 PAHs, including ten HPAH and six LPAH compounds. Summary results are presented for total LPAH and total HPAH (Table 9-1).

Total PAH concentrations ranged from nondetected to 3,900 µg/kg in sediments from the West Basin, and from nondetected to 23,000 µg/kg in sediments located beneath the piers. While most of the sediment samples from beneath the piers had concentrations of total PAH greater than 1,000 µg/kg, the sediment samples from beneath the ends of Piers 12 and 16 had no detectable levels. The lowest levels of total PAH were found in samples from the center of the West Basin and near its eastern opening. Stations near the seawall along the northern portion of the West Basin and along the north side of the Mole had concentrations of total PAH greater than the those in sediments from the central area of the West Basin.

Total HPAH concentrations show a pattern similar to the total PAH concentrations. The higher levels of total HPAH were found in sediment samples from beneath the piers, except that none were found in sediments beneath the ends of Piers 12 and 16. Total HPAH levels were not detected at most of the stations near the opening to the West Basin. Concentrations of HPAH ranged from non-detected to 18,000 µg/kg beneath the piers, and from non-detected to 3,600 µg/kg in sediments from the open areas of the West Basin. Stations near the seawall along the northern portion of the West Basin and along the north side of the Mole had concentrations of total HPAH greater than the concentrations in sediments from the central area of the West Basin.

Total LPAH concentrations showed a pattern similar to the total PAH and total HPAH concentrations, except that the concentrations were lower for LPAH and more stations in the central area of the West Basin had no detectable levels of LPAH. The higher levels of total LPAH were found in sediment samples from beneath the piers. Total LPAH levels were not detected at most of the stations in the central area of the West Basin

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Concentrations of LPAH ranged from non-detected to 5,600 µg/kg beneath the piers, and from non-detected to 350 µg/kg in sediments from the open areas of the West Basin.

#### 9.3.1.5 PCB

Surface sediment samples were analyzed for concentrations of seven PCB compounds. The only PCB compound detected in any of the surface sediment samples was Aroclor 1260. PCBs were detected in most of the sediment samples, however, PCBs were not detected at five stations near the opening of the West Basin, nor were PCBs detected in sediments from beneath seven of the nine sampled piers. Concentrations of PCBs ranged up to 390 µg/kg in sediments from beneath the piers and up to 880 µg/kg in sediments in the open areas of the West Basin. PCBs were detected at higher concentrations in samples from stations near the seawall along the northern portion of the West Basin.

#### 9.3.1.6 PESTICIDES

The analysis of surface sediments for chlorinated pesticides showed that aldrin, lindane, DDD, DDE, and DDT were present in many of the samples. Aldrin was only detected in sediments from Sta 28 (2.3 µg/kg). Lindane (gamma-BHC) was only detected in sediments from Sta.. 10 (6.8 µg/kg) and Station 26 (2.5 µg/kg). DDE was the only DDT related compound that was detected in sediments from every station in the West Basin. Concentrations of DDD ranged from 13 to 110 µg/kg in sediments from beneath the piers and from 6 to 180 µg/kg in sediments in the open areas of the West Basin. Concentrations of DDE ranged up to 36 µg/kg in sediments from beneath the piers and up to 42 µg/kg in sediments in the open areas of the West Basin. DDT was only detected in sediments from Station 16 (34 µg/kg) along the north side of the Mole. The highest concentrations of total DDTs were detected from stations near the seawall along the northern portion of the West Basin and along the north side of the Mole.

#### 9.3.1.7 SEMIVOLATILE COMPOUNDS

Analysis of surface sediment samples for SVOCs detected phenol, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate. Phenol was detected in two samples from the West Basin. Bis(2-ethylhexyl)phthalate was detected in one surface sediment sample. Di-n-octylphthalate was found at 17 of the 45 West Basin stations. Highest concentrations of phenol and di-n-octylphthalate were found in sediment beneath the piers near the NAVSTA and the LBNSY.

### 9.3.2 Subsurface Sediment Chemistry

Subsurface sediment samples were collected in the West Basin and analyzed for metals, butyltins, PAHs, PCBs, pesticides, and semivolatile organic compounds. Subsurface samples were collected at Stations 6, 8, 14, 24, 29, 43 (Pier 15), 46 (Pier 12), and 51 (Pier 2).

The analytical results indicate the presence of 24 chemical compounds in the West Basin subsurface sediment: eight HPAH compounds, ten metals, two butyltin compounds, two PCB compounds, one chlorinated pesticide, and one phthalate compound. Subsurface



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sediment beneath the piers contained 37 chemical compounds: ten HPAH compounds, five LPAH compounds, eleven metals, two PCB compounds, five chlorinated pesticides, one phthalate ester, trichlorobenzene, and three dichlorobenzenes. Results of the subsurface sediment analyses are summarized in Table 9-2.

### 9.3.2.1 METALS

Arsenic concentrations in the subsurface 1-meter sediment ranged from 2.2 mg/kg at Station 29 to 9.1 mg/kg at Station 43 (Pier 15). Concentrations were generally higher in subsurface sediment beneath Piers 15, 12, and 2 (Stations 43, 46, and 51) than the other West Basin stations (6, 8, 14, 24, 29). Arsenic levels were higher in the top 1-meter sample than in the other core samples at most stations. At Station 6, arsenic concentrations were highest in the 4-meter sample. Arsenic levels in subsurface sediment beneath the piers were generally higher in the 1-meter sample and decreased with depth of the core sample. Subsurface sediment samples taken at project reference locations show arsenic concentrations ranging from 2.2 to 13 mg/kg, with higher concentrations in the 1-meter depth core sample.

Beryllium was detected in all subsurface sediment samples and ranged from 0.12 mg/kg in the 2-meter sample at Stations 6 and 24 to 1.1 mg/kg in the 1-meter sample at Station 43 and the 2-meter sample at Station 51. Beryllium concentrations at most stations decreased with depth of the core sample. However, at Station 6, the 3-meter sample had a higher concentration of beryllium than the other core samples. Highest concentrations of subsurface sediment beryllium occurred in the top two meters at Stations 43 and 51, ranging from 1.0 to 1.1 mg/kg. Beryllium was detected in samples taken at the project reference stations ranging from 0.24 to 0.77 mg/kg, with concentrations varying with depth of core sample.

Cadmium levels in subsurface sediment ranged from 0.07 mg/kg to 0.73 mg/kg in the West Basin stations (6, 8, 14, 24, 29). In subsurface sediment beneath the piers (Stations 43, 46, and 51), cadmium ranged from 0.13 mg/kg to 2.8 mg/kg. Cadmium concentrations at Station 6 were higher in the 3-meter sample than in the other core samples. Higher cadmium concentrations at Station 43 were found in the 2-meter sample and at Station 51 in the 3-meter sample. Subsurface sediment at project reference stations show cadmium levels that range from 0.11 mg/kg to 1.8 mg/kg.

Chromium concentrations in subsurface sediment samples ranged from 10 mg/kg in the 2-meter sample at Stations 8 and 24 to 70 mg/kg in the 1-meter sample at Station 43 (Pier 15). Chromium was detected in all subsurface sediment samples. Samples taken at stations beneath the piers had higher levels of chromium than the other West Basin stations. Chromium showed a general trend of decreasing concentration with depth of core sample. However, higher levels of chromium were found in the 3-meter sample than in the other core samples at Stations 6 and 51 (Pier 2). Chromium was found at project reference sites at concentrations ranging from 16 to 65 mg/kg.

Copper was detected in all of the subsurface sediment samples from West Basin stations and concentrations ranged from 7 mg/kg in the 2-meter sample at Station 24 to 50 mg/kg



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in the 3-meter sample at Station 6. Copper concentrations in the top 1-meter samples were highest at Station 24 (45 mg/kg). Subsurface sediment copper at Station 6 was highest in the 3-meter sample and lowest in the 2-meter sample and 4-meter sample. Copper in the subsurface sediment at Station 43 (Pier 15) ranged from 35 to 260 mg/kg, decreasing with depth of core sample. Copper levels ranged from 1 to 64 at Station 46 (Pier 12). The copper concentrations at Station 51 (Pier 2) ranged from 84 to 200 mg/kg, with highest concentrations occurring in the 3-meter and 4-meter samples. Project reference locations show concentrations of copper that range up to 98 mg/kg.

Subsurface sediments in the West Basin were analyzed for lead concentrations, which range from undetectable in the 2-meter sample at Stations 8 and 24 to 33 mg/kg in the 1-meter sample at Station 24. Highest lead levels in the 1-meter core samples were detected at Station 24. Lead levels in the 2-meter core samples range up to 7 mg/kg. Core samples at 3-meter and 4-meter depths at Station 6 showed higher levels of lead than the other Station 6 core samples. Subsurface sediment lead concentrations detected in samples taken beneath Piers 15, 12, and 2 (Stations 43, 46, and 51, respectively) range from 9 mg/kg in the 5-meter sample at Station 46 to 170 mg/kg in the 4-meter sample at Station 51. Highest concentrations of lead at Stations 43 and 46 were found in the 2-meter sample, while the highest lead levels at Station 51 were found in the 4-meter sample. Lead concentrations were found at the project reference stations ranging from 6 to 65 mg/kg in the subsurface sediment samples.

Most of the subsurface sediment samples taken in the West Basin showed no detectable levels of mercury. None of the 2-meter samples reported mercury. Mercury in the top 1-meter core sample ranges from undetectable at Stations 14 and 29 to 0.21 mg/kg at Station 24. Subsurface sediment at Station 6 shows detectable mercury only at the 1-meter and 3-meter samples. Mercury was detected in all the subsurface sediment samples taken beneath the piers. Concentrations of mercury were highest in the 2-meter sample at Stations 43 (Pier 15) and 46 (Pier 12) and decreased with depth of core sample. Mercury at Station 51 (Pier 2) increased with depth of core sample until the 4-meter sample (1.78 mg/kg). Project reference stations show mercury levels in the subsurface sediment ranging up to 0.86 mg/kg.

Nickel concentrations in the subsurface sediment samples taken in the West Basin range from 8 mg/kg in the 2-meter sample at Station 8 to 33 mg/kg in the 3-meter sample at Station 6. Nickel levels were higher in the 1-meter core sample than in the 2-meter sample for all West Basin stations. However, the 3-meter sample at Station 6 contained higher nickel levels (33 mg/kg) than the other core samples at that station. The highest level of nickel in the top 1-meter samples was found at Station 24. Concentrations of nickel at Stations 43, 46, and 51 were slightly higher in the 2-meter sample than in the 1-meter core sample and decreased with depth of core sample. Nickel was detected at the project reference locations at concentrations from 12 to 63 mg/kg.

Selenium was not detected in any of the subsurface sediment samples taken at West Basin stations (6, 8, 14, 24, 29). Selenium was only detected in the 3-meter sample at Station 43 (Pier 15) and Station 51 (Pier 2). Selenium was not detected in any subsurface



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sediment sample taken at Station 46 (Pier 12). Selenium was detected in the 1-meter and 2-meter core samples at the project reference stations, ranging from 1.5 to 2.8 mg/kg.

Silver concentrations in the top 1-meter subsurface sediment samples were higher (2.3 mg/kg) at Station 24 than at Stations 6, 8, 14, or 29. Silver levels were higher in the top 1-meter core sample than in the 2-meter core sample for the West Basin stations. The highest level of silver in subsurface sediment at Station 6 was found in the 3-meter sample. Silver concentrations in subsurface sediment at Stations 43, 46, and 51 decreased with depth of core sample. Highest silver levels for Stations 43, 46, and 51 were found in the 1-meter samples for Station 43 (0.6 mg/kg) and Station 46 (0.4 mg/kg). Silver was found in the subsurface sediment samples at the project reference locations at concentrations ranging from 0.8 to 2.8 mg/kg.

Zinc was detected in all subsurface sediment samples taken at West Basin stations. Zinc concentrations in the top 1-meter core samples range from 42 mg/kg at Station 8 to 170 mg/kg at Station 24. Zinc levels were generally greater in the 1-meter core samples than in the 2-meter core samples. Station 6 showed a greater zinc level in the 3-meter core sample than in the other core samples at the station.

All the subsurface sediment samples taken beneath the piers showed detectable levels of zinc. Concentrations of zinc were highest in the 2-meter sample at Stations 43 (Pier 15) and 46 (Pier 12) and decreased with depth of core sample. Zinc at Station 51 (Pier 2) increased with depth of core sample until the 4-meter sample (540 mg/kg). Subsurface sediment samples taken at the project reference stations contained zinc concentrations ranging from 36 to 200 mg/kg. Concentrations of zinc at the project reference stations were higher in the 1-meter core samples than in the other core samples.

### 9.3.2.2 BUTYLTINS

Dibutyltin was detected in only two of the subsurface sediment samples from the West Basin, 3.4 µg/kg in the 1-meter sample at Station 8 and 4.1 µg/kg in the 2-meter sample at Station 29. Dibutyltin was not detected in any of the subsurface sediment samples taken beneath the piers. No dibutyltin was detected at the project reference locations.

Tributyltin was detected in all of the subsurface sediment samples taken at West Basin stations, but not detected at any of the samples taken beneath the piers. Tributyltin levels in the top 1-meter core samples range from 2.9 µg/kg at Station 24 to 8.0 µg/kg at Station 8. In the 2-meter core samples, tributyltin levels range from 3.3 µg/kg at Station 14 to 8.9 µg/kg at Station 29. Station 6 samples show higher tributyltin levels in the 4-meter sample than in the other core samples. Tributyltin was detected in the subsurface sediment samples at the project reference stations, ranging up to 7.1 µg/kg.

### 9.3.2.3 POLYNUCLEAR AROMATIC HYDROCARBONS

Samples from the cores of the West Basin stations were analyzed for PAHs in two categories, LPAH and HPAH. No LPAHs were detected at any of the West Basin stations. None of the PAHs were detected at Stations 24 or 29. Also, none of the PAHs were detected in core samples from the 3-meter, 4-meter, or 5-meter depth ranges.



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Eight HPAHs were detected in the 1-meter sample at Station 6 ranging from 14 µg/kg to 68 µg/kg. These HPAHs were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, chrysene, indeno(1,2,3-cd)pyrene, and pyrene. The 2-meter core sample at Station 6 contained three PAHs at 12 µg/kg: benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene. Three PAHs were detected in the 1-meter samples from Stations 8 and 14 ranging from 13 µg/kg to 27 µg/kg.

PAH compounds were analyzed in core samples from stations beneath the piers, Stations 43, 46, and 51 (Piers 15, 12, and 2). PAHs were found in more subsurface sediment samples and at higher concentrations at stations beneath the piers than at other stations in the West Basin. Ten HPAHs and two LPAHs were detected in the subsurface sediment at Station 43, seven HPAHs and one LPAH were detected at Station 46, and ten HPAHs and five LPAHs were detected at Station 51.

Concentrations of detected PAHs in subsurface sediment at Station 43 ranged from 73 µg/kg of anthracene for the 1-meter sample to 1200 µg/kg of pyrene for the 2-meter sample. The highest concentrations of seven PAHs at Station 43 were found in the 2-meter sample. These seven PAHs were benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene, pyrene, and anthracene. Highest concentrations at Station 43 of four PAH compounds (benz(a)anthracene, chrysene, fluoranthene, and phenanthrene) were found in the 4-meter sample. The 5-meter sample at Station 43 showed no detectable PAHs.

PAHs were only detected in the 2-meter and 4-meter samples at Station 46. Concentrations of PAHs in Station 46 subsurface sediment ranged from 34 µg/kg of anthracene in the 2-meter sample to 210 µg/kg of benzo(k)fluoranthene in the 4-meter sample.

Subsurface sediment at Station 51 had higher concentrations of 12 PAHs in the 3-meter sample than in the other core samples, ranging from 1400 µg/kg of fluorene to 17,000 µg/kg of methylnaphthalenes. Benzo(b)fluoranthene and fluoranthene had higher concentrations in the 4-meter sample than in the other cores, 1500 and 13,000 µg/kg, respectively. Dibenzo(a,h)anthracene was only detected in the 5-meter sample at 100 µg/kg.

Seven HPAHs (benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[ghi]perylene, chrysene, dibenzo[a,h]anthracene, indeno[1,2,3-cd]pyrene) were detected in subsurface sediment samples at the project reference locations. Concentrations of the HPAHs at the project reference stations range from 19 to 130 µg/kg, and were only detected in the 1-meter and 2-meter depth core samples.

### 9.3.2.4 PCBS

Three PCBs (Aroclor 1248, Aroclor 1254, and Aroclor 1260) were detected in subsurface sediment samples. No PCB compounds were detected at the project reference sites. Aroclor 1248 was detected only in the 3-meter sample at Station 51 (Pier 2). Aroclor 1254 was only detected in the 1-meter sample at Station 24.



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Aroclor 1260 was detected only in the 1-meter sample at Station 6 for the West Basin stations. In subsurface sediments taken beneath the piers, Aroclor 1260 was detected in the 1-meter and 2-meter samples at Station 43 (Pier 15) and in the 4-meter sample at Station 46 (Pier 12).

#### 9.3.2.5 PESTICIDES

Four chlorinated pesticides were detected in subsurface sediment samples. These pesticides were delta-benzene hexachloride, endosulfan II, p,p'-dichloro-diphenyl-dichloroethane (DDD), and p,p'-dichloro-diphenyl-ethane (DDE). Delta-benzene hexachloride was only detected in the 5-meter sample at Station 46 (7 µg/kg). Endosulfan II was only detected in the 2-meter sample at Station 43 (37 µg/kg). Delta-benzene hexachloride and endosulfan II were not detected in subsurface sediment at the project reference stations.

The DDT derivative, p,p'-DDD, was detected at samples taken beneath the piers (4 to 46 µg/kg), but not detected in samples taken at the West Basin stations. Another DDT derivative, p,p'-DDE, was detected in two of the 1-meter samples at West Basin stations (7 to 17 µg/kg), and in all of the samples taken beneath the piers (4 to 1100 µg/kg). At the stations beneath the piers, the DDE concentrations were higher in the 3-meter sample than in the other core samples. The subsurface sediment at the project reference stations showed no p,p'-DDD, and concentrations of p,p'-DDE that range up to 30 µg/kg.

#### 9.3.2.6 SEMIVOLATILE ORGANICS

Bis(2-ethylhexyl)phthalate was detected in two core samples at Station 43 (140 to 740 µg/kg) and two core samples at Station 51 (310 to 580 µg/kg). Di-n-octylphthalate was only detected in the 5-meter sample at Station 6 (37 µg/kg). Subsurface sediment at project reference stations showed no bis(2-ethylhexyl)phthalate, and di-n-octylphthalate that ranged up to 84 µg/kg.

Four chlorobenzenes, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene, were detected only at Station 51 (Pier 2). Concentrations of all four chlorobenzenes were higher in the 3-meter sample (8,000 to 60,000 µg/kg) than in the other core samples. None of the chlorobenzene compounds were found in subsurface sediment at project reference stations.

## 9.4 SEDIMENT TOXICITY

This section describes the preliminary results of sediment toxicity (bioassay) testing. Results of biological performance criteria and the preliminary distribution of toxicity by specific area within the West Basin are discussed below.

### 9.4.1 Results of Bioassay Performance Criteria

Results of the bioassay tests were compared to project-specific performance criteria (BNI 1994b) that were used to determine the acceptance of bioassay data. Results of these comparisons are summarized below. The performance criteria were used to assess the



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laboratory method control samples (negative and positive responses) and the project reference station acceptability.

#### 9.4.1.1 ECHINODERM DEVELOPMENT TEST

All echinoderm development tests passed both the negative and positive control performance criteria. However, three of the reference stations (40018.1, 40018.3, 40032.1) did not pass the reference station performance criterion (Table 9-3). Results of the echinoderm development test for these three reference stations were therefore not included in the statistical data analysis, which is summarized in the subsequent section. All other reference station data were accepted for the echinoderm test.

#### 9.4.1.2 AMPHIPOD SURVIVAL TEST

All amphipod survival tests passed both the negative and positive control performance criteria. However, two of the reference stations (40010.2, 40018.1) did not pass the reference station performance criterion (Table 9-3). Results of the amphipod survival test for these two reference stations were not included in statistical data analysis, which is summarized in the subsequent section. All other reference station data were accepted for the amphipod test.

#### 9.4.1.3 POLYCHAETE GROWTH TEST

Results from two of the polychaete method control samples did not meet all the negative control performance criteria. The polychaete test negative performance criteria includes both a replicate criterion and a replicate mean criterion. For these two method control samples, the replicate mean criterion was met and four of the five replicates met the criterion. Because the mean replicate criterion, which was met, is a better estimate of test performance than the replicate criterion, and because only one of the five replicates did not meet the criterion, the data were considered acceptable for further data analyses.

None of the results from the reference station polychaete growth tests met the project-specific performance criterion for reference stations (Table 9-3). Growth measurements were greater for both the laboratory control samples and the West Basin test stations than for the project reference stations. Although the RAWP does not include a provision for data analysis when reference station performance criteria are not met, preliminary data analysis was conducted using the reference station data. Results from the West Basin test stations appear to be acceptable, and will be evaluated further before being included in the description of toxicity patterns within the West Basin, if appropriate.

### 9.4.2 Distribution of Sediment Toxicity

Results of the surface sediment bioassay tests are summarized in Table 9-4. Values represent the average biological response of the laboratory replicates: percent mortality and reburial for the amphipod, percent mortality and growth for the polychaete, and percent mortality and abnormal development for the echinoderm. The percent response reported and discussed for the echinoderm is that of the bioassay conducted using 100 percent porewater concentration.



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### 9.4.2.1 WEST BASIN STATIONS

Mean amphipod mortality ranged from 1 percent (Station 11) to 43 percent (Station 41). Mean reburial ranged from 78 percent to 100 percent. The lowest reburial percentage resulted from Station 41 sediment. Station 41, located in close proximity to Pier 12 (fuel pier), indicated the highest level of adverse response from amphipod (43 percent).

Mean polychaete mortality ranged from 0 percent to 16 percent (Station 24). No mortality occurred at approximately one-third of the West Basin sampling stations: 1, 2, 4, 12, 14, 19, 23, 25, 27, 28, and 41. Average growth ranged from 0.066 mg/d (Stations 21 and 28) to 0.134 mg/d (Stations 1 and 24).

Adverse biological responses from the echinoderm occurred with exposure to porewater from most stations within the open areas of West Basin, especially from stations located at the eastern area and mouth of the Basin. Overall, there were no stations within the West Basin in which no abnormality occurred. Mean echinoderm mortality ranged from 0 percent to 68 percent (station 5). Mortality was found to be greater than 80 percent at the following stations: 2, 4, 5, 6, 7, 8, 12, 14, 17, 24, 25, 31 and 33. Percent abnormal development ranged from 4 percent (station 29) to 100 percent (stations 2, 4, 6, 7, 12, 13, 14, 17, 24, 25, 31 and 33). In addition, abnormal development of the echinoderm organisms occurred at a frequency of greater than 20 percent when exposed to porewater collected from the following stations: 1, 5, 8, 9, 15, 32, and 41.

### 9.4.2.2 PIER STATIONS

Adverse biological response was observed by the amphipod and the echinoderm at nearly all stations located underneath piers. Mean mortality for the amphipod bioassay ranged from 17 percent (Station 52) to 84 percent (Station 44). Mortalities greater than 20 percent occurred from exposure to all pier samples except for Station 52 (Pier 1). Mean reburial ranged from 25 percent (Station 44; Pier 12) to 96 percent (Station 43; Pier 15). Percent amphipod reburial was less than 80 percent for the following stations: 42 (Pier 16), 44, 45, and 46 (Pier 12), 48 (Pier 7), and 49 (Pier 6).

Polychaete mean mortality ranged from 0 percent (Station 50; Pier 3) to 24 percent (Station 48; Pier 7). Polychaete growth rates on average were highest when exposed to sediment collected from underneath the piers. Average growth ranged from 0.083 mg/d (Station 47; Pier 9) to 0.164 mg/d (Station 43; Pier 15).

Mean echinoderm mortality ranged from 9 percent (Station 48; Pier 7) to 64 percent (Station 45; Pier 12). All pier stations resulted in greater than 20 percent echinoderm mortality except for the following: 43 (Pier 15), 44 (Pier 12), and 48 (Pier 7). All stations from underneath the piers resulted in 100 percent abnormal development.

### 9.4.2.3 REFERENCE STATIONS

Exposure to sediment or porewater collected from each reference station resulted in some form of adverse biological response. Mean mortality for the amphipod bioassay ranged from 8 percent (Station 40010.2) to 36 percent (Station 40018.1). Two of the replicates at Station 40010.1 and one of the replicates at Station 40010.2 resulted in mortality of

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greater than 20 percent in addition to Station 40018.1. Mean reburial ranged from 92 percent (Station 40010.1) to 100 percent (Station 40010.3).

Polychaete mean mortality ranged from 0 percent (stations 40010.1, 40010.2, 40010.3 and 40018.3) to 12 percent (Station 40010.3). Mean growth ranged from 0.056 mg/d (Station 40018.2) to 0.129 mg/d (Station 40010.3). Growth was suppressed to less than 0.080 mg/d in samples taken from stations 40018.1, 40018.2 and 40032.1.

Mean echinoderm mortality ranged from 2 percent (Station 40018.1) to 31 percent (Station 40018.3). Mortality was greater than 20 percent for two of the replicates from Station 40010.3, all three replicates from Station 40018.3, and at Station 40032.1. Percent abnormal development ranged from 8 percent (Station 40010.3) to 100 percent (Station 40032.1). One replicate from Station 40010.2, Station 40018.1, two replicates from Station 40018.3, and Station 40032.1 all resulted in greater than 20 percent abnormally developed organisms.

## 9.5 BENTHIC INFAUNA

At the time of preparation of this document, data for benthic infaunal invertebrates were not yet generated. Findings will be included in the RI Report.

## 9.6 BIOACCUMULATION DATA

This section discusses the bioaccumulation data obtained from demersal fish caught in trawl samples and bioassay clam tissue analyses. All tissue samples were analyzed for lipids, metals, butyltins, polynuclear aromatic hydrocarbons, PCBs, and pesticides.

### 9.6.1 Fish Tissue Analyses

Fish trawls were conducted at seven transects within the West Basin. Because the target fish species are mobile, and likely to move about the West Basin area, the analytical results of the seven West Basin locations were pooled for data analyses. Analytical results of the reference station samples were also pooled. Project reference Stations 40010 and 40018 were sampled for fish tissue bioaccumulation tests. The number of samples analyzed at project reference stations as well as at test stations depended largely on the availability of the target fish species (the white croaker [*Genyonemus lineatus*] and California halibut [*Paralichthys californicus*]) in the trawl catch. At Station 40010, three samples of white croaker muscle fillet were collected, three of the California halibut fillet, and six of the California halibut whole body. At Station 40018, six California halibut whole-body samples were also collected.

Tissues analyzed included muscle fillet and whole body homogenates of white croaker and California halibut (Table 9-5). In addition, bile removed from the California halibut was analyzed for parent compounds of PAHs (Table 9-6).

#### 9.6.1.1 METALS

Arsenic concentrations of white croaker fillet collected in the West Basin ranged up to 1.4 mg/kg, and from 0.9 to 1.2 mg/kg for the project reference. Halibut fillet arsenic levels



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from the West Basin and project reference stations ranged up to 0.6 mg/kg. Whole body samples of white croaker showed arsenic levels at 0.8 to 1.8 mg/kg for fish in the West Basin, and at 0.6 to 1.3 mg/kg for fish at the project reference site. Halibut whole body samples showed that arsenic concentrations ranged up to 0.7 mg/kg for West Basin fish and project reference fish.

Beryllium was not detected in white croaker filet, halibut filet, or halibut whole body samples at West Basin or project reference stations. Beryllium was found in one sample of white croaker whole body from the West Basin at a concentration of 0.1 mg/kg. No beryllium was found in the project reference samples of whole body white croaker.

Chromium was not detected in white croaker filet, halibut filet, or halibut whole body samples at West Basin or project reference stations. Chromium was found in three samples of croaker whole body from the West Basin at concentrations of 0.5 to 0.7 mg/kg. No chromium was found in project reference samples of croaker whole body.

Copper concentrations ranged up to 2 mg/kg for white croaker fillet at the West Basin, and were undetected at the project reference locations. Copper values ranged up to 2 mg/kg for halibut fillet from both the West Basin and project reference stations. Copper was found in white croaker whole body samples from the West Basin ranging from 1 to 4 mg/kg, and in the project reference samples ranging up to 2 mg/kg. C[illegible]ntrations of copper in the halibut whole body samples from the West Basin range u[illegible] mg/kg, and up to 57 mg/kg for samples from the project reference locations.

Lead was detected in one of the six samples of white croaker fillet from the West Basin at 4.2 mg/kg, but undetected in samples from the project reference stations. Lead was not detected in any of the halibut fillet or white croaker whole body samples from the West Basin or from the project reference stations. Lead concentrations in halibut whole body samples from the West Basin ranged up to 1.7 mg/kg, and ranged up to 2 mg/kg for halibut whole body project reference samples.

Concentrations of mercury ranged from 0.03 to 0.07 mg/kg for West Basin samples of white croaker filet, while ranging from 0.02 to 0.04 mg/kg for project reference samples of white croaker filet. Mercury was found in all halibut fillet samples ranging from 0.03 to 0.17 mg/kg for West Basin samples, and from 0.01 to 0.08 for project reference samples. White croaker whole body samples showed concentrations of mercury ranging from 0.02 to 0.14 mg/kg from the West Basin, while project reference samples showed 0.04 to 0.07 mg/kg of mercury. Similarly, halibut whole body samples showed mercury at 0.01 to 0.05 mg/kg for the West Basin, and at 0.01 to 0.04 mg/kg for the project reference.

Nickel was not detected in white croaker filet, halibut filet, or white croaker whole body samples from the West Basin or project reference. Nickel concentrations were found in project reference samples of halibut whole body ranging up to 9 mg/kg, while none was found in the West Basin halibut whole body samples.

Selenium was found in one white croaker fillet sample from the West Basin at 0.6 mg/kg, and none was found in project reference white croaker filet. Halibut fillet samples showed only one sample from the project reference with selenium (0.7 mg/kg), and none of the West Basin samples having detectable selenium. Concentrations of selenium in white croaker whole body



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ranged up to 1.3 mg/kg for West Basin samples, and up to 0.7 mg/kg for project reference samples. Halibut whole body samples showed selenium at one sample from the West Basin (0.9 mg/kg), while no selenium was detected in the project reference samples.

Zinc was found in white croaker fillet samples ranging from 6 to 10 mg/kg for West Basin samples, and from 6 to 12 mg/kg for project reference samples. Halibut fillet samples showed zinc concentrations ranging from 5 to 9 mg/kg for West Basin samples, and from 6 to 9 mg/kg for project reference samples. Whole body samples of white croaker showed zinc levels ranging from 10 to 14 mg/kg for the West Basin, and ranging from 9 to 15 mg/kg for the project reference. Concentrations of zinc in halibut whole body samples ranged from 8 to 33 mg/kg for the West Basin, and from 7 to 48 mg/kg for the project reference.

### 9.6.1.2 BUTYLTINS

Dibutyltin was not detected in any white croaker fillet samples, but tributyltin concentrations ranged from 2.9 to 6.5 µg/kg for the West Basin and from 6 to 11 µg/kg for the project reference. Dibutyltin and tributyltin were each detected in one sample from West Basin halibut filet, but not at the project reference. Concentrations of dibutyltin and tributyltin in white croaker whole body ranged up to 17 µg/kg at the West Basin, and up to 6.1 µg/kg at the project reference. Dibutyltin and tributyltin found in halibut whole body samples ranged up to 20 µg/kg at the West Basin and up to 13 µg/kg at the project reference.

### 9.6.1.3 POLYNUCLEAR AROMATIC HYDROCARBONS

Fish tissue samples, including whole body homogenate and muscle fillet of California halibut and white croaker, were analyzed for PAH compounds. None of the 63 fish tissue samples showed detectable levels of PAH compounds.

Samples of bile were collected from 18 California halibut taken within the West Basin. The bile was analyzed for the HPAH compounds benzo(a)pyrene and pyrene, and for the LPAH compounds naphthalene and phenanthrene (Table 9-6). Bile concentrations for the fish taken in the West Basin of benzo(a)pyrene ranged from 2.73 µg/mL to 58.8, while bile concentrations of benzo(a)pyrene for project reference fish ranged from 1.94 to 16.7 µg/mL. Pyrene concentrations ranged from 21.4 to 469 µg/mL for West Basin fish, and from 13.2 to 118 µg/mL for project reference fish. The LPAH, naphthalene, ranged from 58.4 to 655 µg/mL for fish in the West Basin, and from 72.4 to 312 µg/mL for fish from the project reference stations. Phenanthrene ranged from 43.6 to 535 µg/mL for West Basin fish bile, and from 45 9 to 250 µg/mL for project reference fish bile. Highest concentrations of the PAH compounds were found in bile from fish collected in the West Basin, while the lowest concentrations of PAHs were found in bile from fish taken at project reference locations.

### 9.6.1.4 PESTICIDES

Five chlorinated pesticides were found in fish tissue samples, alpha-benzene hexachloride, endosulfan II, endrin, p,p'-DDD, and p,p'-DDE. The DDT derivative, p,p'-DDE, was the most commonly detected of these compounds. White croaker fillet samples showed concentrations of endosulfan II, endrin, p,p'-DDD, and p,p'-DDE ranging up to 860 µg/kg in West Basin samples, while only p,p'-DDD and p,p'-DDE were found in project reference samples ranging



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up to 1700 µg/kg. Halibut fillet samples showed only p,p'-DDE concentrations, ranging from 17 to 200 µg/kg for the West Basin and from 8.3 to 35 µg/kg for the project reference.

White croaker whole body samples showed concentrations of alpha-benzene hexachloride, endosulfan II, endrin, p,p'-DDD, and p,p'-DDE for the West Basin, ranging up to 1000 µg/kg. Project reference samples of white croaker whole body showed endosulfan II, p,p'-DDD, and p,p'-DDE at concentrations ranging up to 490 µg/kg. Endosulfan II, p,p'-DDD, and p,p'-DDE were found in halibut whole body samples ranging up to 380 µg/kg for the West Basin, and up to 220 µg/kg for the project reference.

## 9.6.2 Clam Bioaccumulation Results

After exposure to sediment samples during the clam bioassay, clam (*Macoma nasuta*) tissue was analyzed for lipids, metals, butyltins, PAHs, PCBs, and pesticides. A total of five samples were collected from the project reference locations: three samples were collected from Station 40010 (40010.1, 40010.2, and 40010.3), one from Station 40018.3, and one from Station 40032.1. Nine samples were collected from West Basin stations. The results of the clam tissue analyses are summarized in Table 9-7.

### 9.6.2.1 METALS

Arsenic was detected in all of the clam tissue samples, ranging from 2.6 mg/kg for Station 43 to 3.3 mg/kg for Station 24. Arsenic levels were generally similar among the clam tissue samples for the West Basin and pier stations. Clam tissue for project reference stations showed arsenic levels ranging from 2.5 to 3.2 mg/kg.

Chromium was only detected in clam tissue for sediment at Station 14 (0.4 mg/kg). Clam tissue for project reference stations showed chromium levels ranging up to 0.4 mg/kg.

Concentrations of copper were detected in all of the clam tissue samples, ranging from 1.1 mg/kg at Station 29 to 2.4 mg/kg at Station 43. Generally, copper levels were similar among the clam tissue samples for the West Basin and pier stations (1.1 to 1.7 mg/kg), except for Station 43 (2.4 mg/kg). Copper was detected in clam tissue for project reference stations ranging from 1.0 to 1.6 mg/kg.

Mercury was detected in three of the clam tissue samples. Mercury was found in clam tissue from Stations 6, 14, and 51 at 0.02 mg/kg. Clam tissue for project reference stations showed mercury concentrations that range up to 0.04 mg/kg.

Zinc levels, detected in all of the clam tissue samples, were generally similar among clam tissue samples from the West Basin and pier stations (11 to 16 mg/kg). Zinc was detected in clam tissue for project reference stations ranging from 11 to 14 mg/kg.

### 9.6.2.2 BUTYLTINS

Tributyltin concentrations were found in all clam tissue samples, ranging from 1.5 mg/kg for Stations 29 and 43 to 3.4 µg/kg for Station 6. The higher concentrations of zinc in clam tissue samples were found for Stations 6, 8, 14, and 24. Tributyltin concentrations in clam tissue for project reference stations ranged up to 1.9 µg/kg



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### 9.6.2.3 POLYNUCLEAR AROMATIC HYDROCARBONS

The only PAH that was detected in the clam tissue is pyrene. Pyrene was detected at concentrations of 20 to 30 µg/kg in the clam tissue for Stations 43, 49, and 51 (Piers 15, 6, 2, respectively). None of the PAH compounds were detected in clam tissue for project reference stations.

### 9.6.2.4 PESTICIDES

The chlorinated pesticide DDT derivative, p,p'-DDE, was found in all clam tissue samples. Concentrations of p,p'-DDE ranged from 5.4 µg/kg for Station 49 (Pier 6) to 88 µg/kg for Station 46 (Pier 12). Concentrations of p,p'-DDE in clam tissue for project reference stations ranged from 4.8 to 59 µg/kg.



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## SECTION 10

# PRELIMINARY EVALUATION AND WORK IN PROGRESS

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## Section 10
# PRELIMINARY EVALUATION AND WORK IN PROGRESS

Even though a significant portion of the RI work has been completed, as discussed in TM6, the ecological and human health risk assessments are in various stages of progress. This section presents preliminary evaluations and describes the work in progress for the purposes of providing an insight into key issues which play a significant role in evaluation of data, development of conclusions and recommendations, and preparation of the RI Report. These issues are: developing a validated electronic database; completing benthic community analysis; and acceptance of the Addendum to the RI/FS Work Plan and Risk Assessment Work Plan (RAWP) by the oversight agencies. These issues are in various stages of resolution and, once resolved, the following critical assessments will be completed: physical and chemical data evaluation, biological data evaluation, and ecological and human health risk assessment, as briefly discussed below. These assessments will be followed by the completion of the RI Report.

Chemical and biological data evaluations are currently underway using data from individual test and reference stations. Preliminary results of these analyses are presented in this section. The evaluation methodology for identifying COPCs, following the completion of the validated electronic database, is also presented.

Sampling stations will be evaluated and pooled to generate sediment evaluation zones based on physical and/or chemical data. Following definition of sediment evaluation zones, more detailed evaluation of both chemical and biological data, consisting of bioassay and benthic community data, will be conducted by zone. Results of this evaluation will be used to complete the data evaluation matrix which, in turn, will be used to identify the AOPCs.

## 10.1 CHEMICAL DATA EVALUATION

Generation of a validated electronic database of physical and chemical data for surface sediment, subsurface sediment, fish tissue, and clam tissue was in progress at the time this document was in preparation. Once this database becomes available, the evaluation of physical and chemical data, including integration into and support for the ecological risk assessment and the human health risk assessment will be conducted. For example, chemical data from nine reference stations will be pooled to determine sediment reference values for the project. The nine pooled reference stations will be used to calculate a statistically representative value for each chemical analyte. However, undetected concentrations of semivolatile compounds for one replicate at Station 40010 will be omitted because of unusually high practical quantitation limit (PQL) values.

For those compound-specific data sets at the project reference stations that were normally distributed, or normally distributed after a natural log transformation (log-normally distributed), the 95 percent upper confidence limit (UCL) will be used as the project reference value. For compounds that were detected at less than four of the nine project reference stations, one half of the typical PQL will be used as the project reference value. For compound-specific data sets which are not normally or log-normally distributed at the project reference stations, the 90th percentile value will be used as the project reference value.



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Concentrations of analyte-specific chemical data for each sampling station will be compared to the analyte-specific project reference values to determine whether the compound was statistically elevated above reference concentrations. If the analyte-specific concentration from an individual data set exceeds the project reference value, that compound will be judged to be elevated relative to reference conditions.

The 95 percent UCL will be calculated as a one-sided upper confidence limit of the mean value for the pooled reference station data (nine individual data points; i.e., n=9). The formula to be used for the one-sided 95 percent UCL is:

$$UCL_{95\%} = x + t_{(0.95,\, n-1)}\, \sigma/\sqrt{n}$$

where:

x = mean analyte-specific concentration of reference data set,

$\sigma$ = analyte-specific standard deviation of reference data set,

n = number of samples from project reference data set, and

t = value of the t-distribution ($\alpha$=0.05) at n-1 degrees of freedom.

Upon completion of similar statistical evaluations of West Basin stations chemical data, comparisons with reference data will be made in support of developing AOPCs and COPCs.

## 10.2 BIOLOGICAL DATA EVALUATION

Benthic community analysis of the sediment samples, which have been collected and archived, is currently in progress. Completion of this analysis will allow conducting more complete biological evaluations, as described in the RAWP. Benthic community analysis provides the basis for performing the ecological risk assessment in support of delineating AOCs at Site 7.

Toxicity data are currently being evaluated and the following discussion describes this task. In order to compare bioassay results of reference station and West Basin sediment, the sediment physical characteristics were reviewed to select suitable reference station matches for each of the test stations. Reference sediment with similar textural properties as the test stations was selected because grain size is known to affect toxicity to some benthic organisms (DeWitt, et al. 1988). The percent fines (silt plus clay) composition of each test station was compared to each reference station (40010, 40018, 40032). Reference station matches were chosen for each test station based on similar grain size (Table 10-1). Reference Stations 40010 and 40018 were then pooled together and treated as one reference station because they differed by less than 20 percent in mean grain size.

Interpretation of bioassay results were based on two criteria (BNI 1994c): 1) the relative difference between test station data and reference station data; and 2) a statistically significant difference between test data and reference data. Bioassay data meeting both criteria were considered a 'hit". Results of the bioassay tests that did not meet the relative

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difference criterion are summarized in Table 10-2 for the amphipod test and polychaete test, and in Table 10-3 for the echinoderm test. Similarly, results of the bioassay tests that did not meet the statistical difference criterion are summarized in Table 10-4 for the amphipod and polychaete tests, in Table 10-5 for the echinoderm test.

Overall results of the bioassay statistical testing are summarized in Tables 10-6 and 10-7, showing the determination of significant bioassay "hits." The distribution of bioassay "hits" is presented on Figure 10-1, showing statistically significant bioassay data in the West Basin area.

## 10.3 PRELIMINARY EVALUATION MATRIX

Table 10-8 shows a preliminary evaluation matrix for West Basin surface sediments, organized by individual sampling location. For each location, the physical properties of bathymetry, TOC, and grain size are provided. Results of each bioassay test by station is also provided based on a statistical comparison with reference data sets (reported as significant or non-significant based on $\alpha$=0.05). The evaluation matrix presents preliminary data for the toxicity tests and ratio to reference for those chemical compounds found to exceed project reference values. The following discussion summarizes the key features of the chemical and biological data shown on Table 10-8.

### 10.3.1 West Basin Stations with Elevated Chemical Compounds

Station 10 (between Piers 6 and 7) indicated 11 HPAH, LPAH, metals, and pesticide compounds that were statistically elevated above reference concentrations, although no evidence of toxicity was apparent. Station 17 (adjacent to Pier 3) indicated 13 HPAH, PCB, metals, and pesticide compounds which were statistically elevated above reference concentrations, with echinoderm mortality and abnormality statistically elevated relative to reference values. Stations 21 and 22 (adjacent to Pier 15 and Pier 1, respectively) both indicated 11 HPAH, LPAH, metals, and PCB compounds that were statistically elevated above reference concentrations. No evidence of toxicity was observed at either station with the exception of polychaete growth inhibition noted at Station 21. Concentrations of HPAH, LPAH, metals, and PCB compounds were also elevated at Stations 1, 3, 7, and 11, located in the northwest region of the West Basin. However, only Stations 1 and 7 showed sediment toxicity, detected as elevated echinoderm abnormality.

Stations 15 and 16 located between Piers 12 and 15 showed elevated levels of PCB, metals, and pesticide compounds, while only Station 15 indicated sediment toxicity (elevated echinoderm abnormality). Station 41, located in the same area, showed elevated levels of HPAH, LPAH, PCB, metals, and pesticide compounds, as well as, sediment toxicity noted as elevated amphipod mortality and echinoderm abnormality.

Several stations (2, 4, 9, 13, 20, 26, 27, 28), generally representing areas along the seawall, showed elevated levels of metals and PCB compounds. Stations 2, 4, 9, and 13 showed sediment toxicity as either elevated echinoderm mortality or echinoderm



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abnormality. Stations 20, 26, and 27 showed no evidence of sediment toxicity, while Station 8 indicated sediment toxicity as decreased polychaete growth.

### 10.3.2 Other West Basin Stations

Four stations showed no statistically elevated chemical concentrations. These were Stations 24, 25, 29, and 32 (open water near the turning basin). Stations 24, 29, and 32 showed no evidence of toxicity based on sediment bioassays, while Station 25 indicated statistically elevated echinoderm mortality and abnormality. Five stations had a single elevated chemical compound. Stations 8, 14, 19, and 30 indicated elevated concentrations of PCBs. Station 31 showed elevated levels of phenol. Stations 8 and 14 also indicated statistically elevated echinoderm abnormality levels, while Stations 19, 30, and 31 have no strong evidence of sediment toxicity.

Concentrations of HPAH and PCB were elevated at Stations 5 and 23. Station 5 indicated statistically elevated echinoderm mortality and abnormality, while Station 23 showed no evidence of sediment toxicity.

### 10.3.3 Sediments Beneath the Piers

Toxicity (echinoderm abnormality) was consistently observed beneath the piers (Stations 42 through 52), with other evidence of toxicity also apparent (e.g., amphipod mortality) on a relatively consistent basis. This evidence of toxicity appeared to coincide with elevated levels of various contaminants. Metals were consistently detected at low to moderate levels, and PAH homologues were detected at moderate to high levels under the piers. Sediment toxicity was reported by four of the six toxicity end points for Stations 42, 45, and 46 (Piers 16, 12, and 12, respectively). The third sediment sample at Pier 12 (Station 44) showed sediment toxicity for three of the six toxicity end points.

Sediment beneath Pier 7 (Station 48) showed sediment toxicity for all three bioassay test species (amphipod mortality and reburial, polychaete mortality, and echinoderm abnormality). In addition to elevated levels of HPAH, LPAH, and metals, Station 48 was the only station beneath the piers to show elevated levels of pesticides.

Stations that showed greater elevations of HPAH, LPAH, and PCB compounds (Stations 43, 47, 49, 50, 51) showed the least indication of sediment toxicity (only elevated echinoderm abnormality). However, Station 48, which showed the greatest elevation of HPAH and LPAH, showed several indications of sediment toxicity.

### 10.3.4 Summary of Statistical Testing of Bioassay Data

Echinoderm abnormality was the most frequently detected form of sediment toxicity in the West Basin, detected at 26 of the 45 sampling stations. Other evidence of toxicity was detected at a far lower frequency. For example, elevated amphipod mortality occurred 4 out of 45 stations (all were sediment from beneath the piers) and reduced polychaete growth occurred at 2 of 45 stations. Stations that showed elevated echinoderm



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abnormalities were more likely to show other elevated toxicity and chemical concentrations than were stations that did not show elevated echinoderm abnormality.

The evaluations and results presented in this section are preliminary and subject to change as more data becomes available. The RI Report will contain a more complete assessment of data and conclusions.

## 10.4 PREPARATION OF THE RI REPORT

The RI Report will include all or most of the contents of TM6. In addition, the evaluations described in this section, as well as the results of ongoing assessments, will be incorporated into the overall project RI Report with the following considerations:

- the text presented in TM6 may be modified when incorporated into the RI Report as more complete information becomes available,
- the RI Report, when issued, will replace in its entirety the contents of TM6, and
- analytical data presented in TM6 are preliminary, have not been validated, and are subject to revision following the incorporation of data validation qualifiers and other information; therefore, no final data evaluation and conclusions are presented in TM6.

The RAWP, currently being reviewed by the oversight agencies, provides a template for evaluating data, conducting ecological and human health risk assessment, and formulating conclusions from these analyses. Agency concurrence with this document will allow for the evaluation of data, using the rationale and methodologies specified in the RAWP, to proceed.



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## SECTION 11

# REFERENCES

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## SECTION 12

# GLOSSARY OF TERMS

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## Section 12
# GLOSSARY OF TERMS

**ABUNDANCE** — The number of individuals in a population of a species in a given unit of area.

**ACUTE TOXICITY** — Death or physiological disorder in an organism resulting from a single dose of, or exposure to, a compound or compound mixture. All acute exposures occur over a small portion of an organism's lifespan or life cycle; see CHRONIC TOXICITY and SUBCHRONIC TOXICITY. Most acute toxicity testing is conducted over a short exposure period, *e.g.*, 72 or 96 hours.

**ADSORPTION** — Physical adhesion of molecules, colloids, or other chemical substances to solid particulate surfaces without chemical reaction. Adsorption is an important factor affecting environmental movement and fate of chemicals; see DESORPTION and SORPTION.

**ADVECTION** — Removal or transport of suspended materials via currents or other oceanographic processes.

**ADVERSE EFFECT** — A condition caused by a specific action that results in harm to an organism or its habitat.

**APPARENT EFFECTS THRESHOLD** — A chemical concentration in sediment above which an adverse toxic effect would always be expected.

**AQUATIC LIFE** — Organisms inhabiting water for all or part of their lifecycle.

**AQUEOUS PHASE** — Referring to the dissolved phase in water rather than the solid phase.

**ASSESSMENT ENDPOINT** — The ecological resource which requires evaluation and, ultimately, protection. For example, the viability of a population is a commonly used assessment endpoint requiring evaluation. Also see MEASUREMENT ENDPOINT.

**BENTHIC/BENTHOS** — Refers to the ocean or harbor bottom, including the sediments and biota inhabiting the bottom.

**BENTHIC COMMUNITY ANALYSIS** — Numerical evaluation of infaunal invertebrate communities inhabiting a site/location; data are used to evaluate the potential effects of contaminated sediments on native biota.



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| **BIOACCUMULATION** | The process whereby exposure of an organism to chemical residues results in concentrated levels of that chemical in specific receptor tissue. Exposure may occur through dermal, respiratory, and ingestion routes; see BIOCONCENTRATION. |
| **BIOASSAY** | A test using organisms to determine the toxicity of a compound or chemical mixture; primary function is to provide case-specific information regarding the toxicity of such compound or chemical mixture. |
| **BIOCONCENTRATION** | The process whereby exposure of an organism to chemical residues results in concentrated levels of that chemical relative to the surrounding aquatic environment. Exposure normally occurs through passive accumulation from the water column; see BIOACCUMULATION. |
| **BIOCONCENTRATION FACTOR (BCF)** | The ratio of concentration of a chemical within the tissue of an organism to that of the surrounding aquatic medium. |
| **BIODEGRADATION** | Decomposition of a chemical contaminant which is catalyzed or aided by the action of microorganisms, *e.g.*, bacteria. |
| **BIODEPLETION** | A reduction or depletion of a chemical substance from an organism specifically or food chain in general; see BIOMAGNIFICATION |
| **BIOLOGICAL IMPACT** | Any impact to a population of organisms; the impact may be measured using species abundance, species diversity, or other measurement indices. |
| **BIOMAGNIFICATION** | The process by which a chemical compound concentrates with increasing trophic level as it moves through the food chain; see BIOACCUMULATION and BIOCONCENTRATION. |
| **BIOMARKERS** | Test organisms used as indicators of environmental conditions. |
| **BIOMASS** | Refers to the amount of biotic matter within a specific area. For example, when sampling benthos, one of the indices used to evaluate benthic communities is the total amount of biomass present within a fixed volume. |



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| **BIOTA/BIOTIC** | Relating to living organisms, including plants and animals, i.e., as opposed to inaminate or nonliving matter. |
| **CHRONIC TOXICITY** | An adverse biological response, such as mortality or an effect on growth or reproductive success, resulting from repeated or long term exposures to a compound, usually at low concentrations; see ACUTE TOXICITY and SUBCHRONIC TOXICITY. |
| **CONCENTRATION** | An amount of a chemical compound in a specified amount of medium, *e.g.*, water, sediment. Measured in standard units such as milligrams per liter (mg/L), microgram per kilogram (µg/kg), or other appropriate units. |
| **CONTAMINATION** | Refers to the presence of specific chemical compounds, typically those included on U.S. EPA's Priority Pollutant list, present in special media of concern. Does not refer to or imply the occurrence of a toxic effect or adverse impact associated with the chemical or group of chemicals. |
| **DEGRADATION** | Transformation of a chemical compound by physicochemical or biochemical processes into its basic components. |
| **DEMERSAL** | Fish which dwell at or near the sea bottom. |
| **DESORPTION** | Dissociation of a chemical from a surface to which it had previously adhered; also see ADSORPTION and SORPTION. |
| **DOSE** | An amount of substance administered per unit of animal body weight. Measured in milligrams of substance per kilogram of animal body weight (mg/kg), or other appropriate units. Useful for calculating risk in a receptor organism. |
| **$EC_{50}$** | MEDIAN EFFECTIVE CONCENTRATION; concentration eliciting a sublethal response in 50 percent of the organisms tested; see $LC_{50}$. |
| **ECOLOGICAL COMMUNITY** | Any assemblage of populations living in a specific habitat. |
| **ECOLOGICAL HAZARD** | Actual or potential adverse effects of chemical substances on aquatic biota (plants or animals). |



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| **ECOLOGICAL RISK ASSESSMENT** | An evaluation of the actual or potential long-term or short-term effects of chemical compounds on aquatic receptors. |
| **$ED_{50}$** | MEDIAN EFFECTIVE DOSE; dose eliciting a non-lethal response in 50 percent of the organisms tested; see $LD_{50}$. |
| **ENDPOINT** | A toxicological response or measured effect. |
| **ENVIRONMENTAL FATE** | The result of natural processes acting upon a substance, including transport (*e.g.*, sedimentation), physical transformation (*e.g.*, volatilization, precipitation), chemical transformation (*e.g.*, photolysis) and biological transformations (*e.g.*, oxidation and reduction). |
| **EQUILIBRIUM PARTITIONING** | Refers to a theoretically based process whereby chemical agents reach equilibrium between the sediment solid phase and its interstitial water; the theory holds that total organic carbon (TOC) is one of the key driving factors for governing this distribution, especially for organic chemicals. |
| **EPIBENTHIC** | Organisms inhabiting the sediment surface; i.e., living on top of the sediment. Also see INFAUNAL ORGANISMS. |
| **EXPOSURE** | Also EXPOSURE ANALYSIS; an evaluation of potential ASSESSMENT likelihood that humans, non-target wildlife, or biological habitats will be exposed to potentially harmful effects of a chemical. |
| **EXPOSURE PATHWAY** | The route by which exposure to a toxicant occurs. A complete exposure pathway consists of contaminant source(s), transport media (*e.g.*, surface water or sediments), the contact point between the transport medium and the receptor (*e.g.*, water supply system), and the receptor route or mechanism of entry (*e.g.*, ingestion of water, biota, or inhaled dust). If an exposure pathway is incomplete, it does not warrant further consideration in the risk assessment. |
| **EXPOSURE SCENARIO** | Overall description of the potential contact of an organism or population with a chemical substance under specified conditions, *i.e.*, routes of contact, life history of the organism, *etc.* |



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| **HABITAT** | An environment that provides the requirements (*i.e.*, food, water, and shelter) essential to development and sustained existence of a species. |
| **HALF-LIFE ($t_{1/2}$)** | The time necessary for the concentration of a chemical to decrease by 50 percent. Provides a measure of the persistence of a chemical in a given medium. The greater the half-life, the more persistent a chemical is likely to be. |
| **HAZARD** | A potential adverse effect associated with exposure to a chemical substance. |
| **HAZARD QUOTIENT** | Risk expressed as a ratio of dose (exposure) to toxicity for a specific exposure duration. HQ values are used to address both acute and chronic risk. |
| **HENRY'S LAW CONSTANT** | Provides a measure of the extent of chemical partitioning between air and water at equilibrium. The higher the constant, the more likely a chemical is to volatilize than to remain in solution. |
| **HOMOLOGUE** | Specific chemical compound within a larger group of chemical compounds (e.g., benzo(a)pyrene is a homologue within the PAH class of organic chemicals). |
| **HUMAN HEALTH RISK ASSESSMENT** | Appraisal of the actual or potential short-term or long-term effects of chemical compounds on humans, such as fishermen or residents. |
| **HYDROLYSIS** | The decomposition of chemical compounds resulting from a reaction with water. |
| **INDICATOR SPECIES** | A species thought to be biologically representative of the reproductive success of other key species within a particular population or biological community. |
| **INDIGENOUS SPECIES** | Biota which are native to a specific habitat. |
| **INFAUNAL INVERTEBRATES/ ORGANISMS** | Organisms living within the sediments (usually within 10 cm of the surface) rather than on top of the sediments. Also see EPIBENTHIC ORGANISMS. |
| **INTERTIDAL ZONE** | Sediments lying between the high- and low-tidal marks. |



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| $K_d$ | SEDIMENT-WATER DISTRIBUTION COEFFICIENT; the ratio of concentrations of a specific chemical substance sorbed to sediment versus the concentration dissolved in water. The higher the $K_d$ value, the more likely the chemical will adsorb to sediment than dissolve in water. |
| $K_{oc}$ | The ratio of concentrations of a specific chemical substance sorbed to the organic carbon fraction of sediment versus the concentration dissolved in water. The higher the $K_{oc}$ value, the more likely the chemical will adsorb to organic carbon in sediment rather than dissolve in water. |
| $K_{ow}$ | OCTANOL/WATER PARTITION COEFFICIENT; a ratio that provides a measure of the extent of chemical partitioning between water and octanol at equilibrium. Octanol is used as a surrogate for lipids, *e.g.*, fatty tissue or other organic substrate. |
| $LC_{50}$ | MEDIAN LETHAL CONCENTRATION; a calculated concentration of a substance expected to kill 50 percent of laboratory test organisms. |
| $LD_{50}$ | MEDIAN LETHAL DOSE; a calculated dose of a substance expected to kill 50 percent of laboratory test organisms. |
| LOCALIZED SPECIES | Species which does not seasonally migrate. |
| LOEC | LOWEST OBSERVED EFFECT CONCENTRATION; the lowest exposure level, or concentration at which an observable toxic effect occurs. |
| LOEL | LOWEST OBSERVED EFFECT LEVEL; the lowest exposure level (dose) at which an observable toxic effect occurs. |
| LYOPHILIZATION | A laboratory freeze-drying technique. |
| MEASUREMENT ENDPOINT | Specific measurable data taken to evaluate whether assessment endpoints (e.g., the viability of a specific population) have been potentially affected by the presence of chemical contaminants; also see ASSESSMENT ENDPOINT. |



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|---|---|
| **MINERALOGY** | The chemical constitution of sediment particles occurring in the aquatic environment. |
| **NEGATIVE CONTROL** | Bioassay in which test organisms are exposed to clean sediments. Used to obtain a measure of biological response associated with exposure to clean sediment. |
| **NOEC** | NO OBSERVED EFFECT CONCENTRATION; the highest concentration level tested at which no observable difference between the test and control population occurs. |
| **NOEL** | NO OBSERVED EFFECT LEVEL; the highest dose tested at which no observable difference between the test and control population occurs. |
| **NON-POINT SOURCE** | Discharge that originates from a number of undefined sources, including stormwater runoff, precipitation, or accidental spills or releases. |
| **NUMBER OF SPECIES** | The number of species in a specific area. Often compared to an equivalent area at a reference location. |
| **NUMERICAL SEDIMENT QUALITY GUIDELINES/CRITERIA** | Chemical analyte-specific toxicity-based values, normally expressed as a chemical concentration, used to establish concentrations in sediment which are expected to be protective of aquatic organisms. |
| **PARTITION COEFFICIENT** | A chemical-specific property describing the ratio in one substrate or phase compared to another, *e.g.*, the amount of a chemical sorbed to sediment compared to the amount dissolved in water. |
| **PELAGIC** | Organisms inhabiting the water column rather than the benthic environment. |
| **PERSISTENCE** | The ability of a chemical compound to remain intact following its release into the environment. |
| **PHOTOLYSIS** | Also PHOTODEGRADATION; the decomposition or dissociation of a molecule resulting from ultraviolet light absorption. |



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| **POINT SOURCE** | Discharge that originates from a well-defined location, typically a wastewater discharge, subject to regulation under the Clean Water Act. |
| **POLLUTION** | Refers to the presence of specific chemical compounds present in specific media of concern. Differs from the term "contamination" in that it does imply the occurrence of a toxic effect associated with the presence of the chemical or group of chemicals. |
| **POPULATION** | A group of organisms belonging to the same species which inhabits a specific area or habitat. |
| **POREWATER** | The water residing in the interstices or pores between sediment particles. |
| **POSITIVE CONTROL** | Bioassay in which a known quantity of toxicant (reference toxicant) is spiked into the test matrix; used to measure the sensitivity of test organisms. |
| **PREDATOR** | An animal that hunts, kills and consumes another (prey) organism. |
| **PREPONDERANCE OF EVIDENCE** | Using all available site-specific chemical and biological data to evaluate the potential for ecological effects associated with the presence of specific chemical compounds. |
| **PREY** | An organism which is hunted, killed, and consumed by another (predatory) organism. |
| **RECEPTOR ORGANISM** | Organisms potentially exposed to a chemical compound of potential concern via any of a number of potential pathways. |
| **RESECTION** | Removal of specific organs or tissues from organisms (e.g., fish) captured for the purpose of sampling. |
| **RISK** | A potential adverse effect associated with exposure to a chemical substance. |
| **SEDIMENT QUALITY OBJECTIVE** | A site-specific term used to define cleanup goals for specific chemical compounds of potential concern. |
| **SEDIMENTOLOGY** | The dynamics associated with erosion, deposition, transport/advection, or other behavior of sediment particles in an aqueous environment. |



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|---|---|
| **SEDIMENTATION** | The deposition of sediment particles in an aqueous environment resulting from a number of oceanographic processes. |
| **SEICHE** | An oscillation of the surface of a lake or landlocked sea that varies in period from a few minutes to several hours. The regular resonating waves pass from one edge of the body of water to the other and back. |
| **SOLID PHASE BIOASSAYS** | Bioassays conducted on the bulk phase of sediment (i.e., not from the interstitial water or other phase). |
| **SOLUBILITY** | The amount or ratio of a solute (a dissolved substance) that will saturate a fixed volume of solvent under static conditions. Solubility is important to understanding a chemical's mobility in water. More soluble substances are potentially more bioavailable but also will be distributed more efficiently through the water column (less concentrated). |
| **SONICATION** | An ultrasound-based laboratory technique used to separate or extract specific chemical analytes. |
| **SORPTION** | A generalized term referring to both adsorption and desorption. |
| **SUBCHRONIC TOXICITY** | Adverse biologic response of an organism, such as mortality or an effect on reproductive success, resulting from relatively short term exposure to a test sample or compound. |
| **SUBLETHAL RESPONSE** | Toxicological response which is less severe that mortality, such as growth inhibition or reproductive impairment. |
| **SUBTIDAL ZONE** | Sediments lying below the lowest tide level. |
| **SYNERGISTIC EFFECT** | The result of a combined action of two or more chemical substances to achieve an effect (either positive or negative) which is greater than that of which the individual chemical is capable. |
| **THREATENED/ENDANGERED (T&E) SPECIES** | A species in danger of extinction throughout all of its native range. |
| **TOXICANT** | A chemical substance capable of inducing a toxic effect. |



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|---|---|
| **TOXICITY** | The ability or capacity of a chemical substance to induce an adverse effect. |
| **TOXICOLOGICAL BENCHMARK** | A guideline value derived as a measure of sensitivity to acute or chronic exposure for the purpose of protecting aquatic life; may be derived for the protection of individual species or species groups. |
| **TOXICOLOGICAL EVALUATION** | An assessment of the potential adverse effects of specific compounds of potential concern. |
| **UNCERTAINTY** | Inherent error resulting from any activity relating to sampling or analysis of data. |
| **UNCERTAINTY ANALYSIS** | Estimation or evaluation of the contributions or magnitudes of errors resulting from analysis of environmental or other data. |
| **UNCERTAINTY FACTOR** | A factor which quantifys the numerical relative uncertainty in deriving toxicological benchmarks, especially when compound-specific data are based on non-project specific toxicological testing. Such uncertainty can arise from overall data quality, interspecies variability, endpoint sensitivity, endpoint extrapolation, and many other sources. |
| **VAPOR PRESSURE** | The pressure exerted by a chemical in its solid or liquid phase to convert to its gas (vapor) phase in equilibrium at a given temperature. |
| **VOLATILIZATION** | Conversion of a solute from solid or liquid phase to vapor phase; e.g., converting liquid water into steam. |



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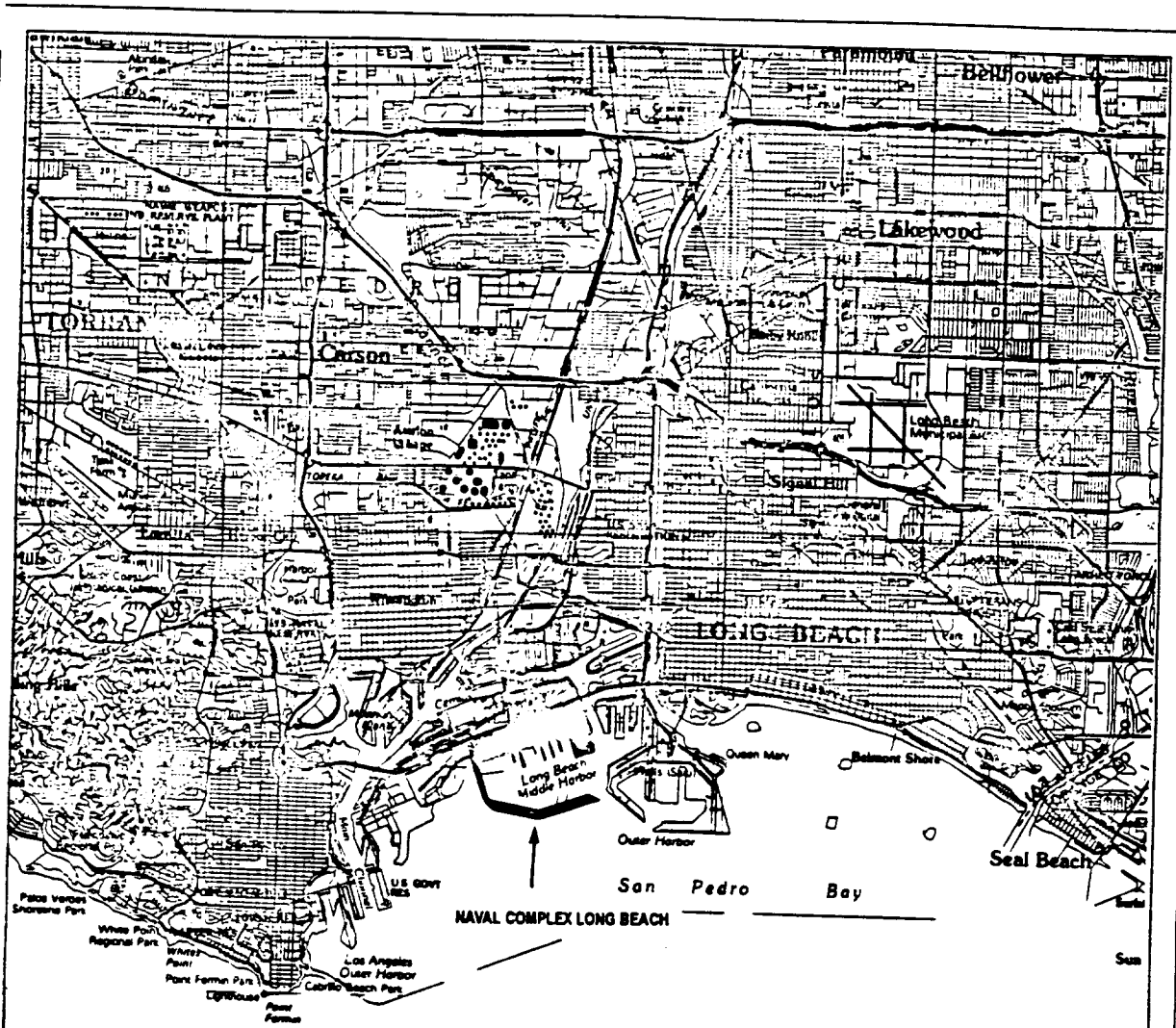
# FIGURES

0593




UTM grid convergence (GN) and 1981 magnetic declination (MN) at center of map
Diagram is approximate

SCALE 1:100 000
1 CENTIMETER ON THE MAP REPRESENTS 1 KILOMETER ON THE GROUND
CONTOUR INTERVAL 40 METERS
SUPPLEMENTARY CONTOUR INTERVAL 10 METERS

KILOMETERS 0 1 2 3 4 5 6 7 8
MILES 0 1 2 3 4 5

Base Map: USGS, 30 X 60 Minute Long Beach Quadrangle, photorevised 1981

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
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RI/FS REPORT
FIGURE 1-1
REGIONAL SETTING

NAVAL STATION, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE 3/20/95
FILE NO. NC467.DWG
JOB NO. 22214-026

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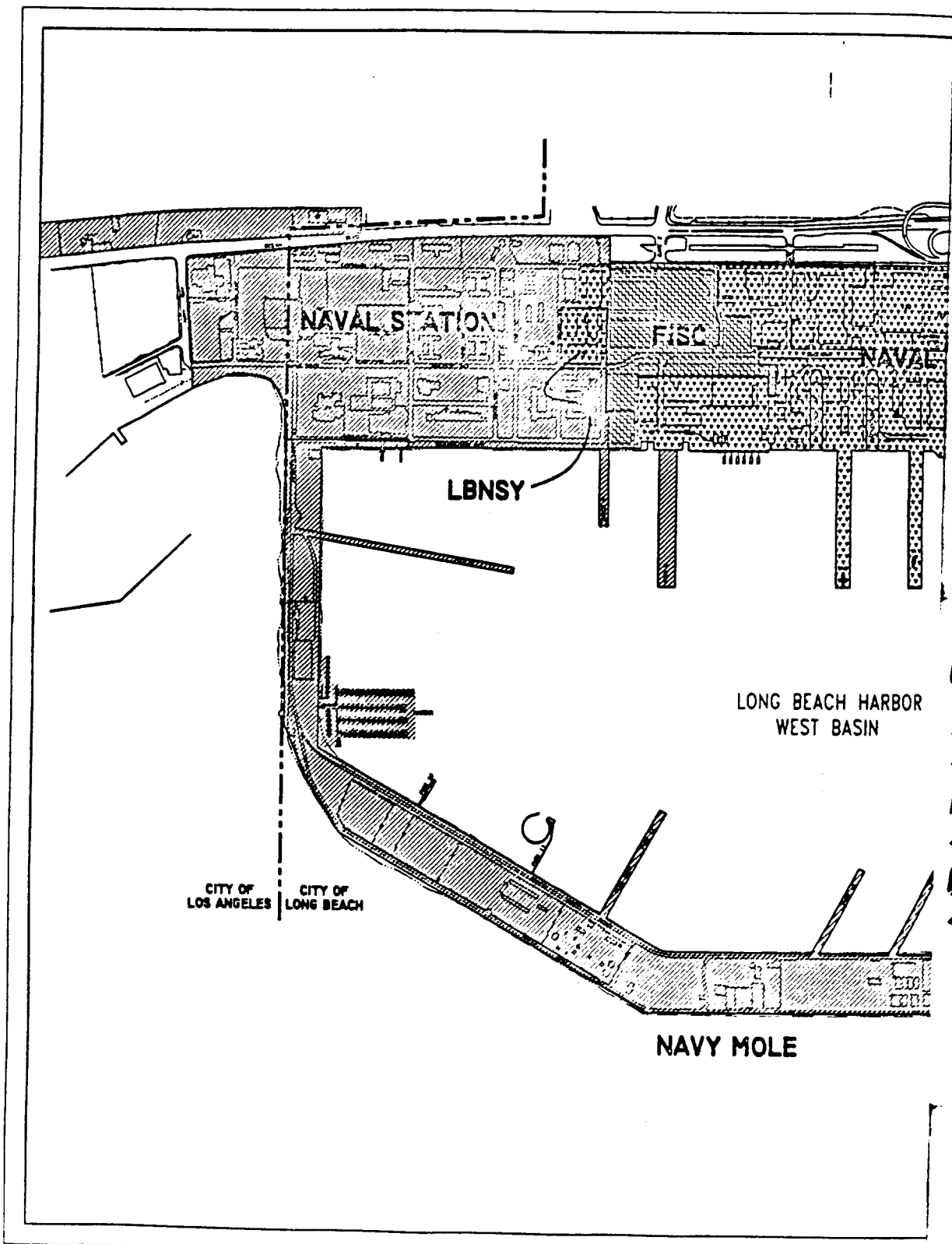
NAVAL STATION
FISC
NAVAL
LBNSY
LONG BEACH HARBOR
WEST BASIN
CITY OF
LOS ANGELES
CITY OF
LONG BEACH
NAVY MOLE

05995

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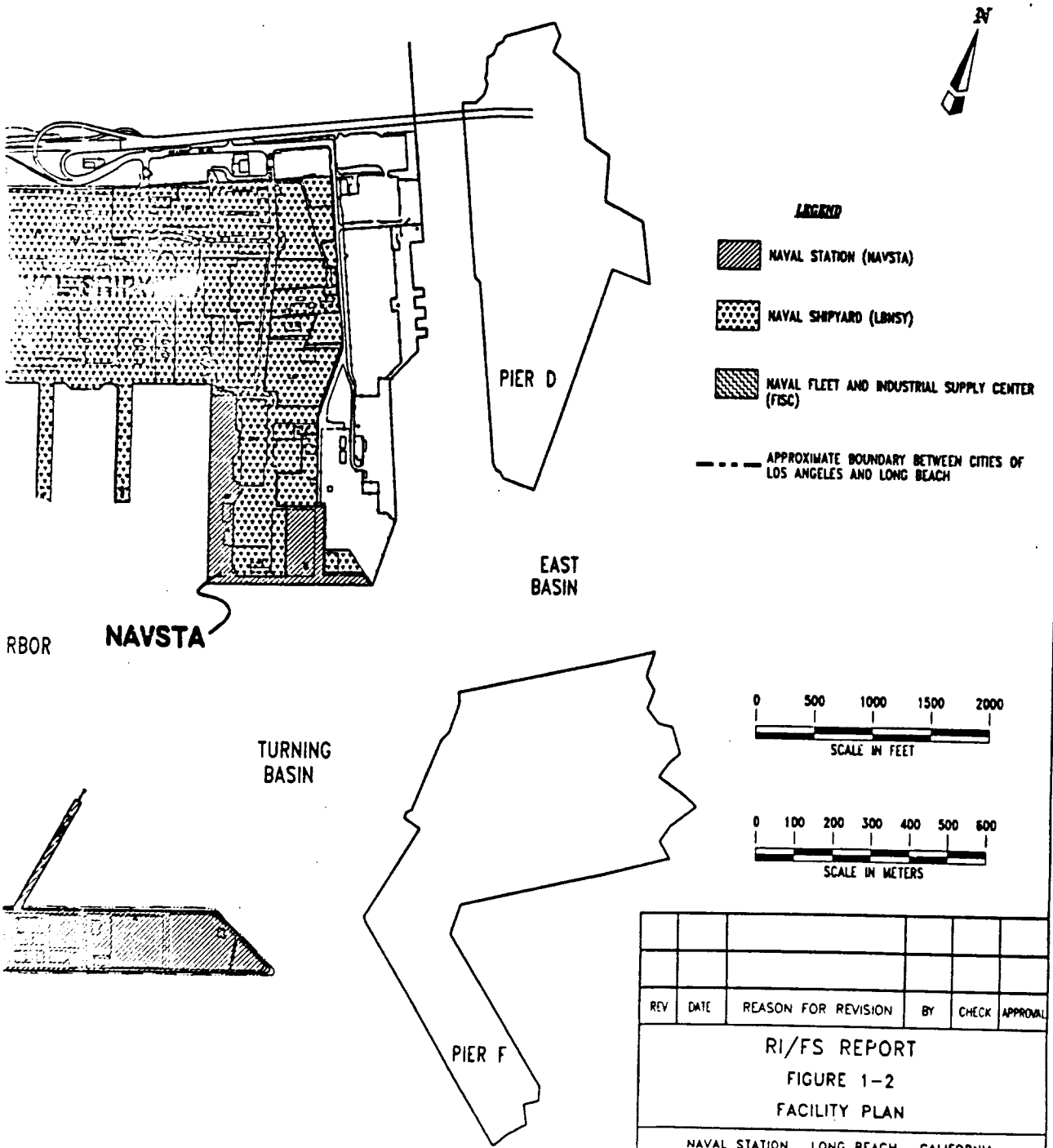
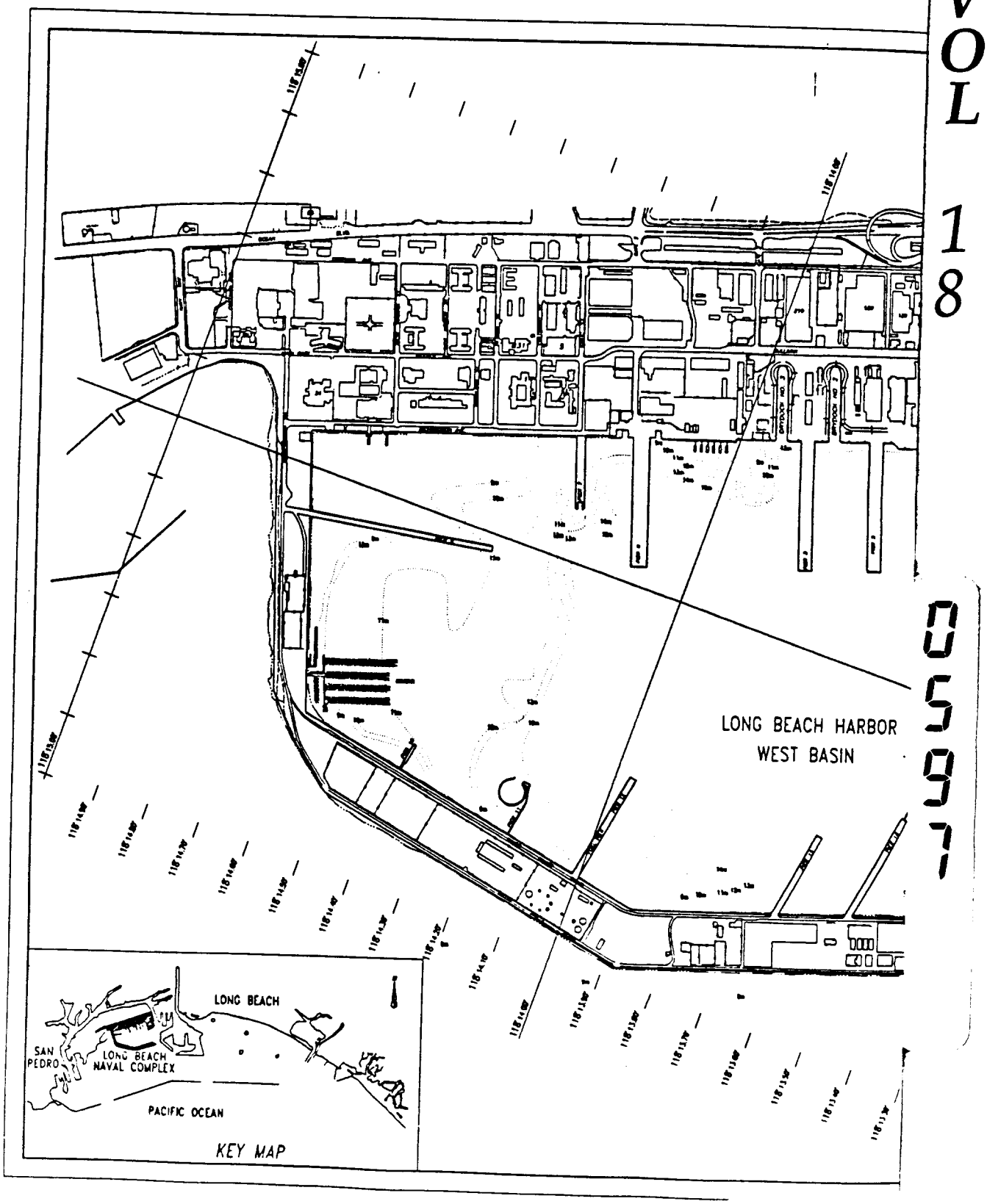



R0062531

VOL 18

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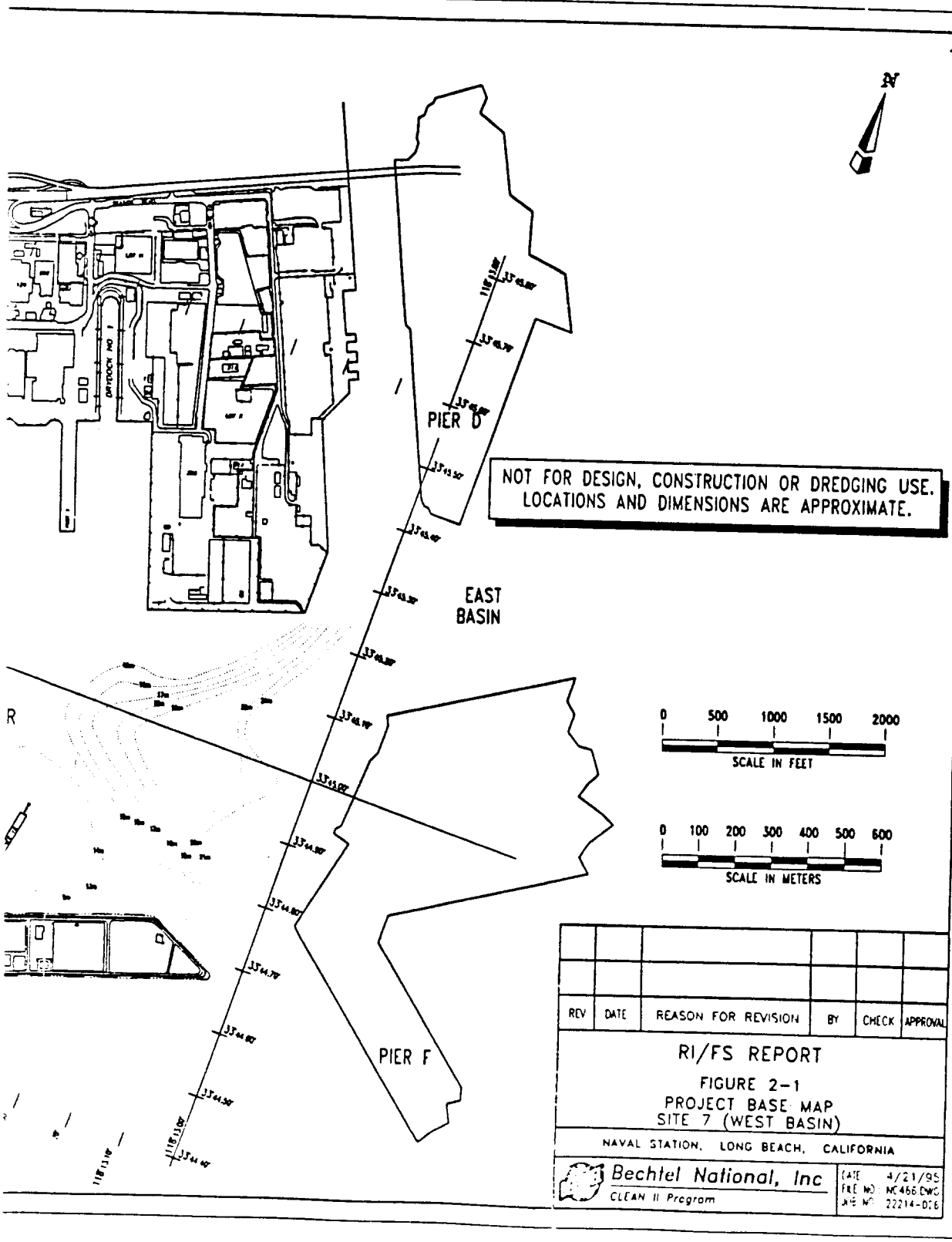
VOL 18 0598

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RI/FS REPORT

FIGURE 2-1
PROJECT BASE MAP
SITE 7 (WEST BASIN)

NAVAL STATION, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE 4/21/95
FILE NO NC466.DWG
JOB NO 22214-026

R0062533

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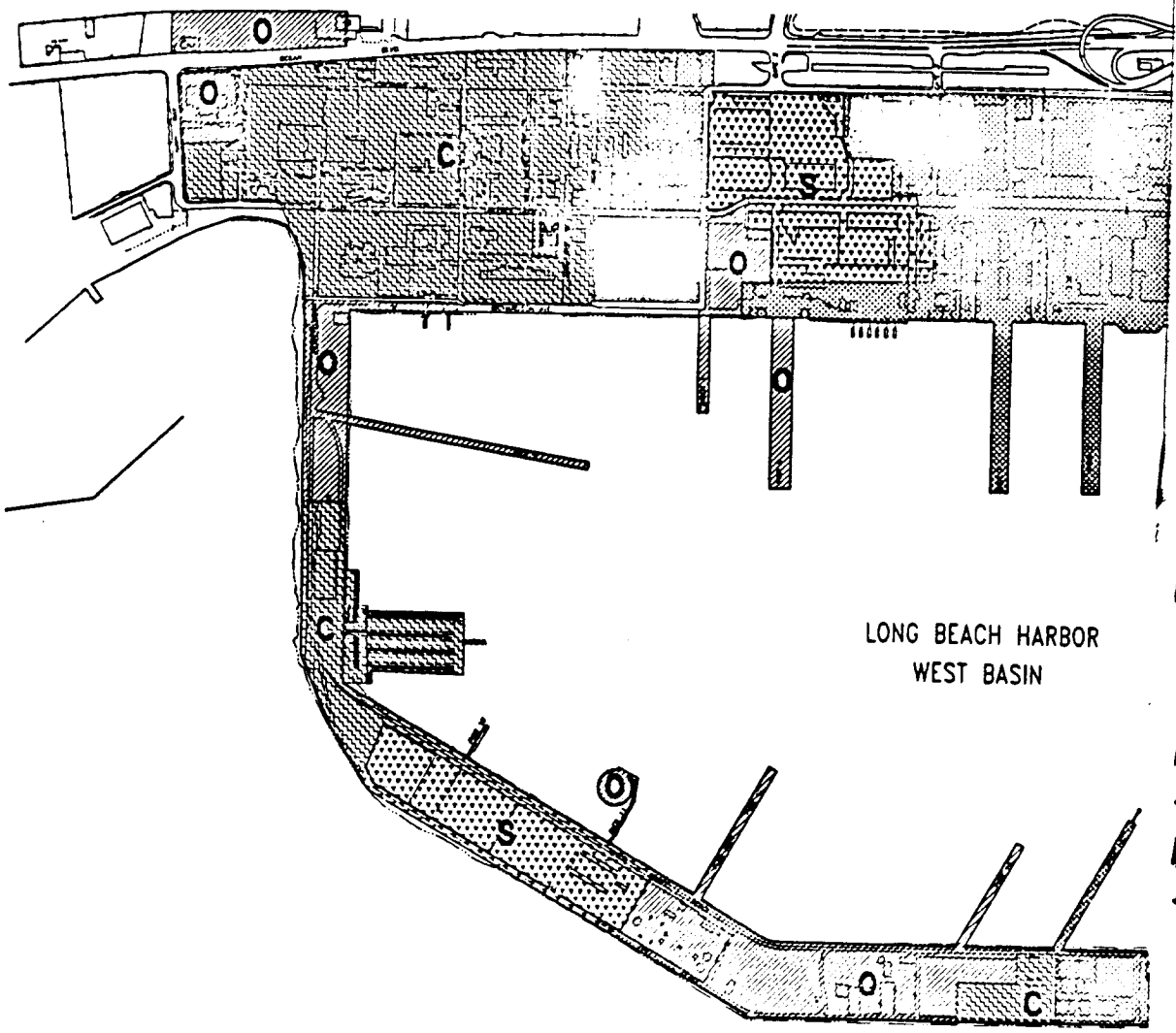
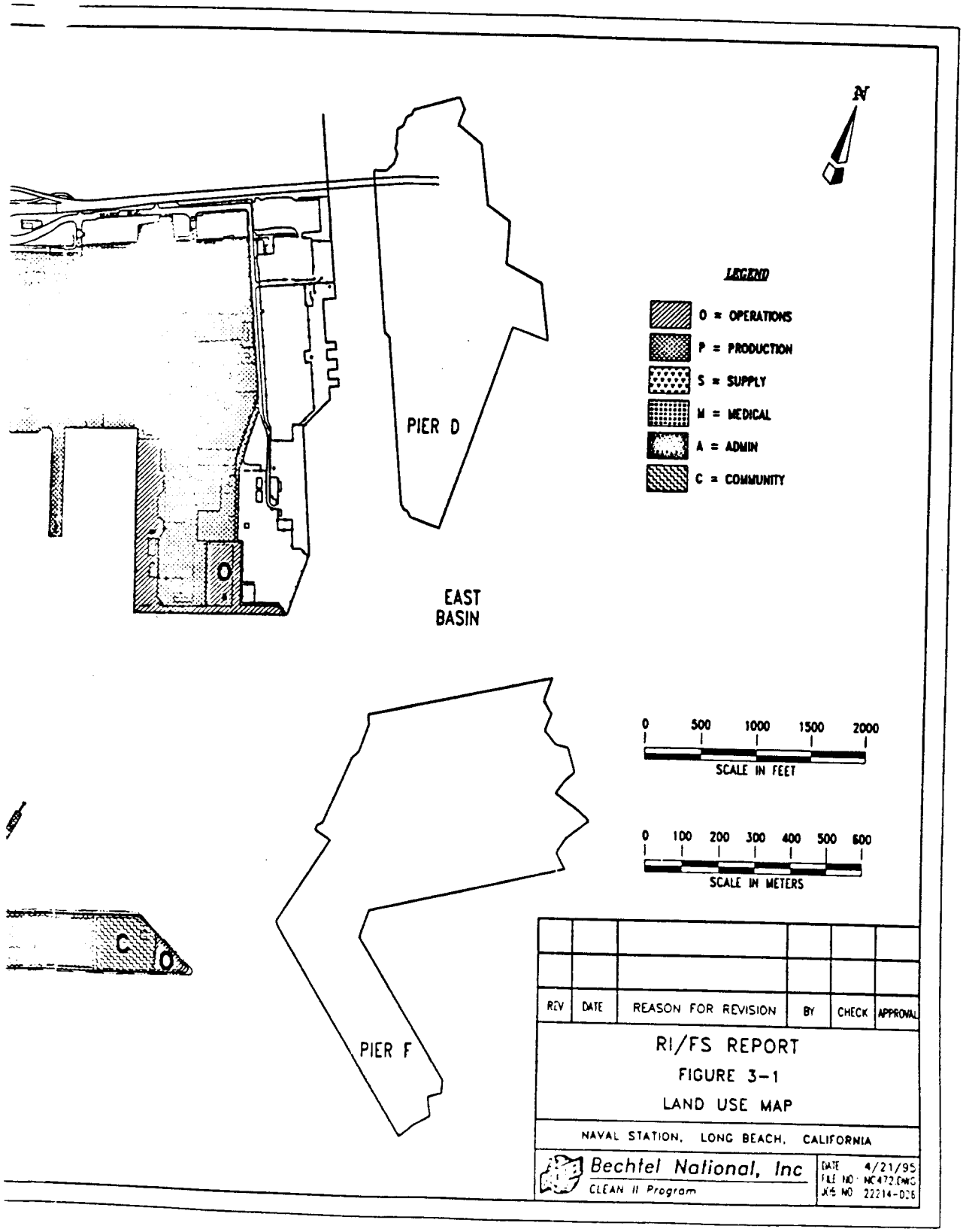



SOURCE: LONG BEACH NAVAL COMPLEX MASTER PLAN, 1991.

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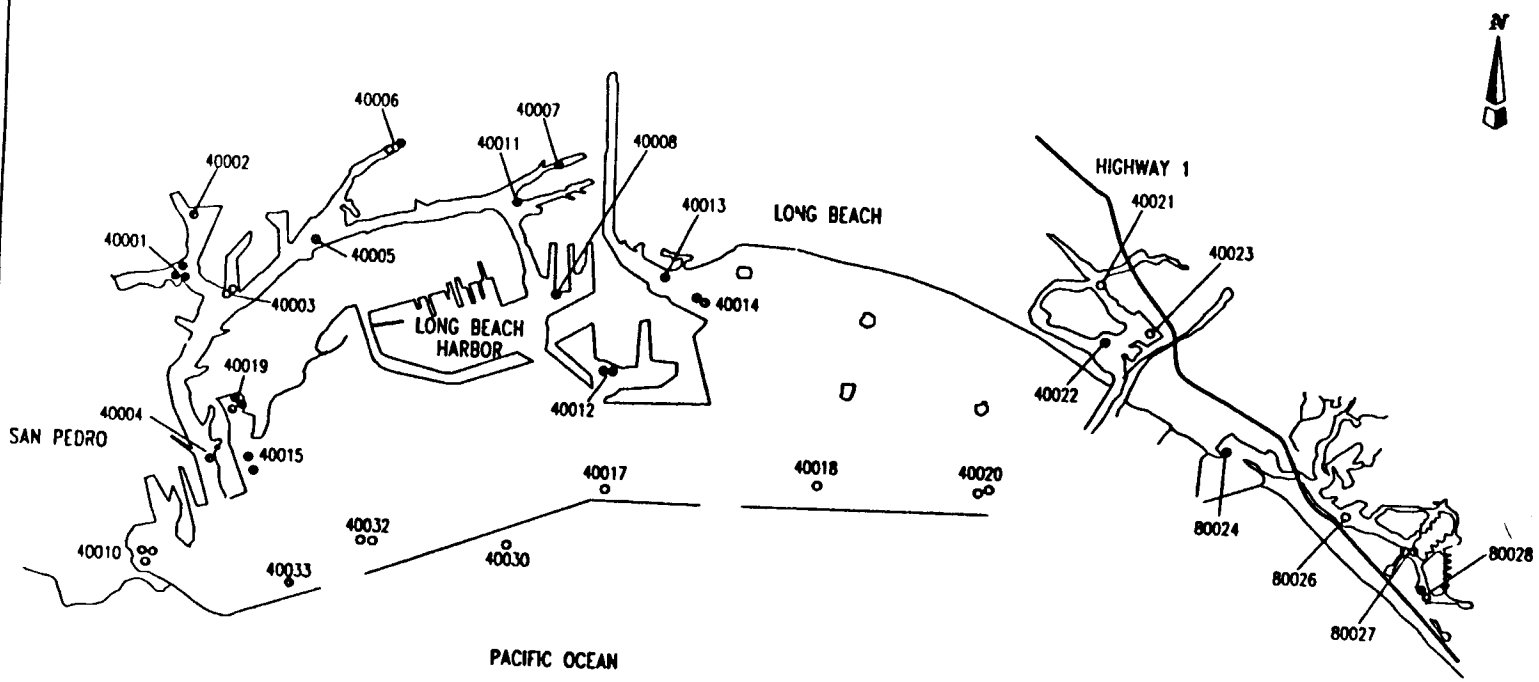


LEGEND

- ° ≤655.34 TEL
- • >655.34<6,676.14
- • ≥6,67.14 PEL

SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, SWRCB AND NOAA, NOV 1994.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
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RI/FS REPORT

FIGURE 4-1

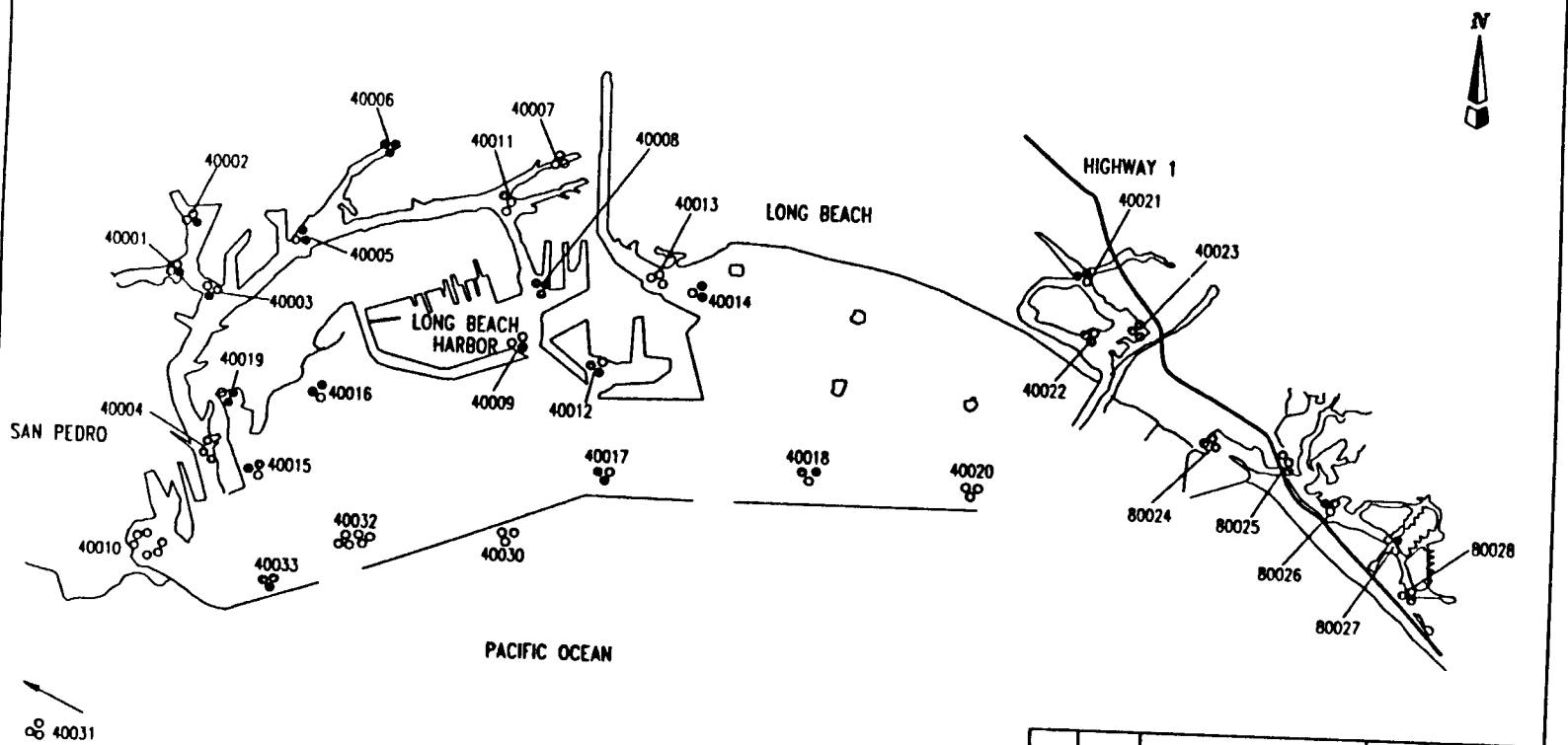
BAY PROTECTION AND TOXIC CLEANUP PROGRAM
SUM OF PAH CONCENTRATIONS IN SEDIMENT (ug/kg)

NAVAL STATION, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 4/24/95
FILE NO.: NC485.DWG
JOB NO.: 22214-026

R0062536




LEGEND

- ○ NOT STATISTICALLY SIGNIFICANT
- ◦ STATISTICALLY SIGNIFICANT AT $p<0.05$
- • STATISTICALLY SIGNIFICANT AT $p<0.01$

SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, SWRCB AND NOAA, NOV 1994.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
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RI/FS REPORT

FIGURE 4-2

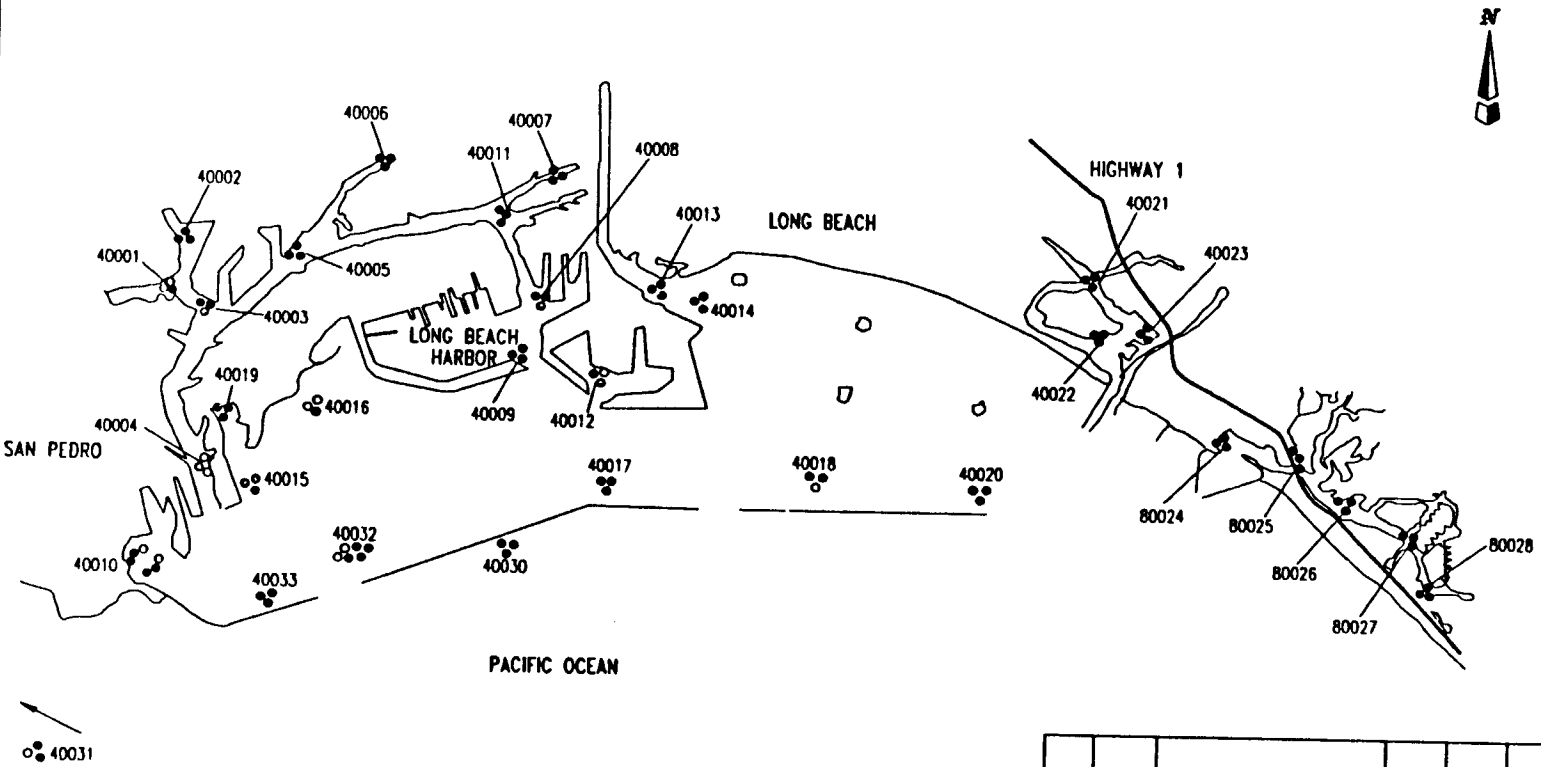
BAY PROTECTION AND TOXIC CLEANUP PROGRAM
AMPHIPOD STATIONS vs CONTROLS
STATISTICAL SIGNIFICANCE OF TOXICITY TEST RESULTS

NAVAL STATION, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 4/24/95
FILE NO.: NC486.DWG
JOB NO.: 22214-026

R0062537




LEGEND

- ○ NOT STATISTICALLY SIGNIFICANT
- • STATISTICALLY SIGNIFICANT AT $p<0.05$
- • STATISTICALLY SIGNIFICANT AT $p<0.01$

SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, SWRCB AND NOAA, NOV 1994.

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RI/FS REPORT
FIGURE 4-3
BAY PROTECTION AND TOXIC CLEANUP PROGRAM
ABALONE 100% POREWATER TOXICITY TEST
STATION STATISTICAL SIGNIFICANCE COMPARED TO CONTROLS

NAVAL STATION, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 4/24/95
FILE NO.: NC487.DWG
JOB NO.: 22214-026

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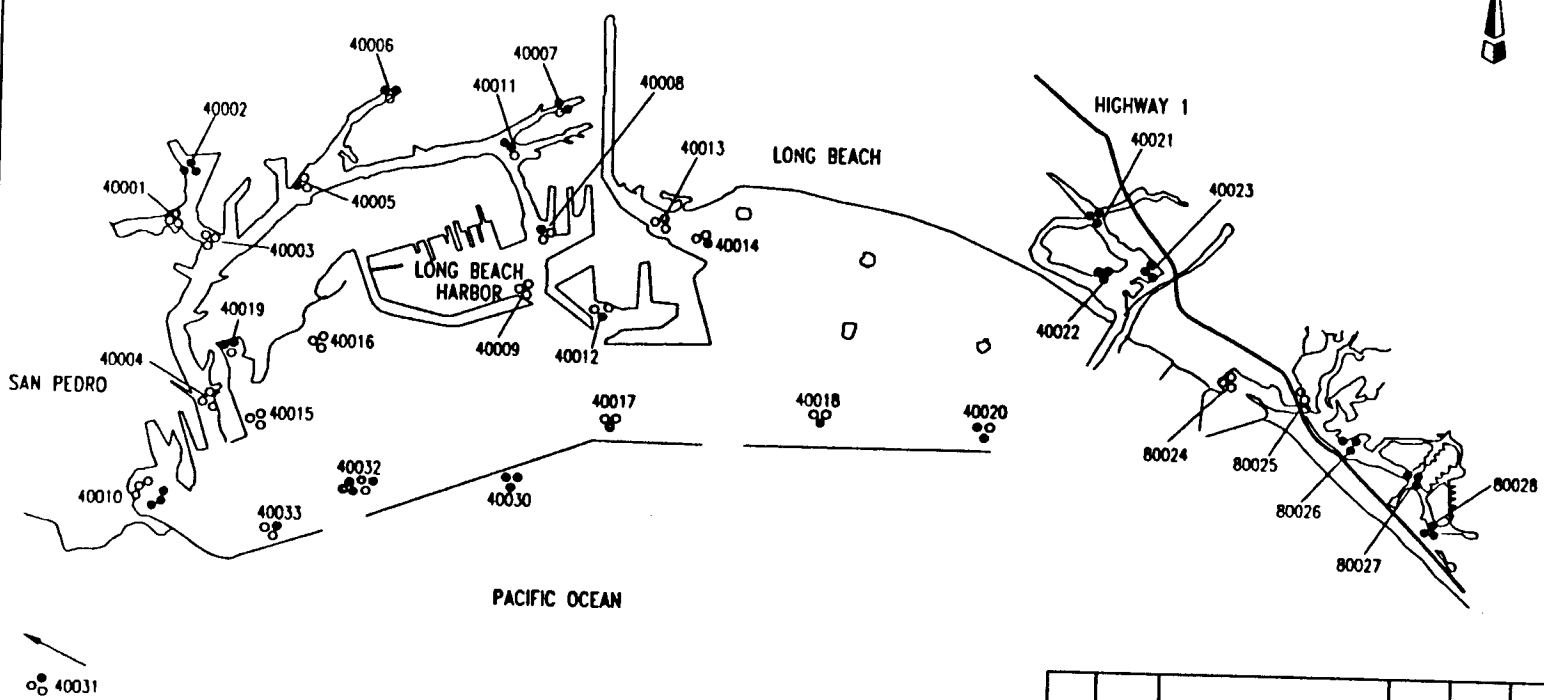


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RI/FS REPORT
FIGURE 4-4
BAY PROTECTION AND TOXIC CLEANUP PROGRAM
ABALONE 50% POREWATER TOXICITY TEST
STATION STATISTICAL SIGNIFICANCE COMPARED TO CONTROLS

NAVAL STATION, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 4/24/95
FILE NO.: NC4R9 DWG
JOB NO.: 22214-026

*LEGEND*

- ○ NOT STATISTICALLY SIGNIFICANT
- ◦ STATISTICALLY SIGNIFICANT AT $p<0.05$
- • STATISTICALLY SIGNIFICANT AT $p<0.01$

SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, SWRCB AND NOAA, NOV 1994.

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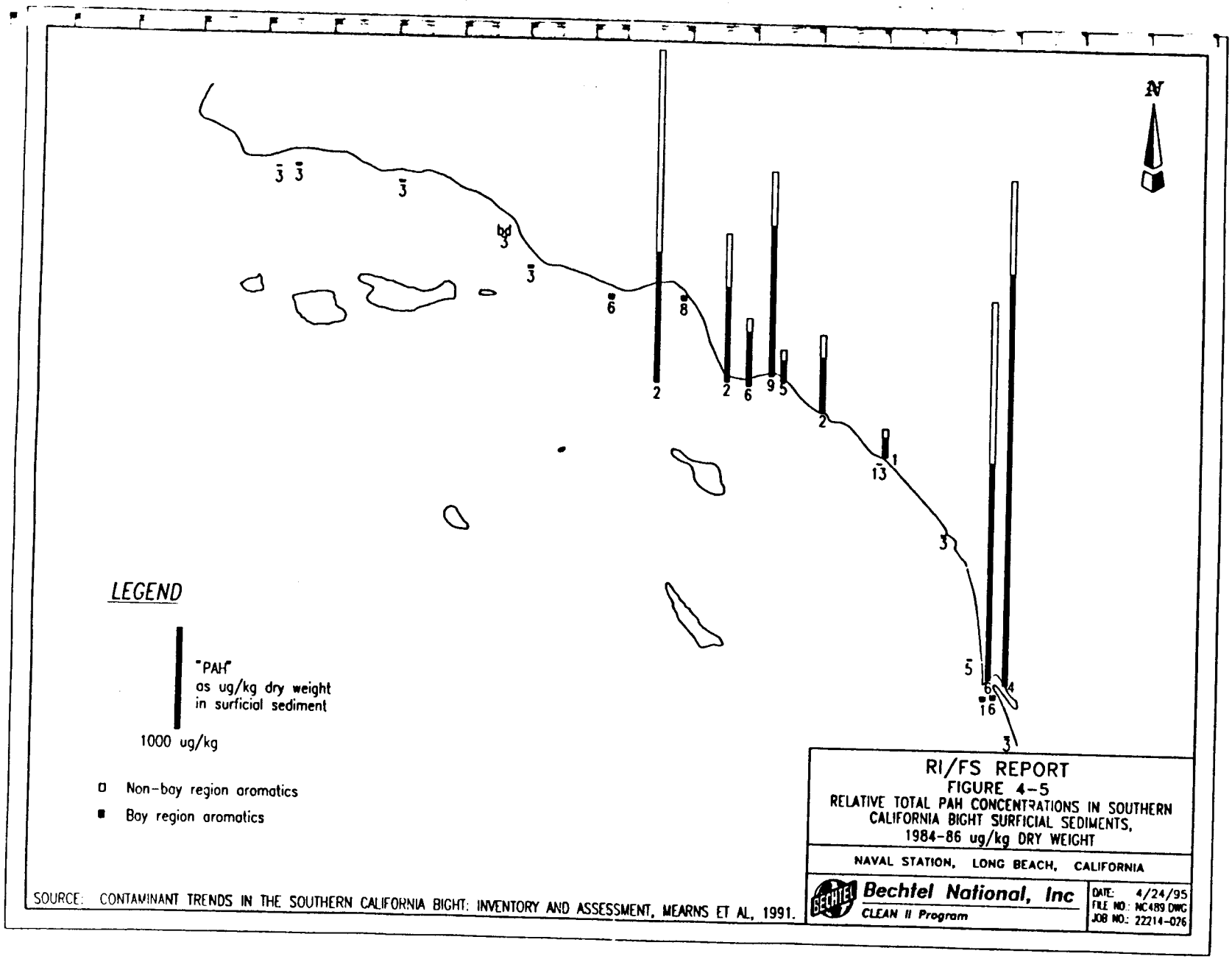
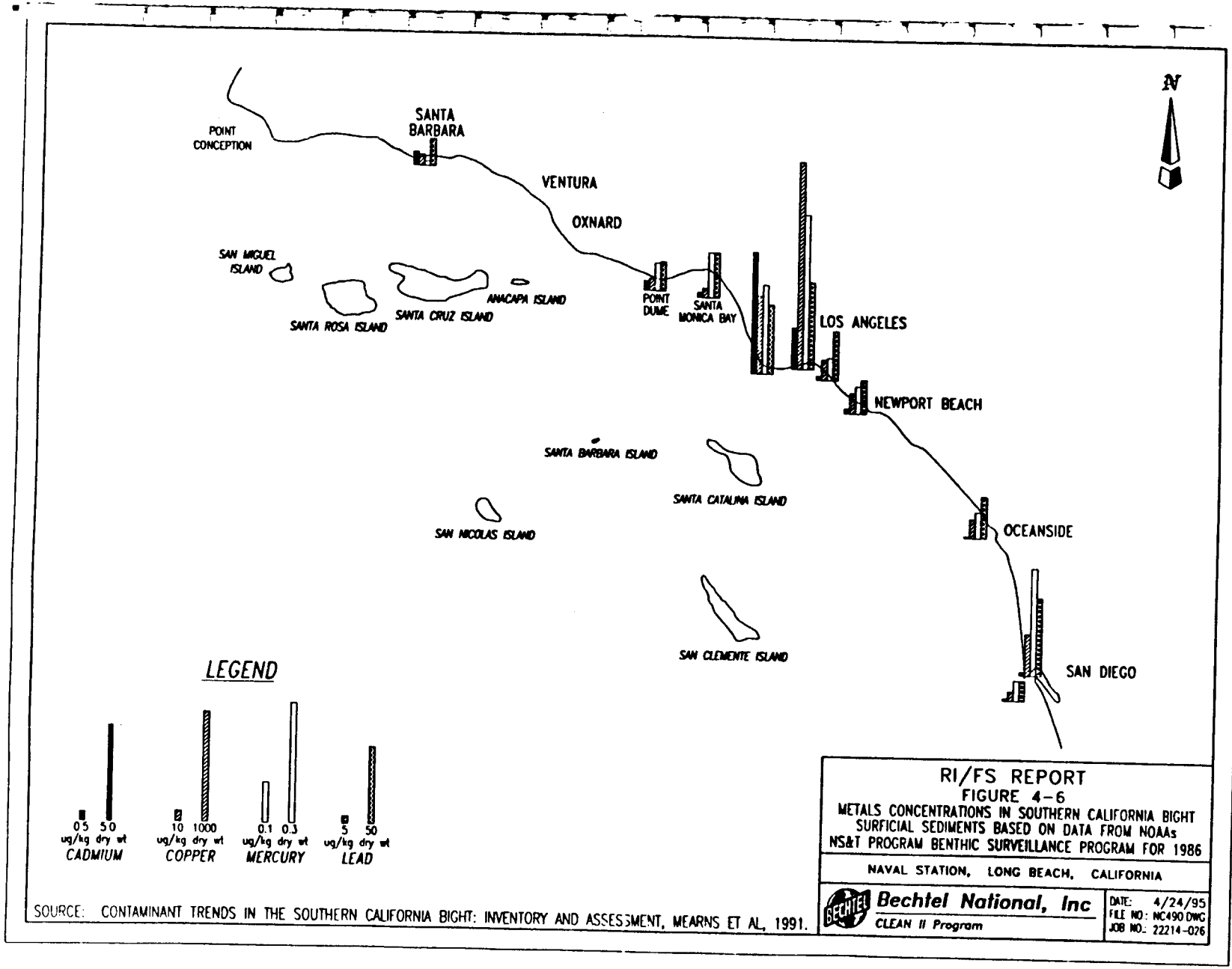
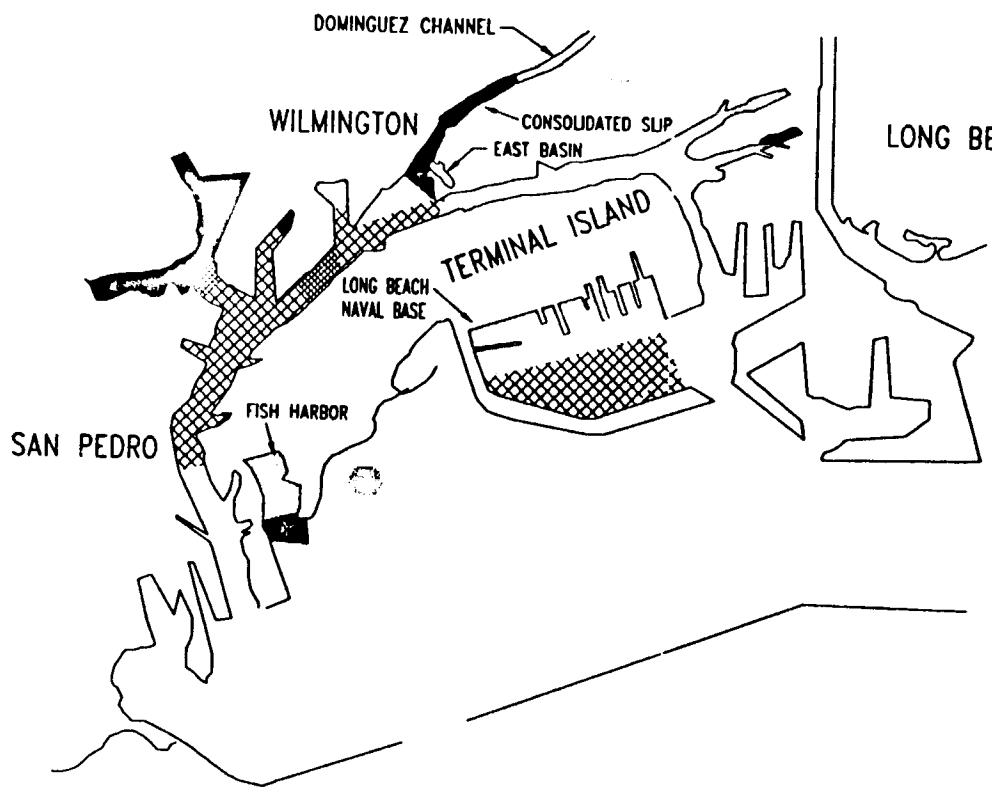

N
LEGEND
"PAH"
as ug/kg dry weight
in surficial sediment
1000 ug/kg
Non-bay region aromatics
Bay region aromatics
SOURCE: CONTAMINANT TRENDS IN THE SOUTHERN CALIFORNIA BIGHT: INVENTORY AND ASSESSMENT, MEARNS ET AL, 1991.
RI/FS REPORT
FIGURE 4-5
RELATIVE TOTAL PAH CONCENTRATIONS IN SOUTHERN CALIFORNIA BIGHT SURFICIAL SEDIMENTS, 1984-86 ug/kg DRY WEIGHT
NAVAL STATION, LONG BEACH, CALIFORNIA
Bechtel National, Inc
CLEAN II Program
DATE: 4/24/95
FILE NO.: NC489 DWG
JOB NO.: 22214-076

R0062540


N
POINT CONCEPTION
SANTA BARBARA
VENTURA
OXNARD
SAN MIGUEL ISLAND
SANTA ROSA ISLAND
SANTA CRUZ ISLAND
ANACAPA ISLAND
POINT DUME
SANTA MONICA BAY
LOS ANGELES
NEWPORT BEACH
SANTA BARBARA ISLAND
SANTA CATALINA ISLAND
SAN NICOLAS ISLAND
OCEANSIDE
SAN CLEMENTE ISLAND
SAN DIEGO
LEGEND
0.5 5.0 ug/kg dry wt CADMIUM
10 1000 ug/kg dry wt COPPER
0.1 0.3 ug/kg dry wt MERCURY
5 50 ug/kg dry wt LEAD
SOURCE: CONTAMINANT TRENDS IN THE SOUTHERN CALIFORNIA BIGHT: INVENTORY AND ASSESSMENT, MEARNS ET AL, 1991.
RI/FS REPORT
FIGURE 4-6
METALS CONCENTRATIONS IN SOUTHERN CALIFORNIA BIGHT SURFICIAL SEDIMENTS BASED ON DATA FROM NOAAs NS&T PROGRAM BENTHIC SURVEILLANCE PROGRAM FOR 1986
NAVAL STATION, LONG BEACH, CALIFORNIA
Bechtel National, Inc
CLEAN II Program
DATE: 4/24/95
FILE NO.: NC490.DWG
JOB NO.: 22214-026

R0062541




*LEGEND*

- HEALTHY ZONE
- POLLUTED ZONE
- SEMI HEALTHY ZONE I
- VERY POLLUTED ZONE
- SEMI HEALTHY ZONE II

SOURCE: REISH ET AL., 1980 "THE BENTHIC BIOLOGICAL CONDITIONS OF LOS ANGELES-LONG BEACH HARBORS: RESULTS OF 28 YEARS OF INVESTIGATION AND MONITORING"

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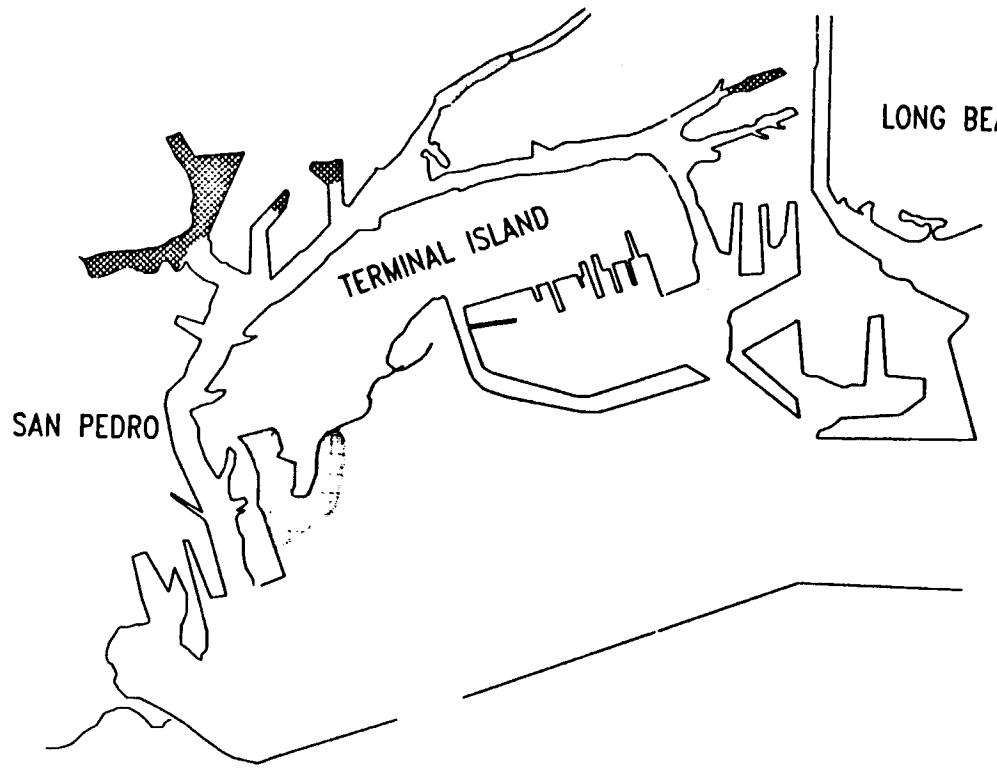
RI/FS REPORT
FIGURE 4-7
BENTHIC BIOLOGICAL CONDITIONS IN LOS ANGELES-LONG BEACH HARBORS IN 1954 (BEFORE STATE POLLUTION ABATEMENT PROGRAM) AS COMPARED TO THOSE AT LONG BEACH NAVAL COMPLEX IN 1971

NAVAL STATION, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 4/24/95
FILE NO.: NC492.DWG
JOB NO.: 22214-026

R0062542




*LEGEND*

- HEALTHY ZONE
- SEMI HEALTHY ZONE I
- POLLUTED ZONE

SOURCE: REISH ET AL., 1980 "THE BENTHIC BIOLOGICAL CONDITIONS OF LOS ANGELES-LONG BEACH HARBORS: RESULTS OF 28 YEARS OF INVESTIGATION AND MONITORING"

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
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FIGURE 4-8
BENTHIC BIOLOGICAL CONDITIONS IN LOS ANGELES-LONG BEACH HARBORS IN 1973 (AFTER STATE POLLUTION ABATEMENT PROGRAM) AS COMPARED TO THOSE AT LONG BEACH NAVAL COMPLEX IN 1978

NAVAL STATION, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 4/24/95
FILE NO.: NC491.DWG
JOB NO.: 22214-026

R0062543

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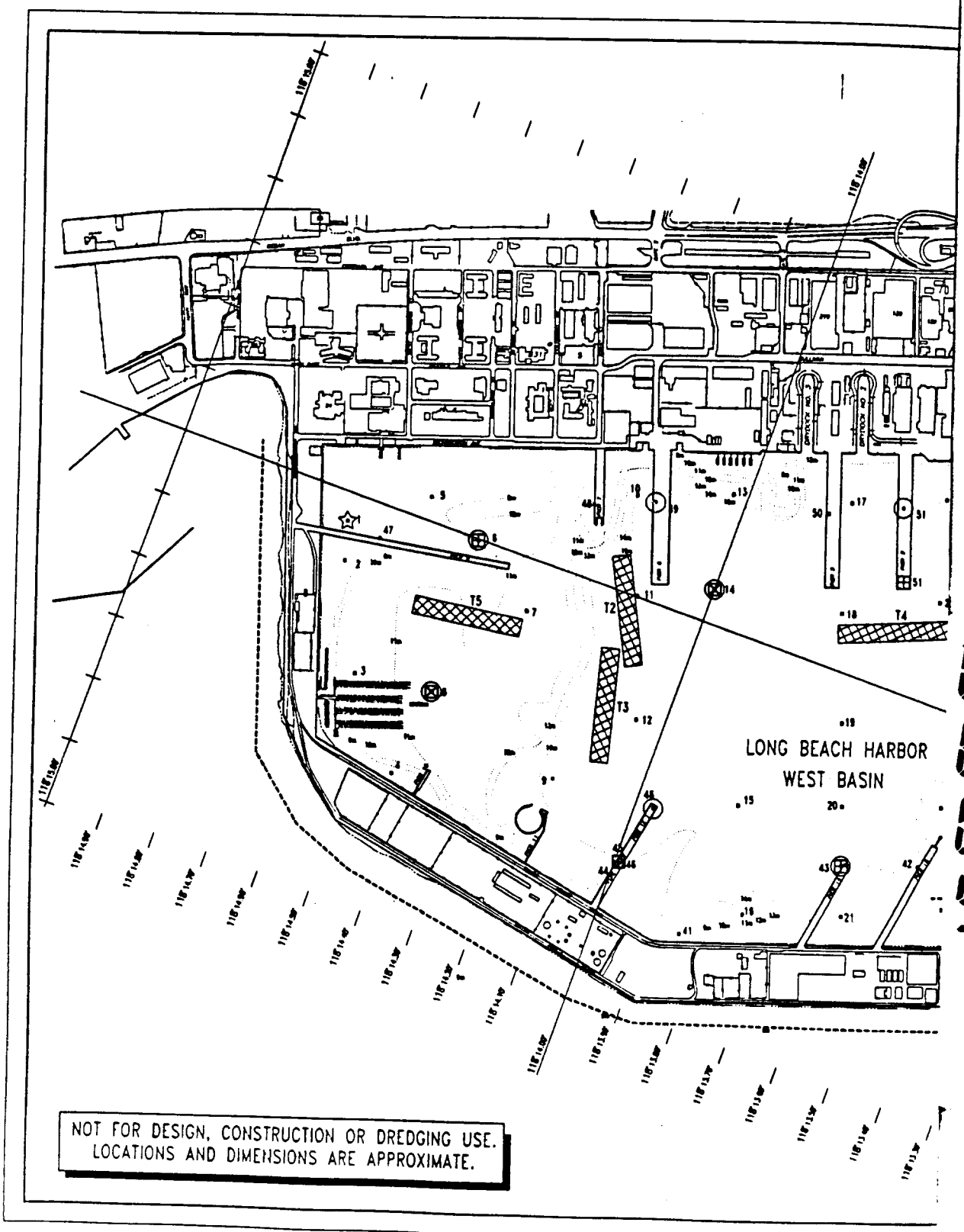


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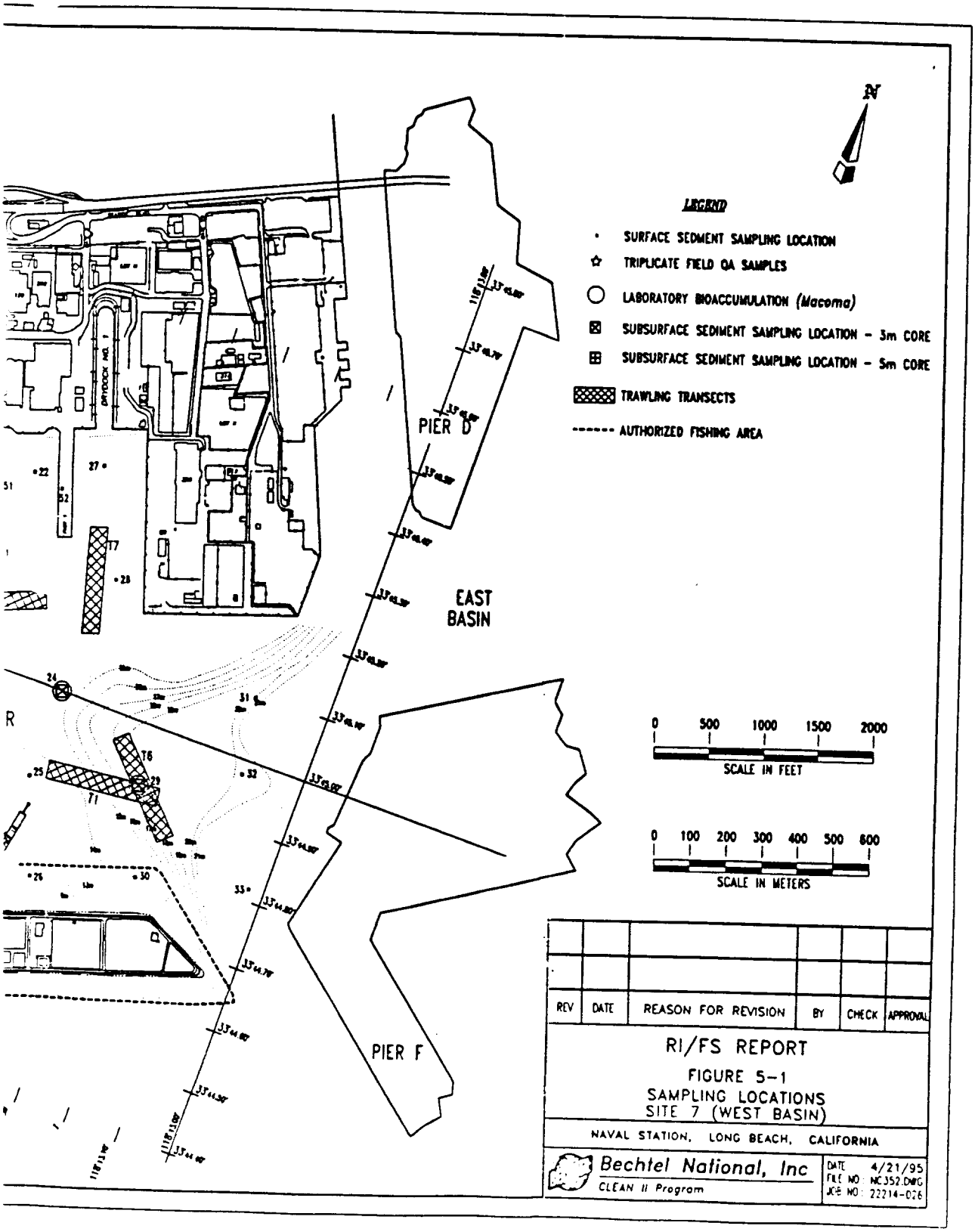
R0062544

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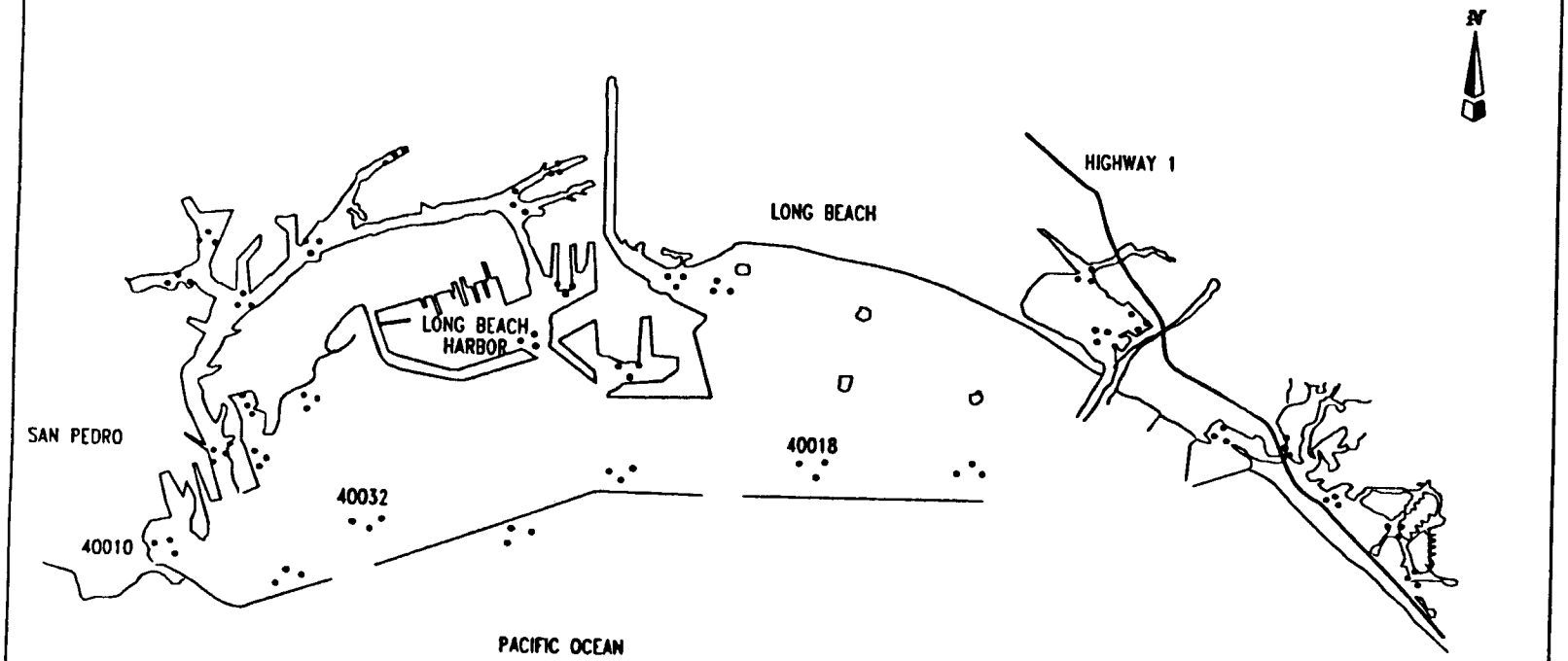


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RI/FS REPORT

FIGURE 5-2
LOCATIONS OF REFERENCE STATIONS SAMPLED WITHIN SAN PEDRO BAY

NAVAL STATION, LONG BEACH, CALIFORNIA

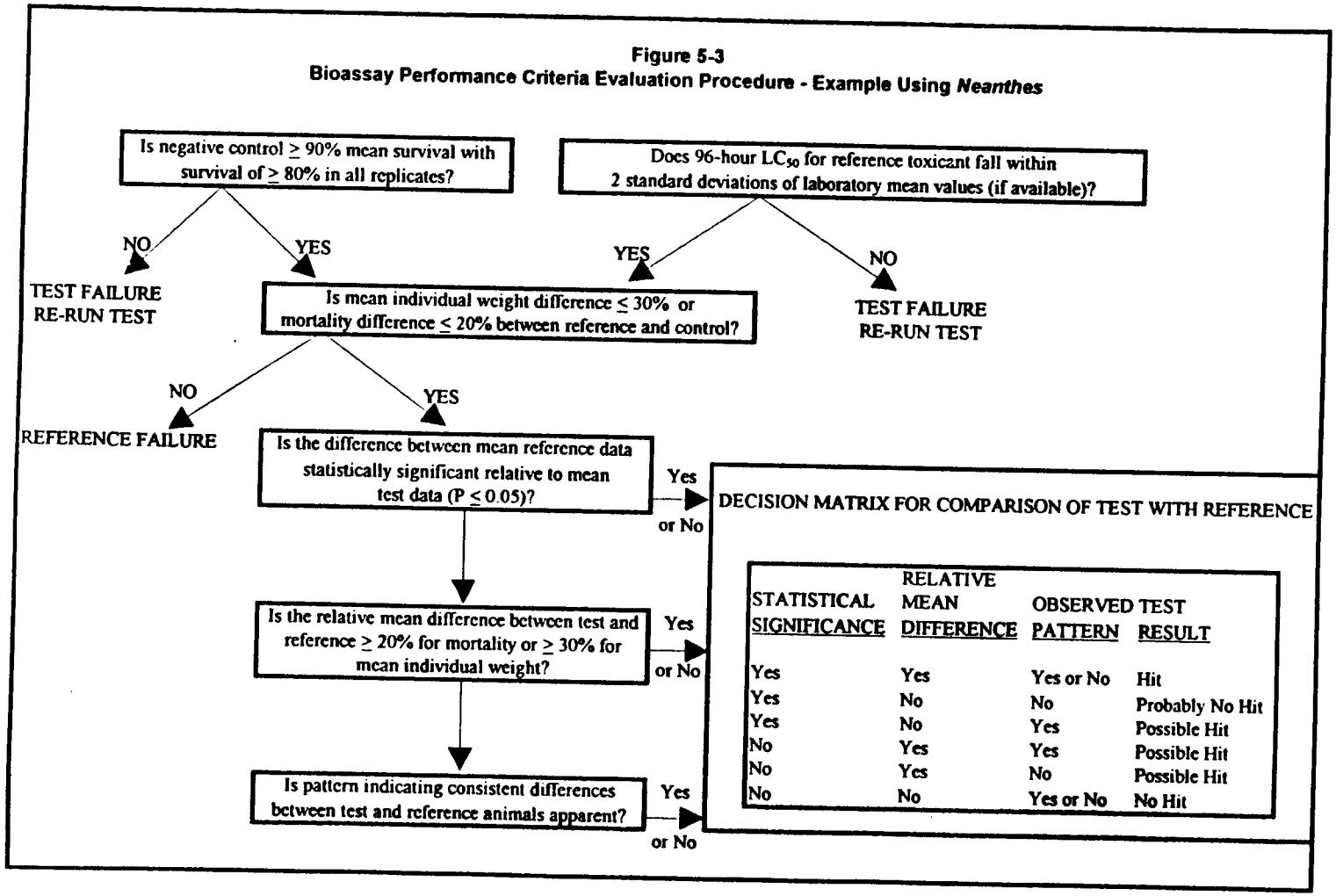
Bechtel National, Inc
CLEAN II Program

DATE: 4/24/95
FILE NO.: NC087.DWG
JOB NO.: 22214-026

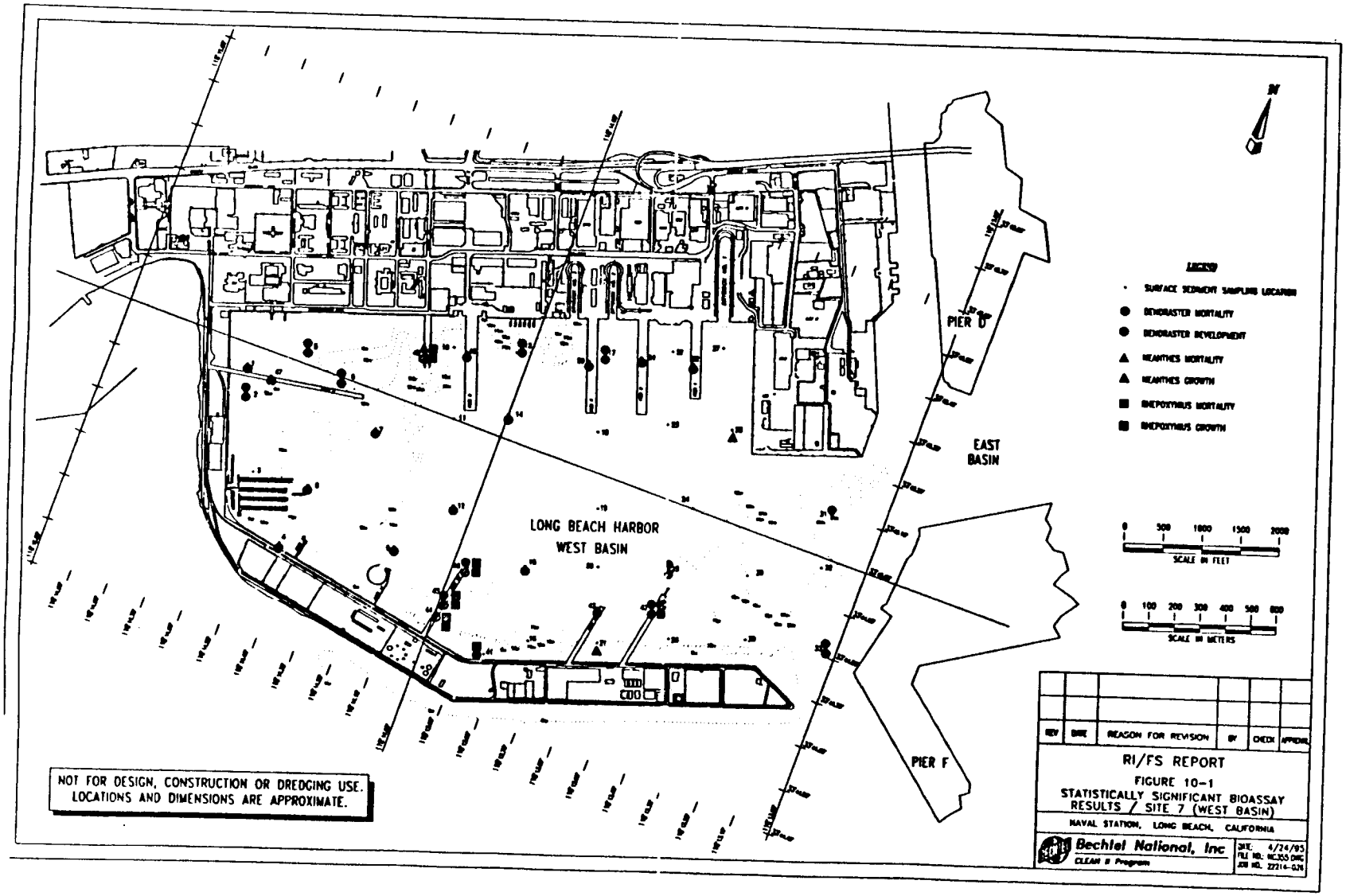
SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, SWRCB AND NOAA, NOV 1994.

R0062546

**Figure 5-3**
**Bioassay Performance Criteria Evaluation Procedure - Example Using *Neanthes***




R0062547




R0062548

VOL 18

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# TABLES

R0062549

VOL 18 0615

## Table 4-1
## Contaminant Concentrations (mg/kg dw) in Surface Sediment from Selected Surveys of the Southern California Bight

| Contaminant | Site | Year | No. of Samples | Mean | Minimum | Maximum | Reference |
|---|---|---|---|---|---|---|---|
| Arsenic | LA/LB[a] Harbors | 1978 | 20 | 60 | 22 | 120 | Soule and Oguri, 1980 |
| | Marina del Rey | 1986 | 13 | 4.6 | <1.0 | 7.9 | Soule and Oguri, 1987 |
| | Newport shipyards | 1986 | 6 | 13 | 11 | 15 | Liu and Schneider, 1988 |
| | Upper Newport Bay | 1971 | 3 | 2.7 | 0.80 | 3.9 | Young *et al.*, 1975 |
| | All sites | 1970-1985 | - | - | 0.80 | 540 | Mearns *et al.*, 1991 |
| Chromium | LA/LB Harbors | 1978 | 3 | 12 | 16 | 220 | Soule and Oguri, 1980 |
| | Marina del Rey | 1986 | 13 | 41 | 6.5 | 70 | Soule and Oguri, 1987 |
| | Newport shipyards | 1986 | 6 | 25 | 9 | 36 | Liu and Schneider, 1988 |
| | Upper Newport Bay | 1980 | 8 | 26 | 15 | 31 | MBC and SCCWRP, 1980 |
| | All sites | 1970-1985 | - | - | 0.43 | 1,300 | Mearns *et al.*, 1991 |
| Copper | LA/LB Harbors | 1978 | 31 | 100 | 18 | 230 | Soule and Oguri, 1980 |
| | Marina del Rey | 1985 | 13 | 150 | 10 | 360 | Soule and Oguri, 1986 |
| | Newport shipyards | 1986 | 6 | 610 | 310 | 830 | Liu and Schneider, 1988 |
| | Upper Newport Bay | 1980 | 8 | 24 | 12 | 31 | MBC and SCCWRP, 1980 |
| | All sites | 1970-1985 | - | - | 2.3 | 20,000 | Mearns *et al.*, 1991 |
| Lead | LA/LB Harbors | 1978 | 30 | 24 | 5.0 | 99 | Soule and Oguri, 1980 |
| | Marina del Rey | 1986 | 13 | 180 | 11 | 540 | Soule and Oguri, 1987 |
| | Newport shipyards | 1986 | 6 | 130 | 90 | 190 | Liu and Schneider, 1988 |
| | Upper Newport Bay | 1980 | 8 | 24 | 16 | 39 | MBC and SCCWRP, 1980 |
| | All sites | 1970-1985 | - | - | 1.0 | 4,400 | Mearns *et al.*, 1991 |
| Mercury | LA/LB Harbors | 1978 | 18 | 0.66 | 0.050 | 3.4 | Soule and Oguri, 1980 |
| | Marina del Rey | 1986 | 13 | 0.58 | 0.050 | 1.5 | Soule and Oguri, 1987 |
| | Newport shipyards | 1986 | 6 | 12 | 8.4 | 19 | Liu and Schneider, 1988 |
| | Upper Newport Bay | 1980 | 8 | 0.060 | 0.030 | 0.090 | MBC and SCCWRP, 1980 |
| | All sites | 1970-1985 | - | - | 0.010 | 160 | Mearns *et al.*, 1991 |
| Nickel[b] | Long Beach Harbor | 1984 | 3 | 27 | 19 | 33 | NOAA, 1991 |
| | Marina del Rey | 1986 | 3 | 23 | 18 | 26 | NOAA, 1991 |
| Silver | LA/LB Harbors | 1978 | 11 | 0.70 | 0.50 | 1.6 | Soule and Oguri, 1980 |
| | Upper Newport Bay | 1980 | 8 | 0.49 | 0.27 | 0.63 | MBC and SCCWRP, 1980 |
| | All sites | 1970-1985 | | - | 0.010 | 18 | Mearns *et al.*, 1991 |
| Zinc | Orange County | 1975 | 10 | 3.2 | 2.2 | 6.4 | Young *et al.*, 1978 |
| | Dana Point | 1976 | 5 | 1.5 | 1.2 | 1.8 | Young *et al.*, 1978 |
| | Los Angeles Harbor | 1980 | 5 | 3.4 | 3.0 | 3.5 | Mearns and Young, 1980 |
| | Palos Verdes | 1980 | 5 | 2.1 | 1.3 | 3.5 | Schafer *et al.*, 1982 |
| Total Butyltins | Channel Islands Harbor | 1986 | 1 | - | - | 0.014 | Stallard *et al.*, 1987 |
| | Huntington Bay | 1986 | 1 | - | - | 0.0013 | Stallard *et al.*, 1987 |
| | Marina del Rey county dock | 1986 | 1 | - | - | 0.056 | Stallard *et al.*, 1987 |
| | Long Beach Marina | 1986 | 3 | - | 0.0013 | 0.0086 | Stallard *et al.*, 1987 |
| | Seal Beach Navy Harbor | 1986 | 1 | - | - | 0.0026 | Stallard *et al.*, 1987 |
| Total PAHs[c] | 6 marine sites | 1984 | - | - | 0.054 | 2.8 | Malins *et al.*, 1986 |
| | 39 marine sites | 1985 | - | - | <0.0040 | 0.15 | Thompson *et al.*, 1987 |
| | 21 marine sites | 1986 | - | - | 0.14 | 16 | Anderson and Gossett, 1986 |
| | 11 marine sites | 1987 | - | - | <0.0030 | 20 | Anderson *et al.*, 1988 |
| | 18 marine sites | 1988[d] | - | - | 0 | 8.6 | NOAA, 1988 |

(table continues)



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**Table 4-1 (continued)**

| Contaminant | Site | Year | No. of Samples | Mean | Minimum | Maximum | Reference |
|---|---|---|---|---|---|---|---|
| Total PCBs[e] | LA/LB Harbors | 1988 | 20 | 2.6 | 0.049 | 30 | Eganhouse *et al.*, 1990 |
| | Marina del Rey | 1988 | 13 | <0.0010 | <0.0010 | <0.0010 | Soule and Oguri, 1990 |
| | Upper Newport Bay | 1980 | 8 | 0.020 | 0 | 0.050 | MBC and SCCWRP, 1980 |
| | San Diego Harbor | 1983 | 20 | 2.3 | 0.20 | 34 | Ladd *et al.*, 1984 |
| | All sites | 1973-1988 | 224 | - | 0.00020 | 34 | Mearns *et al.*, 1991 |
| DDT | LA/LB Harbors | 1978 | 31 | 0.10 | 0.0010 | 0.59 | Soule and Oguri, 1980 |
| | Marina del Rey | 1986 | 13 | 0.030 | 0.0010 | 0.073 | Soule and Oguri, 1987 |
| | Upper Newport Bay | 1980 | 8 | 0.18 | 0.090 | 0.51 | MBC and SCCWRP, 1980 |
| | Bolsa Bay | 1979-1980 | 3 | 4.6 | 3.2 | 7.2 | Feldmeth, 1980 |
| | All sites | 1970-1985 | 179 | - | 0.0010 | 180 | Mearns *et al.*, 1991 |

Notes:

[a] LA/LB – Los Angeles/Long Beach
[b] Concentrations normalized to percent fines
[c] PAHs – polynuclear aromatic hydrocarbons
[d] Minimum and maximum values are station averages; concentrations normalized to percent fines
[e] PCBs – polychlorinated biphenyls

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## Table 4-2
## Contaminant Concentrations (mg/kg ww) in Edible Tissues of White Croaker *(Genyonemus lineatus)* of the Southern California Bight

| Contaminant | Site | Year | No. of Samples | Mean | Minimum | Maximum | Reference |
|---|---|---|---|---|---|---|---|
| Arsenic | Los Angeles Harbor | 1979 | 5 | 0.82 | 0.67 | 1.0 | Goeders, 1982 |
| | Orange County outfall | 1985 | 1 | 0.48 | - | - | CSDOC, 1985 |
| Chromium | Palos Verdes | 1975-1977 | 3 | 0.063 | 0.058 | 0.073 | Young *et al.*, 1978 |
| | Orange County | 1975-1977 | 3 | 0.062 | 0.056 | 0.066 | Young *et al.*, 1978 |
| | Dana Point | 1975-1977 | 3 | 0.065 | 0.031 | 0.12 | Young *et al.*, 1978 |
| | Los Angeles Harbor | 1980 | 5 | 0.019 | 0.0060 | 0.035 | Mearns and Young, 1980 |
| | Palos Verdes | 1980 | 4 | 0.0060 | 0.0060 | 0.0070 | Schafer *et al.*, 1982 |
| Copper | Palos Verdes | 1975-1977 | 9 | 0.27 | 0.11 | 0.55 | Young *et al.*, 1978 |
| | Orange County | 1975-1977 | 10 | 0.27 | 0.020 | 1.1 | Young *et al.*, 1978 |
| | Dana Point | 1975-1977 | 5 | 0.13 | 0.10 | 0.19 | Young *et al.*, 1978 |
| | Los Angeles Harbor | 1980 | 5 | 0.45 | 0.29 | 0.55 | Mearns and Young, 1980 |
| | Palos Verdes | 1980 | 5 | 0.24 | 0.19 | 0.29 | Schafer *et al.*, 1982 |
| Lead[a] | Seal Beach | 1984 | - | 0.030 | - | - | Varanasi *et al.*, 1988 |
| | Dana Point | 1984 | - | 0.010 | - | - | Varanasi *et al.*, 1988 |
| Mercury | Los Angeles | 1979 | 5 | 0.045 | 0.030 | 0.079 | Mearns and Young, 1980 |
| | Palos Verdes | 1980 | 3 | 0.071 | 0.058 | 0.088 | Schafer *et al.*, 1982 |
| | Palos Verdes | 1975-1977 | 3 | 0.14 | 0.039 | 0.34 | Young *et al.*, 1978 |
| | San Pedro Bay | 1975-1977 | 3 | 0.19 | 0.17 | 0.21 | Young *et al.*, 1978 |
| | Dana Point | 1975-1977 | 3 | 0.28 | 0.24 | 0.31 | Young *et al.*, 1978 |
| | Point Dume | 1987 | 5 | 0.099[b] | 0.072 | 0.14 | Cal-EPA, 1991 |
| | White's Point | 1987 | 5 | 0.14[b] | 0.10 | 0.18 | Cal-EPA, 1991 |
| | Dana Point | 1987 | 5 | 0.17[b] | 0.11 | 0.44 | Cal-EPA, 1991 |
| | LA/Long Beach Harbor Breakwater | 1987 | 5 | 0.045[b] | 0.050 | 0.12 | Cal-EPA, 1991 |
| Total Tin[a] | Seal Beach | 1984 | - | 0.35 | - | - | Varanasi *et al.*, 1988 |
| | Dana Point | 1984 | - | 0.050 | - | - | Varanasi *et al.*, 1988 |
| Tributyltin | Marina del Rey | 1987 | 5 | 0.071 | 0.052 | 0.11 | Cal-EPA, 1991 |
| Zinc | Palos Verdes | 1975 | 8 | 3.7 | 2.4 | 5.5 | Young *et al.*, 1978 |
| | Orange County | 1975 | 10 | 3.2 | 2.2 | 6.4 | Young *et al.*, 1978 |
| | Dana Point | 1976 | 5 | 1.5 | 1.2 | 1.8 | Young *et al.*, 1978 |
| | Los Angeles Harbor | 1980 | 5 | 3.4 | 3.0 | 3.5 | Mearns and Young, 1980 |
| | Palos Verdes | 1980 | 5 | 2.1 | 1.3 | 3.5 | Schafer *et al.*, 1982 |
| PAHs[c] | San Pedro Bay | 1979 | - | 0.0017 | - | - | Mearns and Young, 1980 |
| | Outer Navy Mole | 1981 | 23 | < 0.001 | - | - | Bascom, 1982 |
| PCBs[d] | Outer Navy Mole[e] | 1981 | 23 | 0.10 | - | - | Bascom, 1982 |
| | Palos Verdes | 1980 | 5 | 0.38 | 0.23 | 0.51 | Schafer *et al.*, 1982 |
| | Palos Verdes South | 1990 | 5 | 0.87 | - | - | Thompson, 1993 |
| | Los Angeles Harbor | 1980 | 5 | 0.57 | 0.36 | 0.94 | Mearns and Young, 1980 |
| | Marina del Rey | 1990 | 5 | 0.14 | - | - | Thompson, 1993 |
| | Point Dume | 1990 | 5 | 0.090 | - | - | Thompson, 1993 |
| | Various within S CA Bight[f] | 1981 | - | - | 0.0080 | 1.6 | Gossett *et al.*, 1983 |
| | Various within S CA Bight | 1987 | - | - | 0 | 3.5 | Cal-EPA, 1991 |

(table continues)



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Table 4-2 (continued)

| Contaminant | Site | Year | No. of Samples | Mean | Minimum | Maximum | Reference |
|---|---|---|---|---|---|---|---|
| DDT[g] | Outer Navy Mole | 1981 | 23 | 0.28 | - | - | Bascom, 1982 |
| | Palos Verdes | 1980 | 5 | 7.6 | 3.6 | 13 | Schafer *et al.*, 1982 |
| | Palos Verdes South | 1990 | 5 | 10 | - | - | Thompson, 1993 |
| | Los Angeles Harbor | 1980 | 5 | 0.83 | 0.34 | 2.2 | Mearns and Young, 1980 |
| | Marina del Rey | 1990 | 5 | 0.25 | - | - | Thompson, 1993 |
| | Point Dume | 1990 | 5 | 0.16 | - | - | Thompson, 1993 |
| | Various within S CA Bight | 1981 | - | - | 0.033 | 21 | Gossett *et al.*, 1983 |
| | Various within S CA Bight | 1987 | - | - | 0.0020 | 8.1 | Cal-EPA, 1991 |

Notes:

[a] Values are for liver tissue only
[b] Geometric mean concentration
[c] PAHs – polynuclear aromatic hydrocarbons measured as benzo(a)pyrene
[d] PCBs – polychlorinated biphenyls
[e] Total PCB – Aroclor 1242 + Aroclor 1254
[f] S CA Bight – Southern California Bight
[g] DDT – dichloro-diphenyl-trichloroethane

0618



R0062553

VOL 18 0619

## Table 4-3
## Contaminant Concentrations (mg/kg ww) in Edible Tissues of California Halibut (*Paralichthys californicus*) of the Southern California Bight

| Contaminant | Site | Year | No. of Samples | Mean | Minimum | Maximum | Reference |
|---|---|---|---|---|---|---|---|
| Arsenic | Los Angeles Harbor | 1979 | 4 | 0.58 | 0.42 | 0.82 | Goodars, 1982 |
| | Palos Verdes | 1976 | 4 | 0.60 | 0.18 | 0.77 | Goodars, 1982 |
| | San Diego area | 1976 | 2 | 1.2 | 0.79 | 1.7 | Goodars, 1982 |
| Chromium | Palos Verdes | 1975-1977 | 2 | 0.015 | 0.015 | 0.015 | Young *et al.*, 1978 |
| | Point Dume | 1975-1977 | 2 | 0.017 | <0.014 | 0.027 | Young *et al.*, 1978 |
| | Los Angeles Harbor | 1980 | 4 | 0.032 | 0.022 | 0.055 | Mearns and Young, 1980 |
| Copper | Palos Verdes | 1976 | 4 | 0.11 | 0.050 | 0.21 | Young *et al.*, 1978 |
| | Ventura County | 1976 | 2 | 0.12 | 0.040 | 0.19 | Young *et al.*, 1978 |
| | San Diego | 1976 | 2 | 0.14 | 0.11 | 0.17 | Young *et al.*, 1978 |
| | Los Angeles Harbor | 1980 | 4 | 0.19 | 0.13 | 0.34 | Mearns and Young, 1980 |
| Lead[a] | Santa Monica Bay | 1984 | - | 0.040 | - | - | Varanasi *et al.*, 1988 |
| | Dana Point | 1984 | - | 0.10 | - | - | Varanasi *et al.*, 1988 |
| | San Pedro Canyon | 1984 | - | 0.010 | - | - | Varanasi *et al.*, 1988 |
| | San Diego Bay | 1984 | - | 0.060 | - | - | Varanasi *et al.*, 1988 |
| Mercury | Los Angeles Harbor | 1979 | 4 | 0.088 | 0.073 | 0.11 | Mearns and Young, 1980 |
| | Newport Bay | 1980 | 5 | 0.040 | 0.026 | 0.077 | MBC and SCCWRP, 1980 |
| | Newport Bay | 1980 | 5 | 0.090 | 0.059 | 0.13 | MBC and SCCWRP, 1980 |
| | Palos Verdes | 1975-1977 | 3 | 0.28 | 0.24 | 0.36 | Young *et al.*, 1978 |
| | San Diego coast | 1975-1977 | 2 | 0.22 | 0.20 | 0.24 | Young *et al.*, 1978 |
| | Point Dume | 1987 | 5 | <0.050[b] | <0.050 | <0.050 | CalEPA, 1991 |
| Total Tin[a] | Santa Monica Bay | 1984 | - | 0.10 | - | - | Varanasi *et al.*, 1988 |
| | Dana Point | 1984 | - | 0.010 | - | - | Varanasi *et al.*, 1988 |
| | San Pedro Canyon | 1984 | - | 0.020 | - | - | Varanasi *et al.*, 1988 |
| | San Diego Bay | 1984 | - | 0.15 | - | - | Varanasi *et al.*, 1988 |
| Zinc | Palos Verdes | 1976 | 4 | 3.3 | 2.3 | 5.1 | Young *et al.*, 1978 |
| | San Diego | 1976 | 2 | 1.9 | 1.9 | 1.9 | Young *et al.*, 1978 |
| | Point Dume | 1976 | 2 | 2.4 | 2.2 | 2.6 | Young *et al.*, 1978 |
| | Los Angeles Harbor | 1980 | 4 | 2.3 | 1.9 | 2.9 | Mearns and Young, 1980 |
| PAHs[c] | San Pedro Bay | 1979 | - | 0.0017 | - | - | Mearns and Young, 1980 |
| PCBs[d] | Newport Bay | 1980 | 10 | 0.032 | 0.0080 | 0.016 | MBC and SCCWRP, 1980 |
| | Los Angeles Harbor | 1980 | 4 | 0.15 | 0.13 | 0.19 | Mearns and Young, 1980 |
| | Cabrillo Pier, LA Harbor | 1981 | 5 | 0.052 | 0.049 | 0.059 | Gossett *et al.*, 1983 |
| | Belmont Pier, LA Harbor | 1981 | 4 | 0.062 | 0.023 | 0.11 | Gossett *et al.*, 1983 |
| | Various within S CA Bight[e] | 1987 | - | - | 0 | 0.028 | CalEPA, 1991 |
| DDT[f] | Newport Bay | 1980 | 10 | 0.63 | 0.17 | 1.2 | MBC and SCCWRP, 1980 |
| | Los Angeles Harbor | 1980 | 4 | 0.39 | 0.34 | 0.44 | Mearns and Young, 1980 |
| | Cabrillo Pier, LA Harbor | 1981 | 5 | 0.16 | 0.12 | 0.21 | Gossett *et al.*, 1983 |
| | Belmont Pier, LA Harbor | 1981 | 4 | 0.13 | 0.055 | 0.18 | Gossett *et al.*, 1983 |
| | Various within S CA Bight | 1987 | - | - | 0.0010 | 0.042 | CalEPA, 1991 |

Notes:

[a] Values are for hornyhead turbot liver tissue only
[b] Geometric mean concentration
[c] PAHs – polynuclear aromatic hydrocarbons measured as benzo(a)pyrene
[d] PCBs – polychlorinated biphenyls
[e] S CA Bight – Southern California Bight
[f] DDT – dichloro-diphenyl-trichloroethane



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**Table 5-1**
**Target Fish Species for Collection, Listed by Data Use and Relative Priority**

| Common Name | Advantages | Disadvantages |
|---|---|---|
| **Human Health Only** | | |
| Barred sand bass<br>*Paralabrax nebulifer* | Abundant<br>Predatory benthic and pelagic feeder<br>Non-migratory local species<br>Frequently caught<br>Well documented in similar studies<br>High lipid content | Low catch frequency by trawl |
| Rubberlip surfperch<br>*Rhacochilus toxotes* | Abundant in harbors, bays and around piers<br>Non-migratory local species<br>Frequently caught | Pelagic feeder<br>Not well studied |
| Kelp bass<br>*Paralabrax clathratus* | Abundant<br>Frequently caught<br>Non-migratory local species<br>Well studied locally<br>Recommended by EPA for contaminant studies<br>High lipid content | Predatory pelagic feeder<br>Seldom caught/observed away from kelp beds |
| Opaleye<br>*Girella nig* | Abundant in water depths of about 20 ft<br>Frequently caught | Omnivorous pelagic feeder, especially feeds on seaweeds and the animals that live on them |
| Queenfish<br>*Seriphus politus* | Caught locally<br>Non-migratory local species | Water column feeder<br>Not well studied |
| Barred surfperch<br>*Amphistichus argenteus* | Occasionally caught in Long Beach Harbor<br>Recommended by EPA for contaminant studies<br>Predatory benthic feeder<br>Non-migratory local species | Most abundant in breaking surf along sandy beaches |
| **Ecological Only** | | |
| Hornyhead turbot<br>*Pleuronichthys verticalis* | Abundant<br>Predatory benthic feeder<br>Non-migratory local species<br>Life history well understood<br>Probably common prey species | Not frequently caught by fishermen |
| Spotted turbot<br>*Pleuronichtys ritteri* | Predatory benthic feeder<br>Non-migratory local species<br>Probably common prey species | Not frequently caught by fishermen |

(table continues)



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Table 5-1 (continued)

| Common Name | Advantages | Disadvantages |
|---|---|---|
| **Ecological Only** | | |
| Diamond turbot<br>*Hypsopetta guttulata* | Predatory benthic feeder<br>Non-migratory local species<br>Probably common prey species | Not frequently caught by fishermen |
| Speckle-finned sanddab<br>*Citharichthys stigmaeus* | More abundant than turbot<br>Predatory bottom-feeder<br>Prey to large fish, diving birds and marine mammals | Not frequently caught by fishermen |
| Blue rockfish<br>*Sebastes mystinus* | Recommended by EPA for contaminant studies<br>Abundant in shallow water in and around rocky areas<br>Benthic and pelagic feeder | Low catch frequency in Long Beach Harbor, but occasionally caught |
| **Human Health and Ecological** | | |
| California halibut<br>*Paralichthys californicus* | Abundant on sandy bottoms in water shallower than 60 ft<br>Benthic dweller<br>Used by State of California for major contaminant study<br>Frequently caught<br>Prey to sharks, rays and marine mammals<br>Desirable game fish | Pelagic feeder<br>May migrate as adults |
| Fantail sole<br>*Xystreurys lioledis* | Occasionally caught locally<br>Benthic feeder<br>Common prey species | Not well studied<br>Locally migratory |
| Dover sole<br>*Microstomus pacificus* | May occur as far south as Baja California<br>Benthic feeder<br>Recommended by EPA for contaminant studies | Resides in water depths up to 3,000 ft<br>Not frequently caught in Long Beach Harbor<br>Locally migratory |
| White croaker<br>*Genyonemus lineatus* | Abundant in shallow bays<br>Omnivorous benthic feeder<br>Non-migratory local species<br>Frequently caught<br>Well documented in similar studies<br>Abundant reference data<br>Fish consumption advisory has been issued locally | |



R0062556

**Table 5-2**
**Numbers of Fish Collected and Analyzed by Tissue Type and Species**

| Target Species | Whole Body | | | Fillet | | | Bile | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of Sampling Areas | Fish Required per Area | Number of Fish Required | Number of Sampling Areas | Fish Required per Area | Number of Fish Required | Number of Sampling Areas | Fish Required per Area | Number of Fish Required |
| **Species 1 - Human Health Only** | | | | | | | | | |
| Study site (NAVSTA pier) | 2 | 3 | 6 | 2 | 3 | 6 | | | NA[a] |
| Reference (reference pier) | 1 | 3 | 3 | 1 | 3 | 3 | | | NA |
| **Species 2 - Ecological Only** | | | | | | | | | |
| Study site (trawling transects) | 3 | 4 | 12 | | | NA | | | NA |
| Reference (trawling transects) | 2 | 3 | 6 | | | NA | | | NA |
| **Species 3 - Human Health and Ecological** | | | | | | | | | |
| Study site (human health/ecological) | 2 | 3 | 6 | 2 | 3 | 6 | | | |
| Study site (ecological only) | 2 | 3 | 6 | | | NA | 3 | 4[b] | 12 |
| Reference (human health/ecological) | 1 | 3 | 3 | 1 | 3 | 3 | | | |
| Reference (ecological only) | 1 | 3 | 3 | | | NA | 2 | 3 | 6 |
| | Total Whole Body = 45 | | | Total Fillet = 18 | | | Total Bile = 18 | | |

**Total Number of Fish to be Sampled = 72**
(minus 9 fish from human health/ ecological group that can be used to collect bile samples)

**Total Number of Analyses = 81**

Notes:
[a] NA – not applicable
[b] Assume one fish per bile sample, but may be composited if insufficient bile is available in a given fish



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## Table 5-3
## West Basin Samples Collected and Analyzed by Type and Location

| Sample Type | Site 7 | Reference | Total | Chemical Analytes/Biological Endpoints |
|---|---|---|---|---|
| **Sediment Chemistry** | | | | |
| Surface | 47[a] | 9[a] | 56 | SVOCs[b], pesticides, PCB[c] Aroclors, moisture content, priority pollutant metals, butyltins, AVS/SEM[d], total sulfides, particle size, TOC[e] |
| Subsurface | 26 (8 cores) | 7 (2 cores) | 33 (11 cores) | SVOCs, pesticides, PCB Aroclors, moisture content, priority pollutant metals, butyltins, particle size, TOC |
| **Tissue Chemistry** | | | | |
| Clam Bioaccumulation | 9 | 5 | 14 | SVOCs, pesticides, PCB Aroclors, priority pollutant metals, butyltins |
| Fish Whole Body | 30 | 15 | 45 | SVOCs, pesticides, PCB Aroclors, lipid content, priority pollutant metals, butyltins |
| Muscle Fillet | 12 | 6 | 18 | SVOCs, pesticides, PCB Aroclors, lipid content, priority pollutant metals, butyltins |
| Fish Bile | 12 | 6 | 18 | PAH[g] parent compounds and metabolites, normalized to specific PAH equivalents |
| **Biological Testing** | | | | |
| Bioassay | 45 | 15[h] | 60 | Sediment solid phase: amphipod mortality and polychaete growth/mortality<br>Interstitial water (aqueous phase): echinoderm development/mortality |
| Benthic Community Analysis (not yet analyzed) | 45 | 15[h] | 60 | Specific indices relating to benthic community structure |

Notes:

[a] Includes two additional field replicates at Station 1 and Reference Station 101
[b] SVOC – semivolatile organic compound
[c] PCB – polychlorinated biphenyls
[d] AVS/SEM – acid volatile sulfides/simultaneously extracted metals
[e] TOC – total organic carbon
[f] NA – not applicable
[g] PAH – polynuclear aromatic hydrocarbon
[h] Includes two additional field replicates at Reference Stations 101, 102, 103, and 183



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**Table 5-4**
**Biological Performance Criteria**

| Test Organism | Negative Control Performance Criterion | Reference Sediment Performance Criterion | Data Interpretation Performance Criterion | | | Other Observations |
|---|---|---|---|---|---|---|
| Amphipod<br>*R. abronius*<br>Mortality | Mortality (control) ≤ 10% | Mortality (reference vs. control) ≤ 20% | Mortality (test - reference) ≤ 20% | and | Mortality (test vs. reference) statistically significant ($P^a = 0.05$) | Reburial |
| Polychaete<br>*N. arenaceodentata*<br>Mortality | Mortality (control) ≤ 10% | Mortality (reference - control) ≤ 20% | Mortality (test - reference) ≤ 20% | and | Mortality (test vs. reference) statistically significant (P = 0.05) | – |
| Polychaete<br>*N. arenaceodentata*<br>Biomass | Mortality (control) ≤ 10% | Mean individual weight (reference + negative control) ≤ 30% | Mean individual weight (test - reference) ≤ 30% | and | Mean individual weight (test vs. reference) statistically significant (P = 0.05) | – |
| Echinoderm<br>*D. excentricus*<br>Larval Development | Abnormal Development (control) ≤ 30% | Abnormal development (reference - control) ≤ 20% | Abnormal development (test - reference) ≤ 20% | and | Abnormal development (test vs. reference) statistically significant (P = 0.05) | Mortality |
| Benthic Community Analysis | | Richness and abundance within normal range of natural variability; pollution-sensitive taxa present; pollution-tolerant taxa not numerically dominant | Mean abundance of any one group < 50% of reference and significantly different (P < 0.05); follow draft guidelines of EMAP/EPA[b] programs | | | Abundance<br>Diversity<br>Evenness<br>Species richness |

Notes:
[a] P – probability
[b] EMAP/EPA – Environmental Management Action Plan/Environmental Protection Agency



R0062559

## Table 7-1
## List of Analyses and Methods for Sediment Testing

| Analysis | Documentation of Method | EPA Method Number | Method Modifications | Sample Type | Analytical Laboratory |
|---|---|---|---|---|---|
| Moisture | EPA 1979 | EPA 160.3 | Extended the baking time to overnight. | Surface and subsurface sediment | Pace |
| Total Organic Carbon | Menzel and Vaccaro 1964 | | | Surface and subsurface sediment | MEC |
| Grain Size | Plumb 1981 | | | Surface and subsurface sediment | MEC |
| Total Sulfides | EPA 1986 | EPA 9030 | Quantitated by EPA 376.2 | Surface sediment | Pace |
| Metals | | | | | |
| Antimony | EPA 1986 | EPA 7041 | | Surface and subsurface sediment | Pace |
| Arsenic | EPA 1986 | EPA 7060 | | Surface and subsurface sediment | Pace |
| Beryllium | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Cadmium | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Chromium | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Copper | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Lead | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Mercury | EPA 1986 | EPA 7470 | | Surface and subsurface sediment | Pace |
| Nickel | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Selenium | EPA 1986 | EPA 7740 | | Surface and subsurface sediment | Pace |
| Silver | EPA 1986 | EPA 7760 | | Surface and subsurface sediment | Pace |
| Thallium | EPA 1986 | EPA 7841 | | Surface and subsurface sediment | Pace |
| Zinc | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| AVS/SEM* | | | | | |
| Acid Volatile Sulfide | Allen et al. 1993 | | | Surface sediment | Pace |
| Cadmium | Allen et al. 1993 | | | Surface sediment | Pace |
| Copper | Allen et al. 1993 | | | Surface sediment | Pace |
| Lead | Allen et al. 1993 | | | Surface sediment | Pace |
| Mercury | Allen et al. 1993 | | | Surface sediment | Pace |
| Zinc | Allen et al. 1993 | | | Surface sediment | Pace |

(table continues)



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Table 7-1 (continued)

| Analysis | Documentation of Method | EPA Method Number | Method Modifications | Sample Type | Analytical Laboratory |
|---|---|---|---|---|---|
| Butyltins | Uhler and Durell 1989 | | | Surface and subsurface sediment | Pace |
| Pesticides and PCBs[b] | EPA 1986 | EPA 8080 | | Surface and subsurface sediment | Pace |
| SVOCs[c] | EPA 1986 | EPA 8270 | | Surface and subsurface sediment | Pace |
| Bioassay | | | | | |
| Echinoderm | Dinnel 1994 | | | Surface sediment | MEC |
| Polychaete | Dillon et al. 1994 | | | Surface sediment | MEC |
| Amphipod | Swartz et al. 1985 | | | Surface sediment | MEC |
| Clam | Lee et al. 1989 | | | Surface sediment | MEC & Pace |
| Benthic Infauna | | | | Surface sediment | MEC |

Notes:
[a] AVS/SEM – acid volatile sulfides/simultaneously extracted metals
[b] PCBs – polychlorinated biphenyls
[c] SVOCs – semivolatile organic compounds



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## Table 7-2
## List of Analyses and Methods for Fish Tissue Testing

| Analysis | Documentation of Method | EPA Method Number | Method Modifications | Sample Type | Analytical Laboratory |
|---|---|---|---|---|---|
| Lipids | EPA 1986 | EPA 9071 | | Fish tissue | Pace |
| Metals | | | | | |
| Antimony | EPA 1986 | EPA 7041 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Arsenic | EPA 1986 | EPA 7060 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Beryllium | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Cadmium | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Chromium | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Copper | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Lead | EPA 1986 | EPA 7421 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Mercury | EPA 1986 | EPA 7470 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Nickel | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Selenium | EPA 1986 | EPA 7740 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Silver | EPA 1986 | EPA 7760 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Thallium | EPA 1986 | EPA 7841 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Zinc | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Butyltins | Uhler and Durell 1989 | | | Fish tissue | Pace |
| Pesticides and PCBs[a] | EPA 1986 | EPA 8080 | Soxhlet extraction, alumina column, GPC[b] (Tetra Tech 1986) | Fish tissue | Pace |
| PAHs[c] | EPA 1986 | EPA 8270 | Soxhlet extraction, alumina column, GPC (Tetra Tech 1986), GC/MS - SIM[d] | Fish tissue | Pace |
| PAH Parent Compounds | Krahn et al. 1986 | | | Fish bile | Battelle |

Notes:
[a] PCBs – polychlorinated biphenyls
[b] GPC - gel permeation chromatography
[c] PAHs - polynuclear aromatic hydrocarbons
[d] SIM - selective ion monitoring



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## Table 7-3
## List of Analytes by Analytical Method for Surface Sediment Samples

| Analyte Group | Analyte |
|---|---|
| Physical | Total Organic Carbon |
| | Grain Size |
| Metals | Antimony |
| | Arsenic |
| | Beryllium |
| | Cadmium |
| | Chromium |
| | Copper |
| | Lead |
| | Mercury |
| | Nickel |
| | Selenium |
| | Silver |
| | Thallium |
| | Zinc |
| AVS/SEM[a] | Acid Volatile Sulfides |
| | Total Sulfides |
| | Simultaneously Extracted Metals |
| | Cadmium |
| | Copper |
| | Lead |
| | Mercury |
| | Zinc |
| Butyltins | Dibutyltin |
| | Monobutyltin |
| | Tributyltin |
| PAHs[b] | Benz(a)anthracene |
| | Benzo(a)pyrene |
| | Benzo(b)fluoranthene |
| | Benzo(ghi)perylene |
| | Benzo(k)fluoranthene |
| | Chrysene |
| | Dibenz(a,h)anthracene |
| | Fluoranthene |
| | Indeno(1,2,3-cd)pyrene |
| | Pyrene |
| | Acenaphthene |
| | Acenaphthylene |
| | Anthracene |
| | Fluorene |
| | Methylnaphthalenes |
| | Naphthalene |
| | Phenanthrene |
| SVOCs[c] | 1,2,4-Trichlorobenzene |
| | 1,2-Dichlorobenzene |
| | 1,3-Dichlorobenzene |
| | 1,4-Dichlorobenzene |
| | 2,4-Dinitrotoluene |
| | 2,6-Dinitrotoluene |
| | 2-Chloronaphthalene |
| | 3,3-Dichlorobenzidine |
| | 4-Bromophenylphenylether |
| | 4-Chlorophenylphenylether |
| | Benzidine |
| | Bis(2-chloroethoxy)methane |
| | Bis(2-chloroethyl)ether |
| | Bis(2-chloroisopropyl)ether |
| | Hexachlorobenzene |
| SVOCs (continued) | Hexachlorobutadiene |
| | Hexachlorocyclopentadiene |
| | Hexachloroethane |
| | Isophorone |
| | N-Nitrosodi-n-propylamine |
| | N-Nitrosodimethylamine |
| | N-Nitrosodiphenylamine |
| | Nitrobenzene |
| | 2,4,6-Trichlorophenol |
| | 2,4-Dichlorophenol |
| | 2,4-Dimethylphenol |
| | 2,4-Dinitrophenol |
| | 2-Chlorophenol |
| | 2-Methyl-4,6-dinitrophenol |
| | 2-Methylphenol |
| | 2-Nitrophenol |
| | 3- and 4-Methylphenol |
| | 4-Chloro-3-methylphenol |
| | 4-Nitrophenol |
| | Pentachlorophenol |
| | Phenol |
| | Bis(2-ethylhexyl)phthalate |
| | Butylbenzylphthalate |
| | Di-n-butylphthalate |
| | Di-n-octylphthalate |
| | Diethylphthalate |
| | Dimethylphthalate |
| Pesticides | Aldrin |
| | alpha-BHC[d] |
| | beta-BHC |
| | Chlordane |
| | delta-BHC |
| | Dieldrin |
| | Endosulfan I |
| | Endosulfan II |
| | Endosulfan Sulfate |
| | Endrin |
| | Endrin Aldehyde |
| | Heptachlor |
| | Heptachlor Epoxide |
| | Lindane (gamma-BHC) |
| | Methoxychlor |
| | p,p'-DDD[e] |
| | p,p'-DDE[e] |
| | p,p'-DDT[e] |
| | Toxaphene |
| PCBs[b] | Aroclor 1016 |
| | Aroclor 1221 |
| | Aroclor 1232 |
| | Aroclor 1242 |
| | Aroclor 1248 |
| | Aroclor 1254 |
| | Aroclor 1260 |
| Bioassay | Echinoderm Development |
| | Echinoderm Survival |
| | Polychaete Growth |
| | Polychaete Survival |
| | Amphipod Behavior |
| | Amphipod Survival |
| | Macoma Bioaccumulation |

(table continues)



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Table 7-3 (continued)

Notes:

[a] AVS/SEM – acid volatile sulfides/simultaneously extracted metals
[b] PAHs – polynuclear aromatic hydrocarbons
[c] SVOCs – semivolatile organic compounds
[d] BHC – hexachlorocyclohexane
[e] DDD – dichloro-diphenyl-dichloroethane
[f] DDE – dichloro-diphenyl-ethane
[g] DDT – Dichloro-diphenyl-trichloroethane
[h] PCBs – polychlorinated biphenyls



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## Table 7-4
## List of Analytes by Analytical Method for Subsurface Sediment Samples

| Analyte Group | Analyte |
|---|---|
| Physical | Total Organic Carbon |
| | Grain Size |
| Metals | Antimony |
| | Arsenic |
| | Beryllium |
| | Cadmium |
| | Chromium |
| | Copper |
| | Lead |
| | Mercury |
| | Nickel |
| | Selenium |
| | Silver |
| | Thallium |
| | Zinc |
| Butyltins | Dibutyltin |
| | Monobutyltin |
| | Tributyltin |
| PAHs[a] | Benz(a)anthracene |
| | Benzo(a)pyrene |
| | Benzo(b)fluoranthene |
| | Benzo(ghi)perylene |
| | Benzo(k)fluoranthene |
| | Chrysene |
| | Dibenz(a,h)anthracene |
| | Fluoranthene |
| | Indeno(1,2,3-cd)pyrene |
| | Pyrene |
| | Acenaphthene |
| | Acenaphthylene |
| | Anthracene |
| | Fluorene |
| | Methylnaphthalenes |
| | Naphthalene |
| | Phenanthrene |
| SVOCs[b] | 1,2,4-Trichlorobenzene |
| | 1,2-Dichlorobenzene |
| | 1,3-Dichlorobenzene |
| | 1,4-Dichlorobenzene |
| | 2,4-Dinitrotoluene |
| | 2,6-Dinitrotoluene |
| | 2-Chloronaphthalene |
| | 3,3-Dichlorobenzidine |
| | 4-Bromophenylphenylether |
| | 4-Chlorophenylphenylether |
| | Benzidine |
| | Bis(2-chloroethoxy)methane |
| | Bis(2-chloroethyl)ether |
| | Bis(2-chloroisopropyl)ether |
| | Hexachlorobenzene |
| | Hexachlorobutadiene |
| SVOCs (continued) | Hexachlorocyclopentadiene |
| | Hexachloroethane |
| | Isophorone |
| | N-Nitrosodi-n-propylamine |
| | N-Nitrosodimethylamine |
| | N-Nitrosodiphenylamine |
| | Nitrobenzene |
| | 2,4,6-Trichlorophenol |
| | 2,4-Dichlorophenol |
| | 2,4-Dimethylphenol |
| | 2,4-Dinitrophenol |
| | 2-Chlorophenol |
| | 2-Methyl-4,6-dinitrophenol |
| | 2-Methylphenol |
| | 2-Nitrophenol |
| | 3- and 4-Methylphenol |
| | 4-Chloro-3-methylphenol |
| | 4-Nitrophenol |
| | Pentachlorophenol |
| | Phenol |
| | Bis(2-ethylhexyl)phthalate |
| | Butylbenzylphthalate |
| | Di-n-butylphthalate |
| | Di-n-octylphthalate |
| | Diethylphthalate |
| | Dimethylphthalate |
| Pesticides | Aldrin |
| | alpha-BHC[c] |
| | beta-BHC |
| | Chlordane |
| | delta-BHC |
| | Dieldrin |
| | Endosulfan I |
| | Endosulfan II |
| | Endosulfan Sulfate |
| | Endrin |
| | Endrin Aldehyde |
| | Heptachlor |
| | Heptachlor Epoxide |
| | Lindane (gamma-BHC) |
| | Methoxychlor |
| | p,p'-DDD[d] |
| | p,p'-DDE[e] |
| | p,p'-DDT[f] |
| | Toxaphene |
| PCBs[g] | Aroclor 1016 |
| | Aroclor 1221 |
| | Aroclor 1232 |
| | Aroclor 1242 |
| | Aroclor 1248 |
| | Aroclor 1254 |
| | Aroclor 1260 |

(table continues)



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Table 7-4 (continued)

Notes:

[a] PAHs – polynuclear aromatic hydrocarbons
[b] SVOCs – semivolatile organic compounds
[c] BHC – hexachlorocyclohexane
[d] DDD – dichloro-diphenyl-dichloroethane
[e] DDE – dichloro-diphenyl-ethane
[f] DDT – Dichloro-diphenyl-trichloroethane
[g] PCBs – polychlorinated biphenyls

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**Table 7-5**
**List of Analytes by Analytical Method for Fish Tissue Samples**

| Analyte Group | Analyte | Analyte Group | Analyte |
|---|---|---|---|
| Physical | Lipids | Pesticides | Aldrin |
| Metals | Antimony | | alpha-BHC[b] |
| | Arsenic | | beta-BHC |
| | Beryllium | | Chlordane |
| | Cadmium | | delta-BHC |
| | Chromium | | Dieldrin |
| | Copper | | Endosulfan I |
| | Lead | | Endosulfan II |
| | Mercury | | Endosulfan Sulfate |
| | Nickel | | Endrin |
| | Selenium | | Endrin Aldehyde |
| | Silver | | Heptachlor |
| | Thallium | | Heptachlor Epoxide |
| | Zinc | | Lindane (gamma-BHC) |
| | | | Methoxychlor |
| Butyltins | Dibutyltin | | p,p'-DDD[c] |
| | Monobutyltin | | p,p'-DDE[d] |
| | Tributyltin | | p,p'-DDT[e] |
| | | | Toxaphene |
| PAHs[a] | Benz(a)anthracene | PCBs[f] | Aroclor 1016 |
| | Benzo(a)pyrene | | Aroclor 1221 |
| | Benzo(b)fluoranthene | | Aroclor 1232 |
| | Benzo(ghi)perylene | | Aroclor 1242 |
| | Benzo(k)fluoranthene | | Aroclor 1248 |
| | Chrysene | | Aroclor 1254 |
| | Dibenz(a,h)anthracene | | Aroclor 1260 |
| | Fluoranthene | | |
| | Indeno(1,2,3-cd)pyrene | | |
| | Pyrene | | |
| | Acenaphthene | | |
| | Acenaphthylene | | |
| | Anthracene | | |
| | Fluorene | | |
| | Methylnaphthalenes | | |
| | Naphthalene | | |
| | Phenanthrene | | |

Notes:
[a] PAHs – polynuclear aromatic hydrocarbons
[b] BHC – hexachlorocyclohexane
[c] DDD – dichloro-diphenyl-dichloroethane
[d] DDE – dichloro-diphenyl-ethane
[e] DDT – Dichloro-diphenyl-trichloroethane
[f] PCBs – polychlorinated biphenyls



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**Table 9-1**
**Preliminary Results of Detected Compounds: Surface Sediment Physical and Chemical Data**

| Analyte Name | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **Physical and Conventional Data** | | | | | | | | | | | | |
| Total Sulfide, mg/kg dw | 4.3 | 18 | 31 | 1.1 | 14 | 47 | 18 J | 98 | 25 J | 270 J | 35 J | 400 J |
| Total Organic Carbon, % dw | 0.51 | 1.1 | 1.2 | 1.3 | 0.42 | 0.61 | 0.67 | 0.65 | 0.92 | 1.8 | 1.3 | 0.63 |
| Grain Size | | | | | | | | | | | | |
| Clay, % dw | 13 | 19 | 25 | 28 | 7.6 | 18 | 17 | 14 | 27 | 42 | 28 | 23 |
| Fines, % dw | 43 | 52 | 71 | 71 | 45 | 51 | 42 | 44 | 65 | 82 | 70 | 62 |
| Mean Phi | 5.1 | 5.8 | 6.4 | 6.5 | 4.8 | 5.9 | 5.7 | 5.2 | 6.5 | 7.3 | 6.6 | 6.4 |
| Median Phi | 3.8 | 4.2 | 5.7 | 5.9 | 3.9 | 4.1 | 3.8 | 3.9 | 5.5 | 7.5 | 5.9 | 4.9 |
| Sand, % dw | 57 | 48 | 29 | 29 | 55 | 49 | 58 | 56 | 35 | 18 | 30 | 38 |
| Silt, % dw | 30 | 33 | 46 | 43 | 38 | 33 | 25 | 31 | 38 | 40 | 41 | 39 |
| **Metals, mg/kg dw** | | | | | | | | | | | | |
| Arsenic | 9 | 7.2 | 12 | 12 | 5.4J | 4.6 | 6.8 | 5.2 | 9.4 | 12 | 12 | 8 |
| Beryllium | 0.48 | 0.32 | 0.59 | 0.54 | 0.3 | 0.3 | 0.49 | 0.33 | 0.53 | 0.68 | 0.55 | 0.55 |
| Cadmium | 0.26J | 0.46J | 0.45J | 0.41 | 0.15 | 0.24 | 0.16J | 0.21 | 0.36J | 0.32J | 0.35J | 0.27J |
| Chromium | 34 | 32 | 39 | 39 | 22 | 27 | 29 | 26 | 39 | 54 | 42 | 33 |
| Copper | 110 | 130 | 130 | 120 | 54 | 67 | 73 | 54 | 96 | 210 | 120 | 69 |
| Lead | 37 | 45 | 51 | 52 | 21 | 26 | 37 | 43 | 48 | 77 | 62 | 38 |
| Mercury | 0.55 | 0.59 | 0.85 | 0.72 | 0.22 | 0.23 | 0.41 | 0.34 | 0.59 | 0.57 | 0.7 | 0.38 |
| Nickel | 21 | 16 | 24 | 27 | 13 | 18 | 16 | 16 | 25 | 32 | 22 | 22 |
| Selenium | | | | | | | | | | | | |
| Silver | 1.9 | 2.6 | 2.6 | 2.7 | 1.3 | 1.5 | 2.3 | 1.3 | 2.3 | 3.4 | 2.2 | 2 |
| Zinc | 150 | 160 | 170 | 170 | 94 | 110 | 110 | 110 | 160 | 250 | 200 | 130 |
| **SEM/AVS[a] Ratios, unitless** | | | | | | | | | | | | |
| Acid Volatile Sulfide, µmol/g | 0.25J | 1.6OJ | 3.01J | 0.13J | 0.84J | 3.61J | 1.36J | 3.11J | 2.72J | 18.39J | 2.51J | 11.34J |
| Cadmium, Extractable | | 2.7E-3 | 1.7E-3 | | | 1.5E-3 | | 1.4E-3 | 2.3E-3 | | | |
| Copper, Extractable | 3.7E+0 | 9.6E-1 | 5.7E-1 | 1.1E+1 | 8.1E-1 | 2.2E-1 | 7.8E-1 | 2.4E-1 | 5.4E-1 | 1.2E-1 | 6.2E-1 | 9.3E-2 |
| Lead, Extractable | 4.3E-1 | 1.1E-1 | 7.6E-2 | 1.6E+0 | 1.0E-1 | 3.1E-2 | 1.3E-1 | 1.1E-1 | 8.2E-2 | 1.8E-2 | 1.0E-1 | 1.5E-2 |
| Mercury, Extractable | 1.6E-3 | 1.5E-4 | 9.8E-5 | 4.0E-3 | 1.8E-4 | 6.3E-5 | 2.4E-4 | 1.0E-4 | 1.3E-4 | 1.2E-5 | 1.5E-4 | 1.6E-5 |
| Zinc, Extractable | 4.4E+0 | 1.3E+0 | 7.6E-1 | 1.5E+1 | 1.2E+0 | 3.8E-1 | 1.1E+0 | 4.9E-1 | 7.6E-1 | 1.7E-1 | 8.8E-1 | 1.4E-1 |
| **Butyltins, µg/kg dw** | | | | | | | | | | | | |
| Dibutyltin | | | | | | | | | | | | |
| Monobutyltin | | | | | | | | | | | | |
| **HPAH[b], µg/kg dw** | | | | | | | | | | | | |
| Benz(a)anthracene | 64 J | 16 J | 59 J | | 60 J | 46 J | 65 J | | 18 J | 200 J | 92 J | 36 J |
| Benzo(a)pyrene | 180 J | 64 | 200 J | 220 | 100 J | 120 | 180 J | 82 | 53 J | 540 J | 310 J | 110 J |
| Benzo(b)fluoranthene | 190 J | 96 | 240 J | 320 | 150 J | 150 | 180 J | 98 | 53 J | 500 J | 370 J | 150 J |
| Benzo(ghi)perylene | 110 J | 48 | 120 J | | 75 J | 46 | 130 J | 49 | 36 J | 340 J | 200 J | 91 J |
| Benzo(k)fluoranthene | 220 J | 80 | 310 J | 250 | 180 J | 180 | 260 J | 130 | 71 J | 660 J | 370 J | 180 J |
| Chrysene | 160 J | 32 | 79 J | | 100 J | 91 | 150 J | 49 | 53 J | 390 J | 150 J | |
| Dibenz(a,h)anthracene | | | | | | | | | | | | |
| Fluoranthene | 16 J | 16 | | | | 30 | 81 J | 33 | 18 J | 160 J | 92 J | 55 J |
| Indeno(1,2,3-cd)pyrene | 110 J | 32 | 120 J | | 75 J | 46 | 130 J | 49 | 36 J | 360 J | 200 J | 91 J |
| Pyrene | | 32 J | | | | 30 J | 65 J | 33 J | 18 J | 340 J | 110 J | 55 J |
| Total HPAH | 1050 | 416 | 1128 | 790 | 740 | 739 | 1241 | 523 | 356 | 3490 | 1894 | 768 |
| **LPAH[c], µg/kg dw** | | | | | | | | | | | | |
| Acenaphthene | | | | | | | | | | | | |
| Acenaphthylene | 48 J | | 20 J | | 30 J | 15 | 32 J | | | 68 J | 37 J | 18 J |
| Anthracene | 64 J | 32 | 39 J | | 60 J | 46 | 65 J | 33 | 18 J | 160 J | 73 J | 36 J |
| Fluorene | | | | | | | | | | | | |
| Methylnaphthalenes | | | | | | | | | | | | |
| Phenanthrene | 48 J | | 39 J | | 45 J | 30 | 32 J | 16 | | 110 J | 73 J | 36 J |
| Total LPAH | 160 | 32 | 98 | | 135 | 91 | 129 | 49 | 18 | 338 | 183 | 90 |
| **PCB[d], µg/kg dw** | | | | | | | | | | | | |
| PCB 1260 | 140 J | 290 J | 240 J | 250 J | 67 J | 110 J | 150 J | 97 J | 150 J | 540 J | 310 J | 110 J |
| Total PCB | 140 | 290 | 240 | 250 | 67 | 110 | 150 | 97 | 150 | 540 | 310 | 110 |
| **Pesticides, µg/kg dw** | | | | | | | | | | | | |
| Aldrin | | | | | | | | | | | | |
| Lindane (gamma-BHC[e]) | | | | | | | | | | 6.8J | | |
| p,p'-DDD[f] | 14 | 6.9 | 7.1 | 10 | 1.9 | | 9.2J | 4.1 | 8.4J | 20 J | | 7.1J |
| p,p'-DDE[g] | 26 | 46 | 67 | 72 | 13 | 21 | 31 J | 25 | 46 J | 88 J | 57 J | 36 J |
| p,p'-DDT[h] | | | | | | | | | | | | |
| Total DDT | 40 | 52.9 | 74.1 | 82 | 14.9 | 21 | 60.2 | 29.1 | 54.4 | 108 | 57 | 43.1 |
| **Phenols, µg/kg dw** | | | | | | | | | | | | |
| Phenol | | | | | | | | | | | | |
| **Phthalates, µg/kg dw** | | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | | | | |
| Di-n-octylphthalate | 64 J | 32 J | 59 J | | 45 J | 30 | | 49 | 36 J | 91 J | 73 J | 73 J |

(table continues)



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**Table 9-1**
**Preliminary Results of Detected Compounds: Surface Sediment Physical and Chemical Data**

| Analyte Name | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| **Physical and Conventional Data** | | | | | | | | | | | | |
| Total Sulfide, mg/kg dw | 5.8J | 24 | 7.2J | 190 J | 140 J | 110 J | 33 J | 160 J | 60 J | 140 J | 87 J | 11 |
| Total Organic Carbon, % dw | 0.6 | 0.46 | 0.92 | 0.89 | 1.8 | 0.41 | 0.6 | 0.69 | 1.5 | 0.71 | 0.72 | 0.069 |
| Grain Size | | | | | | | | | | | | |
| Clay, % dw | 12 | 11 | 31 | 30 | 48 | 33 | 23 | 24 | 46 | 46 | 26 | 1.8 |
| Fines, % dw | 56 | 42 | 84 | 78 | 87 | 83 | 68 | 76 | 92 | 93 | 70 | 3.9 |
| Mean Phi | 5.1 | 4.9 | 6.9 | 6.7 | 7.8 | 6.8 | 6.3 | 6.5 | 8 | 7.9 | 6.4 | .65 |
| Median Phi | 4.3 | 3.8 | 6.5 | 6.2 | 7.9 | 6.5 | 5.5 | 5.8 | 7.8 | 7.8 | 5.6 | 1.3 |
| Sand, % dw | 44 | 58 | 16 | 22 | 13 | 17 | 32 | 24 | 7.6 | 6.8 | 30 | 79 |
| Silt, % dw | 43 | 31 | 53 | 48 | 39 | 50 | 44 | 51 | 46 | 47 | 44 | 21 |
| **Metals, mg/kg dw** | | | | | | | | | | | | |
| Arsenic | 7.8 | 6.7 | 7.8 | 9.8 | 19 J | 11 J | 10 J | 8.5J | 16 J | 17 J | 8.5J | 4.6 |
| Beryllium | 0.47 | 0.32 | 0.54 | 0.6 | 0.75 | 0.61 | 0.52 | 0.68 | 0.69 | 1 | 0.54 | 0.13 |
| Cadmium | 0.2J | 0.14 | 0.4J | 0.34J | 1 J | 0.51J | 0.37J | 0.42J | 1 J | 0.91J | 0.36J | 0.078 |
| Chromium | 39 | 25 | 42 | 42 | 88 | 43 | 37 | 42 | 67 | 71 | 40 | 9.8 |
| Copper | 150 | 47 | 88 | 92 | 530 | 110 | 68 | 76 | 220 | 210 | 81 | 13 |
| Lead | 58 | 21 | 45 | 46 | 180 | 49 | 37 | 41 | 78 | 89 | 38 | 5.2 |
| Mercury | 0.68 | 0.21 | 0.51 | 0.54 | 1.8 | 0.57 | 0.31 | 0.31 | 0.74 | 0.48 | 0.31 | |
| Nickel | 22 | 17 | 25 | 26 | 35 | 26 | 23 | 25 | 37 | 41 | 22 | 7.8 |
| Selenium | | | | | | | | | 1.6 | | | |
| Silver | 2.3 | 1.6 | 2.5 | 2.6 | 3.8 | 2.4 | 2.1 | 2.5 | 3 | 3.5 | 2.2 | |
| Zinc | 160 | 85 | 160 | 160 | 480 | 170 | 130 | 150 | 300 | 300 | 140 | 33 |
| **SEM/AVS[a] Ratios, umitless** | | | | | | | | | | | | |
| Acid Volatile Sulfide, µmol/g | 0.58J | 1.03J | 6.19J | 5.73J | 3.37J | 3.42J | 2.83J | 3.39J | 4.82J | 5.92J | 4.62J | 0.22J |
| Cadmium, Extractable | | | 1.0E-3 | 9.3E-4 | 3.3E-3 | | | | 1.7E-3 | 1.1E-3 | | |
| Copper, Extractable | 3.2E+0 | 6.2E-1 | 2.1E-1 | 2.2E-1 | 1.5E+0 | 3.6E-1 | 3.1E-1 | 2.3E-1 | 4.4E-1 | 1.1E-1 | 2.3E-1 | 1.0E+0 |
| Lead, Extractable | 3.6E-1 | 9.6E-2 | 3.5E-2 | 3.7E-2 | 2.7E-2 | 6.6E-2 | 5.4E-2 | 4.1E-2 | 6.5E-2 | 5.8E-2 | 4.0E-2 | 5.8E-2 |
| Mercury, Extractable | 6.7E-4 | 3.0E-4 | 2.9E-5 | 5.2E-5 | 3.7E-5 | 3.0E-5 | | | | | | |
| Zinc, Extractable | 3.2E+0 | 9.6E-1 | 3.3E-1 | 3.5E-1 | 2.6E+0 | 5.4E-1 | 4.6E-1 | 3.5E-1 | 6.2E-1 | 4.7E-1 | 3.6E-1 | 1.4E+0 |
| **Butyltins, µg/kg dw** | | | | | | | | | | | | |
| Dibutyltin | | | | | | | | | | | | |
| Monobutyltin | | | | | | | | | | | | |
| **HPAH[b], µg/kg dw** | | | | | | | | | | | | |
| Benz(a)anthracene | | 32 | | | 150 | 120 | | | 280 | 130 | 110 | |
| Benzo(e)pyrene | 160 J | 95 | 54 J | | 500 | 240 | 87 | 100 | 440 | 300 | 180 | |
| Benzo(b)fluoranthene | 200 J | 130 | 72 J | | 680 | 260 | | 100 | 510 | 410 | 220 | |
| Benzo(ghi)perylene | 93 J | 63 | | | 380 | 220 | | | 300 | 150 | 140 | |
| Benzo(k)fluoranthene | 160 J | 140 | 72 J | | 480 | 320 | 120 | 85 | 550 | 300 | 290 | |
| Chrysene | | 63 | | | 380 | 220 | | 85 | 550 | 280 | 230 | |
| Dibenz(a,h)anthracene | | 16 | | | | 120 | | | | | | |
| Fluoranthene | | | | | 150 | 120 | | | 320 | 76 J | 130 | |
| Indeno(1,2,3-cd)pyrene | | 63 | | | 400 | 220 | | | 300 | 150 | 140 | |
| Pyrene | | | | | 180 | 120 | | | 350 | 150 | 140 | |
| Total HPAH | 613 | 602 | 198 | | 3300 | 1960 | 207 | 370 | 3600 | 1946 | 1580 | |
| **LPAH[c], µg/kg dw** | | | | | | | | | | | | |
| Acenaphthene | | | | | | | | | | | | |
| Acenaphthylene | | | | | | | | | | | | |
| Anthracene | | 32 | | | | | | | 180 | 51 | | |
| Fluorene | | | | | | | | | | | | |
| Methylnaphthalenes | | | | | | | | | | | | |
| Phenanthrene | | 32 | | | | | | | 160 | 76 | | |
| Total LPAH | | 64 | | | | | | | 340 | 127 | | |
| **PCB[d], µg/kg dw** | | | | | | | | | | | | |
| PCB 1260 | 370 J | 63 J | 120 J | 150 J | 880 J | 200 J | 56 J | 75 J | 230 J | 410 J | 160 J | |
| Total PCB | 370 | 63 | 120 | 150 | 880 | 200 | 56 | 75 | 230 | 410 | 160 | |
| **Pesticides, µg/kg dw** | | | | | | | | | | | | |
| Aldrin | | | | | | | | | | | | |
| Lindane (gamma-BHC[e]) | | | | | | | | | | | | |
| p,p'-DDD[f] | 16 J | | 20 J | 42 J | 33 J | 7.9J | 4.5J | 4.9J | 11 J | 16 J | 7 J | |
| p,p'-DDE[g] | 50 J | 17 | 43 J | 60 J | 180 J | 57 J | 38 J | 37 J | 92 J | 130 J | 61 J | 6 |
| p,p'-DDT[h] | | | | 34 J | | | | | | | | |
| Total DDT | 66 | 17 | 63 | 136 | 213 | 64.9 | 42.5 | 41.9 | 103 | 146 | 68 | 6 |
| **Phenols, µg/kg dw** | | | | | | | | | | | | |
| Phenol | | | | | | | | | | | | |
| **Phthalates, µg/kg dw** | | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | | | | |
| Di-n-octylphthalate | | 32 | | | | | | | | 250 | | |

(table continues)



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**Table 9-1**
**Preliminary Results of Detected Compounds: Surface Sediment Physical and Chemical Data**

| Analyte Name | Stations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 41 |
| **Physical and Conventional Data** | | | | | | | | | |
| Total Sulfide, mg/kg dw | 54 J | 98 J | 240 J | 50 J | 150 | 44 J | 15 J | 41 J | 120 |
| Total Organic Carbon, % dw | 0.56 | 1.3 | 1.7 | 0.71 | 0.64 | 0.52 | 0.49 | 0.44 | 1.1 |
| Grain Size | | | | | | | | | |
| Clay, % dw | 8.7 | 32 | 47 | 23 | 23 | 17 | 21 | 11 | 30 |
| Fines, % dw | 30 | 84 | 91 | 68 | 70 | 73 | 47 | 24 | 77 |
| Mean Phi | 4.1 | 6.9 | 7.7 | 6.2 | 6.2 | 6 | 5.3 | 4.2 | 6.6 |
| Median Phi | 3.3 | 6.8 | 7.8 | 5.3 | 5.6 | 5 | 3.7 | 2.7 | 6.3 |
| Sand, % dw | 70 | 16 | 9.2 | 32 | 30 | 27 | 53 | 76 | 23 |
| Silt, % dw | 21 | 52 | 44 | 45 | 47 | 56 | 26 | 13 | 47 |
| **Metals, mg/kg dw** | | | | | | | | | |
| Arsenic | 1.6 | 13 | 13 J | 12 | 4.8 | 7.9 | 5.2 | 5 | 11 J |
| Beryllium | 0.28 | 0.77 | 0.72 | 0.54 | 0.56 | 0.49 | 0.31 | 0.31 | 0.6 |
| Cadmium | 0.26 | 0.46 J | 0.48 J | 0.41 J | 0.33 | 0.3 J | 0.14 J | 0.13 J | 0.72 J |
| Chromium | 21 | 48 | 65 | 39 | 33 | 33 | 22 | 22 | 44 |
| Copper | 30 | 120 | 220 | 110 | 52 | 52 | 30 | 27 | 120 |
| Lead | 16 | 56 | 75 | 43 | 30 | 31 | 19 | 17 | 74 |
| Mercury | 0.11 | 0.48 | 0.87 | 0.34 | 0.13 | 0.23 | 0.13 | 0.11 | 1.1 |
| Nickel | 16 | 33 | 34 | 27 | 24 | 21 | 16 | 16 | 20 |
| Selenium | | | | | | | | | |
| Silver | 1.3 | 19 J | 3.4 J | 5.2 J | 1.9 | 2 J | 1.4 J | 1.4 J | 2.4 |
| Zinc | 73 | 190 | 240 | 160 | 110 | 120 | 68 | 63 | 220 J |
| **SEM/AVS[a] Ratios, unitless** | | | | | | | | | |
| Acid Volatile Sulfide, µmol/g | 2.04 J | 3.35 J | 5.55 J | 2.18 J | 5.27 J | 1.59 J | .59 J | 1.32 J | 6.82 J |
| Cadmium, Extractable | | | | 2.9E-3 | 1.6E-3 | | | | 1.0E-3 |
| Copper, Extractable | 1.3E-1 | 3.2E-1 | 4.6E-1 | 4.3E-1 | 1.3E-1 | 3.3E-1 | 6.3E-1 | 2.1E-1 | 2.7E-1 |
| Lead, Extractable | 2.7E-2 | 6.4E-2 | 5.6E-2 | 7.9E-2 | 2.9E-2 | 7.0E-2 | 1.3E-1 | 4.6E-2 | 5.1E-2 |
| Mercury, Extractable | | | | | 3.5E-5 | | | | 4.4E-5 |
| Zinc, Extractable | 2.3E-1 | 5.5E-1 | 5.1E-1 | 7.0E-1 | 3.0E-1 | 6.5E-1 | 1.1E+0 | 3.6E-1 | 4.5E-1 |
| **Butyltins, µg/kg dw** | | | | | | | | | |
| Dibutyltin | | | | | | | | | |
| Monobutyltin | | | | | | | | | |
| **HPAH[b], µg/kg dw** | | | | | | | | | |
| Benz(a)anthracene | | 38 | | | | | | | 140 |
| Benzo(e)pyrene | | 96 | 48 J | 36 | 19 | 33 | | | 340 |
| Benzo(b)fluoranthene | | 130 | 48 J | 36 | 19 | 33 | | | 440 |
| Benzo(ghi)perylene | | 58 | | | | | | | 160 |
| Benzo(k)fluoranthene | | 120 | 72 J | 36 | 37 | 33 | | | 400 |
| Chrysene | | 58 | 48 J | 36 | | 33 | | | 220 |
| Dibenz(a,h)anthracene | | 19 | | | | | | | 80 |
| Fluoranthene | | 38 | 24 J | 18 | | 16 | | | 140 |
| Indeno(1,2,3-cd)pyrene | | 58 | | | | | | | 160 |
| Pyrene | | 38 J | 48 J | 18 J | | 33 J | | | 140 J |
| Total HPAH | | 653 | 288 | 180 | 75 | 181 | | | 2220 |
| **LPAH[c], µg/kg dw** | | | | | | | | | |
| Acenaphthene | | | | | | | | | |
| Acenaphthylene | | | | | | | | | |
| Anthracene | | | | | | | | | 40 |
| Fluorene | | | | | | | | | 80 |
| Methylnaphthalenes | | | | | | | | | |
| Phenanthrene | | | 24 J | | | | | | 60 |
| Total LPAH | | | 24 | | | | | | 180 |
| **PCB[d], µg/kg dw** | | | | | | | | | |
| PCB 1260 | | 130 J | 430 J | 140 J | | 51 J | | | 220 J |
| Total PCB | | 130 | 430 | 140 | | 51 | | | 220 |
| **Pesticides, µg/kg dw** | | | | | | | | | |
| Aldrin | | | | 2.3 J | | | | | |
| Lindane (gamma-BHC[e]) | | 2.5 J | | | | | | | |
| p,p'-DDD[f] | | 9.8 J | 12 J | 7 J | | 5.9 J | 3.8 J | 3 J | 20 |
| p,p'-DDE[g] | 18 J | 65 J | 100 J | 54 J | 43 | 33 J | 31 J | 27 J | 110 |
| p,p'-DDT[h] | | | | | | | | | |
| Total DDT | 18 | 74.8 | 112 | 61 | 43 | 38.9 | 34.8 | 30 | 130 |
| **Phenols, µg/kg dw** | | | | | | | | | |
| Phenol | | | | | | | 94 | | |
| **Phthalates, µg/kg dw** | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | |
| Di-n-octylphthalate | | 38 | | | | | | | |

(table continues)

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**Table 9-1**
**Preliminary Results of Detected Compounds: Surface Sediment Physical and Chemical Data**

| Analyte Name | Stations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pier 16 42 | Pier 15 43 | Pier 12 44 | Pier 12 45 | Pier 12 46 | Pier 9 47 | Pier 7 48 | Pier 6 49 | Pier 3 50 | Pier 2 51 | Pier 1 52 |
| **Physical and Conventional Data** | | | | | | | | | | | |
| Total Sulfide, mg/kg dw | 3600 | 4400 | 3800 | 3800 | 4100 | 360 | 3900 | 3000 | 4900 | 5400 | 4300 |
| Total Organic Carbon, % dw | 1.6 | 2.2 | 1.7 | 1.4 | 1.9 | 1.3 | 2.3 | 1.6 | 1.6 | 2.1 | 2.1 |
| Grain Size | | | | | | | | | | | |
| Clay, % dw | 43 | 52 | 32 | 44 | 46 | 26 | 38 | 33 | 23 | 39 | 40 |
| Fines, % dw | 72 | 94 | 54 | 71 | 72 | 50 | 71 | 76 | 38 | 85 | 82 |
| Mean Phi | 5.5 | 8.7 | 0 | 6.7 | 5.3 | 6.3 | 5.9 | 6.8 | 3.5 | 7.7 | 7.1 |
| Median Phi | 7.4 | 8.2 | 5.6 | 7.4 | 7.7 | 4 | 6.9 | 6.8 | 1.3 | 7 | 7.1 |
| Sand, % dw | 14 | 5.6 | 8.9 | 20 | 13 | 47 | 21 | 24 | 32 | 11 | 9.3 |
| Silt, % dw | 29 | 42 | 22 | 26 | 25 | 24 | 33 | 43 | 16 | 47 | 42 |
| **Metals, mg/kg dw** | | | | | | | | | | | |
| Arsenic | 8.5 | 11 J | 10 | 11 | 8.4 | 7.7 J | 15 J | 13 J | 11 J | 13 J | 9.7 J |
| Beryllium | 0.61 | 0.73 | 0.88 | 0.68 | 0.54 | 0.38 | 0.55 | 0.68 | 0.27 | 0.72 | 0.86 |
| Cadmium | 0.49 | 0.95 J | 0.64 | 0.75 | 0.68 | 0.61 J | 0.63 J | 0.55 J | 1.3 J | 1.5 J | 0.94 J |
| Chromium | 49 | 58 | 56 | 44 | 46 | 34 | 330 | 59 | 43 | 51 | 63 |
| Copper | 120 | 260 | 160 | 130 | 120 | 180 | 330 | 230 | 170 | 210 | 260 |
| Lead | 55 | 80 | 79 | 65 | 60 | 54 | 94 | 77 | 84 | 72 | 89 |
| Mercury | 0.27 | 0.62 | 0.5 | 0.38 | 0.46 | 0.88 | 0.52 | 0.71 | 0.33 | 0.4 | 0.49 |
| Nickel | 33 | 29 | 32 | 24 | 30 | 19 | 28 | 30 | 35 | 29 | 34 |
| Selenium | | | | | | | | | | | |
| Silver | 2.1 | 2.5 | 2.6 | 2.4 | 2.2 | 1.5 | 2.2 | 2.7 | 4.1 | 2.5 | 2.9 |
| Zinc | 190 | 300 J | 250 | 210 | 200 | 210 J | 390 | 300 | 620 | 260 | 340 |
| **SEM/AVS[a] Ratios, unitless** | | | | | | | | | | | |
| Acid Volatile Sulfide, µmol/g | 80.6 J | 125 J | 82.1 J | 69.2 J | 73.7 J | 9.56 J | 103 J | 92.4 J | 118 J | 113 J | 116 J |
| Cadmium, Extractable | 1.0E-4 | 7.8E-5 | 1.3E-4 | 2.2E-4 | 1.3E-4 | 7.1E-4 | 9.5E-5 | 1.1E-4 | 8.1E-5 | | 8.8E-5 |
| Copper, Extractable | 1.8E-2 | 2.8E-2 | 2.4E-2 | 3.0E-2 | 1.9E-2 | 3.0E-1 | 4.6E-2 | 3.7E-2 | 2.1E-2 | 2.3E-2 | 2.4E-2 |
| Lead, Extractable | 3.1E-3 | 3.0E-3 | 4.1E-3 | 5.0E-3 | 3.2E-3 | 3.4E-2 | 5.5E-3 | 3.9E-3 | 3.6E-3 | 2.8E-3 | 2.9E-3 |
| Mercury, Extractable | 3.8E-6 | | 5.3E-6 | 9.8E-6 | 5.5E-6 | 3.0E-5 | 5.3E-6 | 2.5E-6 | 2.3E-6 | | |
| Zinc, Extractable | 3.0E-2 | 3.5E-2 | 3.8E-2 | 5.1E-2 | 3.2E-2 | 3.5E-1 | 6.1E-2 | 4.5E-2 | 5.3E-2 | 2.9E-2 | 3.2E-2 |
| **Butyltins, µg/kg dw** | | | | | | | | | | | |
| Dibutyltin | | | | | | | | | | | |
| Monobutyltin | | 3.6 J | | | | 2.5 | | | | | |
| **HPAH[b], µg/kg dw** | | | | | | | | | | | |
| Benz(a)anthracene | | 1600 | | | | | | | | | |
| Benzo(e)pyrene | | 980 | 230 | 240 | | 150 | 1900 J | 500 | 1000 | | |
| Benzo(b)fluoranthene | | 1300 | 320 | 270 | | 290 | 1500 J | 1100 | 870 | 510 | 430 |
| Benzo(ghi)perylene | | 180 | 200 | | | 330 | 1800 J | 1400 | 1200 | 620 | 540 |
| Benzo(k)fluoranthene | | 1100 | 260 | 240 | | 110 | 440 J | 340 | 220 | 140 | 140 |
| Chrysene | | 1700 | 200 | 170 | | 360 | 1300 J | 960 J | 870 J | 620 J | 510 J |
| Dibenz(a,h)anthracene | | | | | | 330 | 2100 J | 820 | 1200 | 580 | 260 |
| Fluoranthene | | 3600 | 150 | | | | 330 J | 270 | | | |
| Indeno(1,2,3-cd)pyrene | | 220 | 200 | | | 250 | 4400 | 520 | 2000 | 250 | 86 |
| Pyrene | | 2800 J | 180 | | | 110 | 550 J | 360 | 240 | 180 | 140 |
| Total HPAH | | 13480 | 1740 | 920 | | 250 J | 3300 J | 2000 J | 1800 J | 870 J | 490 J |
| **LPAH[c], µg/kg dw** | | | | | | 2180 | 17620 | 8270 | 9400 | 3770 | 2596 |
| Acenaphthene | | 180 | | | | | | | | | |
| Acenaphthylene | | | | | | | 360 | | | | |
| Anthracene | | | | | | | 500 | 110 | 81 | 72 | 29 |
| Fluorene | | 650 | | | | 150 | 1400 | 300 | 1200 | 290 | 110 |
| Methylnaphthalenes | | | | | | | 550 | 46 | 190 | 36 | |
| Phenanthrene | | | | | | | 83 J | | | | |
| Total LPAH | | 510 | | | | 77 | 2700 | 250 | 810 | 250 | 86 |
| | | 1340 | | | | 227 | 5593 | 706 | 2281 | 648 | 225 |
| **PCB[d], µg/kg dw** | | | | | | | | | | | |
| PCB 1260 | | | | | | 340 J | | 390 J | | | |
| Total PCB | | | | | | 340 | | 390 | | | |
| **Pesticides, µg/kg dw** | | | | | | | | | | | |
| Aldrin | | | | | | | | | | | |
| Lindane (gamma-BHC[e]) | | | | | | | | | | | |
| p,p'-DDD[f] | | | | | | 15 | 36 | 13 | | | |
| p,p'-DDE[g] | 110 J | 13 J | 99 J | 110 J | 92 J | 110 | 110 | 87 | 70 | 91 | 94 |
| p,p'-DDT[h] | | | | | | | | | | | |
| Total DDT | 110 | 13 | 99 | 110 | 92 | 125 | 146 | 100 | 70 | 91 | 94 |
| **Phenols, µg/kg dw** | | | | | | | | | | | |
| Phenol | | | | | | 210 J | | | | | |
| **Phthalates, µg/kg dw** | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | | 190 J | 230 | 220 | 220 | 170 |
| Di-n-octylphthalate | | | | | | | | | | | |

(table continues)



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**Table 9-1**
**Preliminary Results of Detected Compounds: Surface Sediment Physical and Chemical Data**

| Analyte Name | Stations | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 40010 | | | 40018 | | | 40020 | 40032 | | |
| | 40010.1 | 40010.2 | 40010.3 | 40018.1 | 40018.2 | 40018.3 | 40020.1 | 40032.1 | 40032.2 | 40032.3 |
| **Physical and Conventional Data** | | | | | | | | | | |
| Total Sulfide, mg/kg dw | 15 | 41. | 1.8 | 380 | 120 | 260 | | 17. | | |
| Total Organic Carbon, % dw | 1.9 | 1.9 | 1.9 | 0.92 | 0.99 | 0.95 | 0.73 | 0.43 | 0.47 | 0.39 |
| Grain Size | | | | | | | | | | |
| Clay, % dw | 20 | 25 | 22 | 33 | 30 | 38 | 17 | 7 | 6.6 | 6 |
| Fines, % dw | 85 | 96 | 67 | 68 | 73 | 83 | 69 | 15 | 17 | 15 |
| Mean Phi | 6.5 | 7.1 | 5.8 | 6.7 | 6.7 | 7.2 | 5.7 | 3.2 | 3.4 | 3.1 |
| Median Phi | 5.6 | 6 | 5.4 | 6.5 | 6.3 | 7.2 | 5 | 3 | 3.1 | 2.9 |
| Sand, % dw | 15 | 4.3 | 33 | 31 | 27 | 17 | 31 | 85 | 83 | 85 |
| Silt, % dw | 65 | 71 | 45 | 35 | 43 | 45 | 52 | 8.3 | 11 | 9.2 |
| **Metals, mg/kg dw** | | | | | | | | | | |
| Arsenic | 14.1 | 9 | 9.1 | 7.1 | 6.9J | 6.9 | | 2.8J | | |
| Beryllium | 0.44 | 0.43 | 0.44 | 0.38 | 0.39 | 0.71 | | | | |
| Cadmium | 2.4J | 1.5 | 1.6 | 0.66J | 0.67J | 0.78 | | 0.25J | | |
| Chromium | 53 | 45 | 42 | 27. | 28 | 38 | | 15 | | |
| Copper | 130 | 130 | 120 | 30. | 33 | 43 | | 13 | | |
| Lead | 42 | 36 | 44 | 44 | 43. | 61. | | 11 | | |
| Mercury | 0.59 | 0.43 | 0.4 | 0.19 | 0.2 | 0.12 | | 0.066 | | |
| Nickel | 37 | 32 | 31 | 17. | 18. | 24 | | 8 | | |
| Selenium | 1.3 | 1.7 | 1.8 | | | | | | | |
| Silver | 2.2 | 2.4 | 1.5 | 1.5 | 1.6 | 2.1 | | 0.8 | | |
| Zinc | 240 | 240 | 190. | 93.1 | 100.1 | 130. | | 42.1 | | |
| **SEM/AVS[a] Ratios, unitless** | | | | | | | | | | |
| Acid Volatile Sulfide, µmol/g | 0.25J | 1.74J | 0.17J | 14.8J | 3.55J | 8.11J | | 0.50J | | |
| Cadmium, Extractable | 8.7E-2 | 1.3E-2 | 1.0E-1 | 4.6E-4 | 2.5E-3 | 1.6E-3 | | | | |
| Copper, Extractable | 4.5E+0 | 7.4E-1 | 6.1E+0 | 3.2E-2 | 1.3E-1 | 7.3E-2 | | 3.4E-1 | | |
| Lead, Extractable | 6.9E-1 | 9.5E-2 | 8.7E-1 | 1.7E-2 | 6.9E-2 | 4.1E-2 | | 1.2E-1 | | |
| Mercury, Extractable | 8.9E-4 | | | | 2.8E-5 | | | | | |
| Zinc, Extractable | 1.2E+1 | 1.9E+0 | 1.3E+1 | 9.2E-2 | 3.8E-1 | 2.2E-1 | | 9.0E-1 | | |
| **Butyltins, µg/kg dw** | | | | | | | | | | |
| Dibutyltin | | | | | | | | | | |
| Monobutyltin | | | | | | | | 2.5 | | |
| **HPAH[b], µg/kg dw** | | | | | | | | | | |
| Benz(a)anthracene | | | | | | | | | | |
| Benzo(a)pyrene | 150. | 43. | | 19. | 20. | | | | | |
| Benzo(b)fluoranthene | 130. | 43. | 290 | 19 | 20. | | | | | |
| Benzo(ghi)perylene | 66. | 21. | | | | | | | | |
| Benzo(k)fluoranthene | 200.J | 43. | 220. | 19. | 20. | | | | | |
| Chrysene | 88. | 43. | | 19. | 20. | | | | | |
| Dibenz(a,h)anthracene | | | | | | | | | | |
| Fluoranthene | 150. | 64. | 270. | 19 | 20. | | | | | |
| Indeno(1,2,3-cd)pyrene | 66. | 21. | | | | | | | | |
| Pyrene | 130.J | 64. | 220 | 38.J | 20.J | 24. | | | | |
| Total HPAH | 980 | 342 | 1000 | 133 | 120 | 24 | | | | |
| **LPAH[c], µg/kg dw** | | | | | | | | | | |
| Acenaphthene | | | | | | | | | | |
| Acenaphthylene | | | | | | | | | | |
| Anthracene | 44. | | | | | | | | | |
| Fluorene | | | | | | | | | | |
| Methylnaphthalenes | | | | | | | | | | |
| Phenanthrene | 44. | | | | | | | | | |
| Total LPAH | 88 | | | | | | | | | |
| **PCB[d], µg/kg dw** | | | | | | | | | | |
| PCB 1260 | | | | | | | | | | |
| Total PCB | | | | | | | | | | |
| **Pesticides, µg/kg dw** | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Lindane (gamma-BHC[e]) | | | | | | | | | | |
| p,p'-DDD[f] | 10 | 20.J | 20.J | 8.9 | 9.8 | 19.J | | 5.3 | | |
| p,p'-DDE[g] | 130 | 190.J | 220.J | 95 | 98 | 71.J | | 70 | | |
| p,p'-DDT[h] | | | | | | | | | | |
| Total DDT | 140 | 210 | 240 | 103.9 | 107.8 | 90 | | 75.3 | | |
| **Phenols, µg/kg dw** | | | | | | | | | | |
| Phenol | | | | | | | | | | |
| **Phthalates, µg/kg dw** | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | | |
| Di-n-octylphthalate | 220 | | | | | 310 | | | | |

(table continues)



R0062572

VOL 18
0638

**Table 9-1 (continued)**

Data Qualification Note: Estimated data (J qualified) are presented along with validated data. Rejected data and undetected analytes are not shown. Sediment data are reported on a dry weight (dw) basis.

Notes:

[a] SEM/AVS – simultaneously extracted metals/acid volatile sulfides
[b] HPAH – high molecular weight polynuclear aromatic hydrocarbons
[c] LPAH – low molecular weight polynuclear aromatic hydrocarbons
[d] PCB – polychlorinated biphenyls
[e] BHC – hexachlorocyclohexane
[f] DDD – dichloro-diphenyl-dichloroethane
[g] DDE – dichloro-diphenyl-ethane
[h] DDT – Dichloro-dipher.yl-trichloroethane



R0062573

VOL 18 00639

## Table 9-2
## Preliminary Results of Detected Compounds: Subsurface Sediment Physical and Chemical Data

| Analyte Name | Profile Depth Range, m | Stations: West Basin 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 | Reference 40818.1 | 40818.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical and Conventional Data** | | | | | | | | | | | |
| Total Organic Carbon, % | 0 - 1 | 0.24 | 0.21 | 0.31 | 0.43 | 0.10 | 2.16 | — | 2.19 | 3.63 | 0.69 |
| | 1 - 2 | 0.20 | 0.19 | 0.25 | 0.28 | 0.06 | 2.24 | 0.96 | 1.51 | 1.41 | 0.17 |
| | 2 - 3 | 0.28 | — | — | — | — | 1.81 | — | 2.39 | — | 0.08 |
| | 3 - 4 | 0.16 | — | — | — | — | 0.52 | 0.52 | 2.22 | — | 0.10 |
| | 4 - 5 | 0.09 | — | — | — | — | 0.52 | 0.20 | 0.38 | — | 0.05 |
| Grain Size | | | | | | | | | | | |
| Clay, % dw | 0 - 1 | 6 | 3 | 10 | 25 | 3 | 41 | — | 35 | 58 | 23 |
| | 1 - 2 | 3 | 1 | 18 | 6 | 14 | 36 | 19 | 43 | 35 | 12 |
| | 2 - 3 | 41 | — | — | — | — | 41 | — | 43 | — | 19 |
| | 3 - 4 | 8 | — | — | — | — | 10 | 14 | 57 | — | 19 |
| | 4 - 5 | 6 | — | — | — | — | 14 | 7 | 17 | — | 19 |
| Fines, % dw | 0 - 1 | 25 | 8 | 40 | 66 | 14 | 64 | — | 65 | 99 | 57 |
| | 1 - 2 | 9 | 6 | 70 | 27 | 36 | 59 | 34 | 84 | 83 | 50 |
| | 2 - 3 | 98 | — | — | — | — | 55 | — | 72 | — | 56 |
| | 3 - 4 | 19 | — | — | — | — | 29 | 32 | 87 | — | 65 |
| | 4 - 5 | 38 | — | — | — | — | 62 | 32 | 62 | — | 57 |
| Gravel, % dw | 0 - 1 | | | 0.2 | 0.2 | | 17.1 | — | 10.8 | | 0.7 |
| | 1 - 2 | 1.6 | 0.1 | | 0.1 | 1.2 | 24.4 | 18.2 | 5.5 | | 0.2 |
| | 2 - 3 | 0.1 | — | — | — | — | 29.9 | — | 20.9 | — | 0.2 |
| | 3 - 4 | 7.2 | — | — | — | — | 17.2 | 8.9 | 6.6 | — | |
| | 4 - 5 | 2.8 | — | — | — | — | 1.5 | 1.2 | 0.1 | — | |
| Mean Phi | 0 - 1 | 3.8 | 3.2 | 4.8 | 6.2 | 3.0 | 4.7 | — | 5.0 | 9.1 | 6.2 |
| | 1 - 2 | 3.2 | 3.0 | 5.8 | 3.6 | 4.6 | 4.1 | 3.2 | 7.6 | 7.0 | 4.8 |
| | 2 - 3 | 7.8 | — | — | — | — | 4.0 | — | 3.9 | — | 5.6 |
| | 3 - 4 | 3.2 | — | — | — | — | 2.5 | 4.5 | 8.0 | — | 5.9 |
| | 4 - 5 | 4.1 | — | — | — | — | 5.3 | 4.2 | 5.6 | — | 5.9 |
| Median Phi | 0 - 1 | 3.5 | 3.2 | 3.6 | 5.7 | 3.1 | 7.0 | — | 6.6 | 8.7 | 4.7 |
| | 1 - 2 | 3.2 | 3.2 | 5.3 | 3.1 | 2.9 | 7.1 | 3.1 | 7.4 | 6.8 | 4.0 |
| | 2 - 3 | 7.4 | — | — | — | — | 6.7 | — | 7.4 | — | 4.4 |
| | 3 - 4 | 2.8 | — | — | — | — | 3.1 | 3.1 | 8.5 | — | 4.9 |
| | 4 - 5 | 3.6 | — | — | — | — | 5.1 | 3.5 | 4.9 | — | 4.6 |
| Sand, % dw | 0 - 1 | 75 | 92 | 59 | 34 | 86 | 19 | — | 24 | 1 | 43 |
| | 1 - 2 | 90 | 94 | 30 | 73 | 63 | 17 | 47 | 10 | 17 | 49 |
| | 2 - 3 | 2 | — | — | — | — | 15 | — | 7 | — | 44 |
| | 3 - 4 | 74 | — | — | — | — | 54 | 59 | 7 | — | 35 |
| | 4 - 5 | 59 | — | — | — | — | 37 | 67 | 38 | — | 43 |
| Silt, % dw | 0 - 1 | 19 | 5 | 30 | 40 | 10 | 23 | — | 30 | 41 | 34 |
| | 1 - 2 | 6 | 4 | 53 | 21 | 22 | 23 | 16 | 41 | 48 | 38 |
| | 2 - 3 | 57 | — | — | — | — | 14 | — | 29 | — | 37 |
| | 3 - 4 | 11 | — | — | — | — | 18 | 18 | 30 | — | 46 |
| | 4 - 5 | 31 | — | — | — | — | 47 | 25 | 46 | — | 38 |
| Metals, mg/kg dw | | | | | | | | | | | |
| Arsenic | 0 - 1 | 3.7 | 3.4 | 4.6 | 6.9 | 2.2 | 9.1 | — | 5.2 | 13.1 | 6.5 |
| | 1 - 2 | 4.2 | 2.0 | 4.6 | 1.1 | 1.4 | 7.0 | 6.4 | 5.2 | 9.8 | 2.2 |
| | 2 - 3 | 3.7 | — | — | — | — | 7.9 | — | 5.4 | — | 3.3 |
| | 3 - 4 | 8.1 | — | — | — | — | 4.1 | 3.8 | 5.6 | — | 4.8 |
| | 4 - 5 | 1.4 | — | — | — | — | 5.2 | 2.0 | 4.2 | — | 3.7 |
| Beryllium | 0 - 1 | 0.27 | 0.14 | 0.27 | 0.60 | 0.29 | 1.05 | — | 1.03 | 0.70 | 0.46 |
| | 1 - 2 | 0.12 | 0.13 | 0.26 | 0.12 | 0.25 | 1.01 | 0.47 | 1.05 | 0.77 | 0.24 |
| | 2 - 3 | 0.89 | — | — | — | — | 1.03 | — | 0.80 | — | 0.60 |
| | 3 - 4 | 0.23 | — | — | — | — | 0.44 | 0.46 | 0.93 | — | 0.48 |
| | 4 - 5 | 0.25 | — | — | — | — | 0.54 | 0.40 | 0.58 | — | 0.60 |

(table continues)



R0062574

VOL 18

Table 9-2 (continued)

| Analyte Name | Profile Depth Range, m | Stations: West Basin 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 | Reference 40010.1 | 40018.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals, mg/kg dw (continued)** | | | | | | | | | | | |
| Cadmium | 0 - 1 | 0.10 | 0.10 | | 0.36 | 0.09 | 1.40 | — | 1.03 | 1.75 | 0.37 |
| | 1 - 2 | 0.15 | 0.09 | 0.07 | 0.10 | 0.14 | 2.01 | 0.47 | 1.05 | 0.81 | 0.53 |
| | 2 - 3 | 0.73 | — | — | — | — | 1.79 | — | 2.79 | — | 0.33 |
| | 3 - 4 | 0.07 | — | — | — | — | 0.29 | 0.46 | 2.22 | — | 0.11 |
| | 4 - 5 | | — | — | — | — | 0.14 | 0.13 | 0.43 | — | 0.11 |
| Chromium | 0 - 1 | 18 | 14 | 19 | 36 | 16 | 70 | — | 54 | 65 | 34 |
| | 1 - 2 | 12 | 10 | 17 | 10 | 11 | 67 | 31 | 58 | 48 | 16 |
| | 2 - 3 | 36 | — | — | — | — | 56 | — | 62 | — | 30 |
| | 3 - 4 | 14 | — | — | — | — | 29 | 29 | 59 | — | 26 |
| | 4 - 5 | 22 | — | — | — | — | 24 | 17 | 27 | — | 29 |
| Copper | 0 - 1 | 23 | 12 | 17 | 45 | 16 | 262 | — | 158 | 98 | |
| | 1 - 2 | 9 | 10 | 18 | 7 | 11 | 225 | 64 | 160 | 65 | 11 |
| | 2 - 3 | 50 | — | — | — | — | 177 | — | 200 | — | 25 |
| | 3 - 4 | 9 | — | — | — | — | 57 | 1 | 204 | — | 22 |
| | 4 - 5 | 36 | — | — | — | — | 35 | 17 | 84 | — | 32 |
| Lead | 0 - 1 | 8 | 8 | 9 | 33 | 7 | 108 | — | 85 | 37 | 43 |
| | 1 - 2 | 4 | | 7 | | 7 | 141 | 42 | 89 | 65 | 6 |
| | 2 - 3 | 18 | — | — | — | — | 108 | — | 144 | — | 11 |
| | 3 - 4 | 14 | — | — | — | — | 22 | 33 | 170 | — | 10 |
| | 4 - 5 | 7 | — | — | — | — | 14 | 9 | 20 | — | 10 |
| Mercury | 0 - 1 | 0.05 | 0.05 | | 0.21 | | 0.66 | — | 0.21 | 0.77 | 0.12 |
| | 1 - 2 | | | | | | 1.04 | 0.23 | 0.34 | 0.86 | |
| | 2 - 3 | 0.07 | — | — | — | — | 0.97 | — | 0.70 | — | 0.04 |
| | 3 - 4 | | — | — | — | — | 0.12 | 0.27 | 1.78 | — | |
| | 4 - 5 | | — | — | — | — | 0.08 | 0.04 | 0.27 | — | |
| Nickel | 0 - 1 | 11 | 10 | 15 | 26 | 13 | 35 | — | 31 | 63 | 25 |
| | 1 - 2 | 9 | 8 | 14 | 9 | 10 | 40 | 25 | 37 | 40 | 12 |
| | 2 - 3 | 33 | — | — | — | — | 36 | — | 32 | — | 24 |
| | 3 - 4 | 12 | — | — | — | — | 24 | 21 | 31 | — | 22 |
| | 4 - 5 | 17 | — | — | — | — | 20 | 15 | 22 | — | 26 |
| Selenium | 0 - 1 | | | | | | | — | | 2.8 | |
| | 1 - 2 | | | | | | | | | 1.5 | |
| | 2 - 3 | | — | — | — | — | 1.3 | — | 1.2 | — | |
| | 3 - 4 | | — | — | — | — | | | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| Silver | 0 - 1 | 1.1 | 0.8 | 1.2 | 2.3 | 1.2 | 0.6 | — | 0.4 | 2.8 | 1.9 |
| | 1 - 2 | 0.9 | | 1.0 | 0.9 | 0.9 | 0.3 | 0.2 | | 2.5 | 0.8 |
| | 2 - 3 | 2.7 | — | — | — | — | | — | 0.1 | — | 1.8 |
| | 3 - 4 | 0.7 | — | — | — | — | 0.1 | | 0.2 | — | 1.7 |
| | 4 - 5 | 1.4 | — | — | — | — | | | 0.1 | — | 1.7 |
| Zinc | 0 - 1 | 55 | 42 | 47 | 165 | 53 | 385 | — | 284 | 196 | 98 |
| | 1 - 2 | 33 | 24 | 48 | 30 | 36 | 403 | 131 | 420 | 167 | 36 |
| | 2 - 3 | 99 | — | — | — | — | 333 | — | 419 | — | 56 |
| | 3 - 4 | 35 | — | — | — | — | 87 | 119 | 537 | — | 49 |
| | 4 - 5 | 49 | — | — | — | — | 71 | 50 | 88 | — | 56 |
| **Butyltin, µg/kg dw** | | | | | | | | | | | |
| Dibutyltin | 0 - 1 | | 3.4 | | | | | — | | | |
| | 1 - 2 | | | | | 4.1 | | | | | |
| | 2 - 3 | | — | — | — | — | | — | | — | |
| | 3 - 4 | | — | — | — | — | | | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| Tributyltin | 0 - 1 | 3.7 | 8.0 | 5.7 | 2.9 | 6.4 | | — | | 5.1 | 5.1 |
| | 1 - 2 | 3.8 | 4.9 | 3.3 | 4.4 | 8.9 | | | | 7.1 | 3.2 |
| | 2 - 3 | 4.4 | — | — | — | — | | — | | — | 2.0 |
| | 3 - 4 | 6.0 | — | — | — | — | | | | — | |
| | 4 - 5 | 3.6 | — | — | — | — | | | | — | 2.4 |

(table continues)



0640

R0062575

Table 9-2 (continued)

| Analyte Name | Profile Depth Range, m | Stations: West Basin 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 | Reference 40010.1 | 40018.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HPAH[a], µg/kg dw | | | | | | | | | | | |
| Benz(a)anthracene | 0 - 1 | 14 | | | | | | | | | |
| | 1 - 2 | | | | | | 196 | — | 724 | | |
| | 2 - 3 | | | | | | 973 | | 262 | | |
| | 3 - 4 | | — | — | — | — | 223 | — | 9980 | — | |
| | 4 - 5 | | — | — | — | — | 985 | | 3704 | — | |
| Benzo(a)pyrene | 0 - 1 | 55 | 14 | 13 | | | | | 1055 | — | |
| | 1 - 2 | 12 | | | | | 192 | — | | 47 | |
| | 2 - 3 | | — | — | — | — | 772 | 78 | | 115 | |
| | 3 - 4 | | — | — | — | — | 162 | — | 5190 | — | |
| | 4 - 5 | | — | — | — | — | 368 | 137 | 2037 | — | |
| Benzo(b)fluoranthene | 0 - 1 | 68 | 14 | 27 | | | | | 607 | — | |
| | 1 - 2 | 12 | | | | | 189 | — | | 47 | |
| | 2 - 3 | | — | — | — | — | 872 | 172 | | 115 | |
| | 3 - 4 | | — | — | — | — | 231 | — | | — | |
| | 4 - 5 | | — | — | — | — | 485 | 134 | 1481 | — | |
| Benzo(ghi)perylene | 0 - 1 | 27 | | | | | | | 592 | — | |
| | 1 - 2 | | | | | | 150 | — | | 47 | |
| | 2 - 3 | | | | | | 299 | | | 77 | |
| | 3 - 4 | | — | — | — | — | 95 | — | 2595 | — | |
| | 4 - 5 | | — | — | — | — | 147 | | 704 | — | |
| Benzo(k)fluoranthene | 0 - 1 | 55 | 14 | 13 | | | | | 275 | — | |
| | 1 - 2 | 12 | | | | | 196 | — | | 47 | |
| | 2 - 3 | | — | — | — | — | 638 | 188 | | 134 | |
| | 3 - 4 | | — | — | — | — | 218 | — | 13,573 | — | |
| | 4 - 5 | | — | — | — | — | 338 | 213 | 2778 | — | |
| Chrysene | 0 - 1 | 41 | | | | | | | 520 | — | |
| | 1 - 2 | | | | | | 175 | — | 2481 | | |
| | 2 - 3 | | — | — | — | — | 805 | 113 | 2887 | 19 | |
| | 3 - 4 | | — | — | — | — | 218 | — | 8782 | — | |
| | 4 - 5 | | — | — | — | — | 941 | 88 | 4444 | — | |
| Dibenz(a,h)anthracene | 0 - 1 | | | | | | | | 939 | — | |
| | 1 - 2 | | | | | | 87 | — | | | |
| | 2 - 3 | | — | — | — | — | | | | 19 | |
| | 3 - 4 | | — | — | — | — | | — | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| Fluoranthene | 0 - 1 | | | | | | | | 108 | — | |
| | 1 - 2 | | | | | | 157 | — | 1318 | | |
| | 2 - 3 | | — | — | — | — | 383 | 156 | 1732 | | |
| | 3 - 4 | | — | — | — | — | 231 | — | 3393 | — | |
| | 4 - 5 | | — | — | — | — | 721 | 85 | 13,148 | — | |
| Indeno(1,2,3-cd)pyrene | 0 - 1 | 27 | | | | | | | 809 | — | |
| | 1 - 2 | | | | | | 143 | — | | 23 | |
| | 2 - 3 | | — | — | — | — | 329 | | | 58 | |
| | 3 - 4 | | — | — | — | — | 97 | — | 2196 | — | |
| | 4 - 5 | | — | — | — | — | 162 | 36 | 741 | — | |
| Pyrene | 0 - 1 | 14 | | | | | | | 578 | — | |
| | 1 - 2 | | | | | | 315 | — | 3101 | | |
| | 2 - 3 | | — | — | — | — | 1208 | 188 | 997 | | |
| | 3 - 4 | | — | — | — | — | 333 | — | 11,976 | — | |
| | 4 - 5 | | — | — | — | — | 1029 | 125 | 9259 | — | |
| Total HPAH | 0 - 1 | 301 | 41 | 54 | | | | | 1734 | — | |
| | 1 - 2 | 37 | | | | | 1801 | — | 7623 | 210 | |
| | 2 - 3 | | — | — | — | — | 6279 | 895 | 5879 | 537 | |
| | 3 - 4 | | — | — | — | — | 1808 | — | 57,685 | — | |
| | 4 - 5 | | — | — | — | — | 5176 | 818 | 38,296 | — | |
| | | | | | | | | | 7218 | — | |

(table continues)



R0062576

VOL 18 0641

Table 9-2 (continued)

| Analyte Name | Profile Depth Range, m | Stations: West Basin 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 | Reference 40010.1 | 40018.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LPAH[b], µg/kg dw | | | | | | | | | | | |
| Anthracene | 0 - 1 | | | | | | 73 | — | 88 | | |
| | 1 - 2 | | | | | | 329 | 34 | 168 | | |
| | 2 - 3 | | — | — | — | — | 118 | — | 6786 | — | |
| | 3 - 4 | | — | — | — | — | 265 | 41 | 6111 | — | |
| | 4 - 5 | | — | — | — | — | | | 275 | — | |
| Fluorene | 0 - 1 | | | | | | | — | 98 | | |
| | 1 - 2 | | | | | | | | 315 | | |
| | 2 - 3 | | — | — | — | — | | — | 1377 | — | |
| | 3 - 4 | | — | — | — | — | | | 241 | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| Methylnaphthalenes | 0 - 1 | | | | | | | — | | | |
| | 1 - 2 | | | | | | | | | | |
| | 2 - 3 | | — | — | — | — | | — | 17,166 | — | |
| | 3 - 4 | | — | — | — | — | | | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| Naphthalene | 0 - 1 | | | | | | | — | | | |
| | 1 - 2 | | | | | | | | | | |
| | 2 - 3 | | — | — | — | — | | — | 4790 | — | |
| | 3 - 4 | | — | — | — | — | | | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| Phenanthrene | 0 - 1 | | | | | | | — | 336 | | |
| | 1 - 2 | | | | | | 84 | | 630 | | |
| | 2 - 3 | | — | — | — | — | | — | 9182 | — | |
| | 3 - 4 | | — | — | — | — | 85 | | 4630 | — | |
| | 4 - 5 | | — | — | — | — | | | 188 | — | |
| Total LPAH | 0 - 1 | | | | | | 73 | — | 522 | | |
| | 1 - 2 | | | | | | 413 | 34 | 1113 | | |
| | 2 - 3 | | — | — | — | — | 118 | — | 39,301 | — | |
| | 3 - 4 | | — | — | — | — | 350 | 41 | 10,981 | — | |
| | 4 - 5 | | — | — | — | — | | | 462 | — | |
| PCB[c], µg/kg dw | | | | | | | | | | | |
| PCB 1248 | 0 - 1 | | | | | | | — | | | |
| | 1 - 2 | | | | | | | | | | |
| | 2 - 3 | | — | — | — | — | | — | 6587 | — | |
| | 3 - 4 | | — | — | — | — | | | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| PCB 1254 | 0 - 1 | | | | 113 | | | — | | | |
| | 1 - 2 | | | | | | | | | | |
| | 2 - 3 | | — | — | — | — | | — | | — | |
| | 3 - 4 | | — | — | — | — | | | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| PCB 1260 | 0 - 1 | 23 | | | | | 294 | — | | | |
| | 1 - 2 | | | | | | 252 | | | | |
| | 2 - 3 | | — | — | — | — | | — | | — | |
| | 3 - 4 | | — | — | — | — | | 87 | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |
| Total PCB | 0 - 1 | 23 | | | 113 | | 294 | — | | | |
| | 1 - 2 | | | | | | 252 | | | | |
| | 2 - 3 | | — | — | — | — | | — | 6587 | — | |
| | 3 - 4 | | — | — | — | — | | 87 | | — | |
| | 4 - 5 | | — | — | — | — | | | | — | |

(table continues)



R0062577

VOL 18
0642

Table 9-2 (continued)

| Analyte Name | Profile Depth Range, m | Stations: West Basin 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 | Reference 40010.1 | 40018.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pesticides, µg/kg dw** | | | | | | | | | | | |
| delta-BHC (HCH)[d] | 0-1 | | | | | | | — | | | |
| | 1-2 | | | | | | | | | | |
| | 2-3 | | — | — | — | — | | — | | — | |
| | 3-4 | | — | — | — | — | | | | — | |
| | 4-5 | | — | — | — | — | | 7 | | — | |
| | 3-4 | | | | | | | | | | |
| Endosulfan II | 0-1 | | | | | | | — | | | |
| | 1-2 | | | | | | 37 | | | | |
| | 2-3 | | — | — | — | — | | — | | — | |
| | 3-4 | | — | — | — | — | | | | — | |
| | 4-5 | | — | — | — | — | | | | — | |
| | 1-2 | | — | | | | | | | | |
| p,p'-DDD[e] | 0-1 | | | | | | 35 | — | | | |
| | 1-2 | | | | | | 44 | 6 | | | |
| | 2-3 | | — | — | — | — | 46 | — | | — | |
| | 3-4 | | — | — | — | — | | 5 | 19 | — | |
| | 4-5 | | — | — | — | — | 4 | | | — | |
| p,p'-DDE[f] | 0-1 | 7 | | | 17 | | 231 | — | 248 | 30 | 9 |
| | 1-2 | | | | | | 218 | 41 | 234 | 13 | 7 |
| | 2-3 | | — | — | — | — | 462 | — | 1098 | — | 5 |
| | 3-4 | | — | — | — | — | 50 | 41 | 50 | — | |
| | 4-5 | | — | — | — | — | 29 | 10 | 4 | — | 11 |
| Total DDT[g] | 0-1 | 7 | | | 17 | | 266 | — | 248 | 30 | 9 |
| | 1-2 | | | | | | 262 | 47 | 234 | 13 | 7 |
| | 2-3 | | — | — | — | — | 508 | — | 1098 | — | 5 |
| | 3-4 | | — | — | — | — | 50 | 47 | 69 | — | |
| | 4-5 | | — | — | — | — | 32 | 10 | 4 | — | 11 |
| **Phthalates, µg/kg dw** | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | 0-1 | | | | | | | — | 310 | | |
| | 1-2 | | | | | | 738 | | 577 | | |
| | 2-3 | | — | — | — | — | 136 | — | | — | |
| | 3-4 | | — | — | — | — | | | | — | |
| | 4-5 | | — | — | — | — | | | | — | |
| Di-n-octylphthalate | 0-1 | | | | | | | — | | | 62 |
| | 1-2 | | | | | | | | | | 24 |
| | 2-3 | | — | — | — | — | | — | | — | 36 |
| | 3-4 | | — | — | — | — | | | | — | |
| | 4-5 | 37 | — | — | — | — | | | | — | 84 |
| **Semivolatiles, µg/kg dw** | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | 0-1 | | | | | | | — | | | |
| | 1-2 | | | | | | | | | | |
| | 2-3 | | — | — | — | — | | — | 10,978 | — | |
| | 3-4 | | — | — | — | — | | | | — | |
| | 4-5 | | — | — | — | — | | | | — | |
| 1,2-Dichlorobenzene | 0-1 | | | | | | | — | | | |
| | 1-2 | | | | | | | | | | |
| | 2-3 | | — | — | — | — | | — | 7984 | — | |
| | 3-4 | | — | — | — | — | | | 222 | — | |
| | 4-5 | | — | — | — | — | | | | — | |
| 1,3-Dichlorobenzene | 0-1 | | | | | | | — | | | |
| | 1-2 | | | | | | | | | | |
| | 2-3 | | — | — | — | — | | — | 19,361 | — | |
| | 3-4 | | — | — | — | — | | | 778 | — | |
| | 4-5 | | — | — | — | — | | | 202 | — | |

(table continues)



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Table 9-2 (continued)

| Analyte Name | Profile Depth Range, m | Stations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | West Basin | | | | | Pier 15 | Pier 12 | Pier 2 | Reference |
| | | 6 | 8 | 14 | 24 | 29 | 43 | 46 | 51 | 40010.1 40010.3 |
| Semivolatiles, µg/kg dw (continued) | | | | | | | | | | |
| 1,4-Dichlorobenzene | 0 - 1 | | | | | | | | | |
| | 1 - 2 | | | | | | | — | 491 | |
| | 2 - 3 | | — | — | — | — | | | 210 | |
| | 3 - 4 | | — | — | — | — | | — | 59,880 | — |
| | 4 - 5 | | — | — | — | — | | | 2037 | — |
| | | | | | | | | | 535 | — |

Data Qualification Note: Data shown are preliminary unvalidated values. Undetected analytes are not shown. Sediment data are reported on a dry weight basis. "—" cells were not analyzed.

Notes:

[a] HPAH – high molecular weight polynuclear aromatic hydrocarbons
[b] LPAH – low molecular weight polynuclear aromatic hydrocarbons
[c] PCB – polychlorinated biphenyls
[d] BHC (HCH) – hexachlorocyclohexane
[e] DDD – dichloro-diphenyl-dichloroethane
[f] DDE – dichloro-diphenyl-ethane
[g] DDT – Dichloro-diphenyl-trichloroethane



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**Table 9-3**
**Reference Stations Not Passing the Reference Sediment Performance Criterion**

| Organism | Station | Endpoint | Relative Mean Difference |
|---|---|---|---|
| Amphipod | 40018.1 | mortality | 27% |
| | 40010.2 | mortality | 25% |
| Polychaete | 40018.3 | growth | 54% |
| | 40018.3 | growth | 48% |
| | 40018.3 | growth | 45% |
| | 40018.1 | growth | 46% |
| | 40018.2 | growth | 59% |
| | 40010.2 | growth | 37% |
| | 40010.3 | growth | 43% |
| | 40010.1 | growth | 52% |
| | 40010.1 | growth | 46% |
| | 40010.1 | growth | 49% |
| | 40010.2 | growth | 44% |
| | 40010.2 | growth | 58% |
| | 40010.3 | growth | 55% |
| | 40010.3 | growth | 32% |
| | 40032.1 | growth | 44% |
| Echinoderm | 40018.1 | abnormality | 23% |
| | 40018.3 | abnormality | 89% |
| | 40032.1 | abnormality | 92% |

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## Table 9-4
## Preliminary Surface Sediment Bioassay Test Results

| Station | Bioassay | | | | | |
|---|---|---|---|---|---|---|
| | Amphipod | | Polychaete | | Echinoderm[a] | |
| | % Mortality | % Reburial | % Mortality | Growth-mg/d | % Mortality | % Abnormality |
| **West Basin** | | | | | | |
| 1 | 15 | 92 | 0.0 | 0.134 | 4.0 | 99 |
| 2 | 9.0 | 93 | 0.0 | 0.116 | 66 | 100.0 |
| 3 | 7.0 | 88 | 5.0 | 0.0750 | .0 | 16 |
| 4 | 10.0 | 99 | 0.0 | 0.0680 | 35 | 100.0 |
| 5 | 13 | 97 | 8.0 | 0.132 | 68 | 93 |
| 6 | 13 | 93 | 4.0 | 0.0980 | 48 | 100.0 |
| 7 | 13 | 99 | 8.0 | 0.130 | 34 | 100.0 |
| 8 | 13 | 92 | 8.0 | 0.104 | 36 | 99 |
| 9 | 12 | 100.0 | 8.0 | 0.0950 | 4.0 | 89 |
| 10 | 9.0 | 98 | 4.0 | 0.101 | 0.0 | 10.0 |
| 11 | 1.2 | 98 | 12 | 0.106 | 2.0 | 13 |
| 12 | 12 | 99 | 0.0 | 0.0950 | 3.0 | 100.0 |
| 13 | 7.5 | 99 | 8.0 | 0.0870 | 58 | 100.0 |
| 14 | 3.7 | 97 | 0.0 | 0.123 | 36 | 100.0 |
| 15 | 7.0 | 97 | 4.0 | 0.0890 | 8.0 | 43 |
| 16 | 9.0 | 97 | 8.0 | 0.0930 | 10.0 | 32 |
| 17 | 12 | 98 | 4.0 | 0.0670 | 54 | 100.0 |
| 18 | 8.0 | 98 | 4.0 | 0.0970 | 3.0 | 13 |
| 19 | 11 | 100.0 | 0.0 | 0.0880 | 3.0 | 13 |
| 20 | 13 | 98 | 8.0 | 0.0770 | 13 | 8.0 |
| 21 | 15 | 94 | 16 | 0.0660 | 1.0 | 8.0 |
| 22 | 10.0 | 90.0 | 4.0 | 0.0850 | 11 | 11 |
| 23 | 5.0 | 97 | 0.0 | 0.0930 | 13 | 7.0 |
| 24[b] | 8.0 | 100.0 | 16 | 0.134 | 40.0 | 100.0 |
| 25 | 7.0 | 97 | 0.0 | 0.101 | 49 | 100.0 |
| 26 | 10.0 | 95 | 4.0 | 0.0890 | 9.0 | 9.0 |
| 27 | 19 | 95 | 0.0 | 0.0760 | 12 | 6.0 |
| 28 | 10.0 | 90.0 | 0.0 | 0.0660 | 16 | 6.0 |
| 29 | 17 | 93 | 8.0 | 0.0920 | 2.0 | 4.0 |
| 30 | 17 | 96 | 4.0 | 0.0670 | 8.0 | 7.0 |
| 31 | 14 | 95 | 8.0 | 0.0940 | 75 | 100.0 |
| 32 | 9.0 | 98 | 12 | 0.110 | 17 | 60.0 |
| 33 | 17 | 95 | 4.0 | 0.104 | 54 | 100.0 |
| 41 | 43 | 78 | 0.0 | 0.0770 | 13 | 49 |

(table continues)



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**Table 9-4** (continued)

| Station | Bioassay | | | | | |
|---|---|---|---|---|---|---|
| | Amphipod | | Polychaete | | Echinoderm [a] | |
| | % Mortality | % Reburial | % Mortality | Growth-mg/d | % Mortality | % Abnormality |
| **Piers** | | | | | | |
| 42 (Pier 16) | 71 | 61 | 8.0 | 0.133 | 48 | 100.0 |
| 43 (Pier 15) | 22 | 96 | 8.0 | 0.164 | 14 | 100.0 |
| 44 (Pier 12) | 84 | 25 | 4.0 | 0.138 | 18 | 100.0 |
| 45 (Pier 12) | 47 | 63 | 8.0 | 0.132 | 64 | 100.0 |
| 46 (Pier 12) | 79 | 36 | 8.0 | 0.158 | 49 | 100.0 |
| 47 (Pier 9) | 17 | 92 | 16 | 0.0830 | 27 | 100.0 |
| 48 (Pier 7) | 77 | 54 | 24 | 0.187 | 9.0 | 100.0 |
| 49 (Pier 6) | 27 | 78 | 16 | 0.150 | 22 | 100.0 |
| 50 (Pier 3) | 25 | 93 | 0.0 | 0.138 | 25 | 100.0 |
| 51[b] (Pier 2) | 31 | 93 | 12 | 0.145 | 27 | 100.0 |
| 52 (Pier 1) | 17 | 92 | 20.0 | 0.129 | 28 | 100.0 |
| **Reference** | | | | | | |
| 40010.1 | 15 | 98 | 4.0 | 0.0910 | 8.0 | 14 |
| 40010.1 | 22 | 92 | 0.0 | 0.105 | 4.0 | 12 |
| 40010.1 | 24 | 96 | 0.0 | 0.0970 | 3.0 | 16 |
| 40010.2 | 8.0 | 98 | 0.0 | 0.121 | 18 | 14 |
| 40010.2 | 31 | 97 | 0.0 | 0.108 | 7.0 | 22 |
| 40010.2 | 15 | 97 | 4.0 | 0.080 | 9.0 | 15 |
| 40010.3 | 17 | 98 | 0.0 | 0.110 | 27 | 16 |
| 40010.3 | 11 | 100.0 | 0.0 | 0.0860 | 28 | 17 |
| 40010.3 | 17 | 95 | 12 | 0.129 | 11 | 8.0 |
| 40018.1 | 36 | 93 | 4.0 | 0.0730 | 2.0 | 32 |
| 40018.2 | 17 | 97 | 8.0 | 0.0560 | 14 | 20.0 |
| 40018.3 | 13 | 99 | 0.0 | 0.0900 | 31 | 17 |
| 40018.3 | 9.0 | 95 | 0.0 | 0.101 | 28 | 25 |
| 40018.3 | 13 | 95 | 0.0 | 0.106 | 30.0 | 94 |
| 40032.1 | 17 | 99 | 4.0 | 0.0760 | 23 | 100.0 |

Notes:

[a] 100% porewater concentration

[b] Dissolved oxygen (DO) levels fell below 60% saturation during porewater bioassy



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**Table 9-5**
**Preliminary Results of Detected Compounds: Fish Tissue Bioaccumulation Data**

| Analyte Name | Transect | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 40010 | | | | | | | | |
| | R1 | R1 | R1 | T5 | T5 | T5 | T6 | T6 | T7 |
| Replicate | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 1 |
| | White Croaker Fillet | | | | | | | | |
| **Physical and Conventional Data** | | | | | | | | | |
| Lipids (mg/kg) | 72,000 | 60,100 | 63,000 | 69,200 | 55,100 | 49,400 | 43,000 | 34,800 | 33,800 |
| **Metals, mg/kg** | | | | | | | | | |
| Arsenic | 1.2 | 0.9 | 1.2 | 1.4 | | 1 | | 0.6 | 0.8 |
| Beryllium | | | | | | | | | |
| Chromium | | | | | | | | | |
| Copper | | | | 1 | | | 1 | 2 | |
| Lead | | | | | 4.2 | | | | |
| Mercury | 0.04 | 0.02 | 0.03 | 0.07 | 0.04 | 0.03 | 0.07 | 0.06 | 0.07 |
| Nickel | | | | | | | | | |
| Selenium | | | | | | | | | 0.6 |
| Zinc | 8 | 12 | 6 | 6 | 10 | 6 | 8 | 9 | 7 |
| **Butyltin, µg/kg** | | | | | | | | | |
| Dibutyltin | | | | | | | | | |
| Tributyltin | 6 | 10 | 11 | 6.5 | 5.7 | 4.7 | 4 | 5.9 | 2.9 |
| **Pesticides, µg/kg** | | | | | | | | | |
| alpha-BHC (HCH)[a] | | | | | | | | | |
| Endosulfan II | | | | 85 | 30 | 19 | 18 | 15 | |
| Endrin | | | | 8.5 | 7.4 | 8.4 | | | |
| p,p'-DDD[b] | 25 | 13 | | 57 | 16 | 11 | 20 | 21 | 81 |
| p,p'-DDE[c] | 1700 | 680 | 620 | 860 | 140 | 71 | 570 | 310 | 63 |
| Total DDT[d] | 1725 | 693 | 620 | 917 | 156 | 82 | 590 | 331 | 144 |

(table continues)



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**Table 9-5**
**Preliminary Results of Detected Compounds: Fish Tissue Bioaccumulation Data**

| Analyte Name | Transect | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 40010 | | | | | | | | |
| Replicate | R1 1 | R1 2 | R1 3 | T1 1 | T1 2 | T1 3 | T1 4 | T2 1 | T4 1 |
| **Physical and Conventional Data** | | | | California Halibut Fillet | | | | | |
| Lipids (mg/kg) | 1300 | 1730 | 1980 | 657 | 1430 | 2880 | 718 | 1090 | 1330 |
| **Metals, mg/kg** | | | | | | | | | |
| Arsenic | 0.6 | | | | | | | | 0.6 |
| Beryllium | | | | | | | | | |
| Chromium | | | | | | | | | |
| Copper | 2 | | | 1 | | | | | 2 |
| Lead | | | | | | | | | |
| Mercury | 0.08 | 0.05 | 0.01 | 0.17 | 0.03 | 0.03 | 0.07 | 0.13 | 0.04 |
| Nickel | | | | | | | | | |
| Selenium | | 0.7 | | | | | | | |
| Zinc | 9 | 6 | 6 | 5 | 5 | 6 | 9 | 5 | 7 |
| **Butyltin, µg/kg** | | | | | | | | | |
| Dibutyltin | | | | | 1.4 | | | | 1.4 |
| Tributyltin | | | | | | | | | |
| **Pesticides, µg/kg** | | | | | | | | | |
| alpha-BHC (HCH)[a] | | | | | | | | | |
| Endosulfan II | | | | | | | | | |
| Endrin | | | | | | | | | |
| p,p'-DDD[b] | | | | | | | | | |
| p,p'-DDE[c] | 8.3 | 35 | 23 | 200 | 31 | 52 | 20 | 25 | 17 |
| Total DDT[d] | 8.3 | 35 | 23 | 200 | 31 | 52 | 20 | 25 | 17 |

(table continues)



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**Table 9-5**
**Preliminary Results of Detected Compounds: Fish Tissue Bioaccumulation Data**

| Analyte Name | Transect | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 40018 | | | | | | | | | |
| Replicate | R2 1 | R2 2 | R2 3 | R2 4 | R2 5 | R2 6 | T3 1 | T3 2 | T4 1 | T4 2 |
| **Physical and Conventional Data** | White Croaker Whole Body | | | | | | | | | |
| Lipids (mg/kg) | 6320 | 46,000 | 15,100 | 25,800 | 67,600 | 49,000 | 45,700 | 41,700 | 51,000 | 39,200 |
| **Metals, mg/kg** | | | | | | | | | | |
| Arsenic | 0.8 | 0.8 | 0.8 | 0.6 | 1.3 | 0.6 | 1.4 | 1.1 | 1.5 | 1.4 |
| Beryllium | | | | | | | | | | |
| Chromium | | | | | | | | | | |
| Copper | 1 | | | 1 | 2 | 1 | 1 | 3 | 0.7<br>4 | 0.7<br>4 |
| Lead | | | | | | | | | | |
| Mercury | 0.07 | 0.04 | 0.05 | 0.07 | 0.07 | 0.05 | 0.07 | 0.14 | 0.03 | 0.04 |
| Nickel | | | | | | | | | | |
| Selenium | | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | | 0.6 | 0.9 | 1 |
| Zinc | 10 | 9 | 9 | 11 | 12 | 15 | 12 | 13 | 10 | 14 |
| **Butyltin, µg/kg** | | | | | | | | | | |
| Dibutyltin | | | | | | | | | | |
| Tributyltin | | 1.3 | | | 6.1 | 1.8 | 1<br>6.9 | 3.3 | 11 | 3.8<br>16 |
| **Pesticides, µg/kg** | | | | | | | | | | |
| alpha-BHC (HCH)[a] | | | | | | | | | | |
| Endosulfan II | | | | | | | | | | |
| Endrin | | | | | 30 | 8.3 | 24 | 26 | 31 | |
| p,p'-DDD[b] | | 47 | | 8.1 | 40 | 16 | 28 | 5.4<br>27 | 7.5<br>39 | |
| p,p'-DDE[c] | 39 | 310 | 230 | 240 | 490 | 480 | 210 | 210 | 370 | 65 |
| Total DDT[d] | 39 | 357 | 230 | 248.1 | 530 | 496 | 238 | 237 | 409 | 65 |

(table continues)



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**Table 9-5**
**Preliminary Results of Detected Compounds: Fish Tissue Bioaccumulation Data**

| Analyte Name | Transect | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | T4 3 | T4 4 | T4 5 | T5 1 | T5 2 | T6 1 | T6 2 | T7 1 | T7 2 | T7 3 | T7 4 |
| **Physical and Conventional Data** | White Croaker Whole Body | | | | | | | | | | |
| Lipids (mg/kg) | 5510 | 20,700 | 61,500 | 53,100 | 30,700 | 65,100 | 37,200 | 53,400 | 55,900 | 74,800 | 56,700 |
| **Metals, mg/kg** | | | | | | | | | | | |
| Arsenic | 1.4 | 1.5 | 1.2 | 1.8 | 1.1 | 1.1 | 1.1 | 0.8 | 1 | 0.8 | 1 |
| Beryllium | 0.1 | | | | | | | | | | |
| Chromium | 0.5 | | | | | | | | | | |
| Copper | 3 | 2 | 4 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 1 |
| Lead | 0.09 | 0.08 | 0.06 | 0.03 | 0.02 | 0.04 | 0.04 | 0.07 | 0.04 | 0.06 | 0.05 |
| Mercury | 1 | 0.9 | | 0.9 | 0.6 | | 0.6 | 0.9 | 0.8 | 1.3 | 0.7 |
| Nickel | 12 | 12 | 12 | 10 | 11 | 13 | 11 | 10 | 10 | 12 | 11 |
| Selenium | | | | | | | | | | | |
| Zinc | | | | | | | | | | | |
| **Butyltin, µg/kg** | | | | | | | | | | | |
| Dibutyltin | 3.3 | | 1.1 | 1.4 | 1.6 | 1.7 | 1.6 | | | 1.5 | 4.1 |
| Tributyltin | 7.7 | 7.9 | 11 | 13 | 11 | 12 | 12 | 5 | 3.1 | 8.6 | 17 |
| **Pesticides, µg/kg** | | | | | | | | | | | |
| alpha-BHC (HCH)[a] | | | | | | | | | | | |
| Endosulfan II | 26 | 35 | | | | | | | 5.7 | | |
| Endrin | | | 33 | | | | | | | | |
| p,p'-DDD[b] | 19 | 30 | | | | | | | | | |
| p,p'-DDE[c] | 280 | 450 | 1000 | 430 | 190 | 390 | 350 | 72 | 35 | 15 | 44 |
| Total DDT[d] | 299 | 480 | 1000 | 430 | 190 | 390 | 350 | 750 | 360 | 370 | 360 |
| | | | | | | | | 822 | 395 | 385 | 404 |

(table continues)



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**Table 9-5**
**Preliminary Results of Detected Compounds: Fish Tissue Bioaccumulation Data**

| Analyte Name | Transect | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 40010 | | | | | | | 40018 | |
| Replicate | R1 1 | R1 2 | R1 3 | R1 4 | R1 5 | R1 6 | R2 1 | R2 2 | R2 3 |
| **Physical and Conventional Data** | California Halibut Whole Body | | | | | | | | |
| Lipids (mg/kg) | 7820 | 4420 | 4900 | 9360 | 11,900 | 9590 | 12,600 | 9460 | 2460 |
| **Metals, mg/kg** | | | | | | | | | |
| Arsenic | 0.7 | | | | 0.5 | | | | |
| Beryllium | | | | | | | | | |
| Chromium | | | 1 | 3 | 12 | 2 | 32 | | 57 |
| Copper | | | | | 0.8 | | 1.1 | | 2 |
| Lead | 0.04 | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 | 0.03 | 0.03 | 0.03 |
| Mercury | | | | | | | 9 | | 3 |
| Nickel | 18 | 12 | 7 | 12 | 20 | 10 | 26 | 11 | 48 |
| Selenium | | | | | | | | | |
| Zinc | | | | | | | | | |
| **Butyltin, µg/kg** | | | | | | | | | |
| Dibutyltin | | | | | 4 | 4 | 1.4 | 1.3 | |
| Tributyltin | 3.6 | 1.2 | | 2.7 | 12 | 13 | 3.3 | 1.8 | |
| **Pesticides, µg/kg** | | | | | | | | | |
| alpha-BHC (HCH)[a] | | | | | | | | | |
| Endosulfan II | | | | 9.4 | | | | | |
| Endrin | | | | | | | | | |
| p,p'-DDD[b] | | | | 12 | | | | 6.1 | |
| p,p'-DDE[c] | 57 | 52 | 41 | 220 | 180 | 150 | 75 | 110 | 33 |
| Total DDT[d] | 57 | 52 | 41 | 232 | 180 | 150 | 75 | 116.1 | 33 |

(table continues)



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**Table 9-5**
**Preliminary Results of Detected Compounds: Fish Tissue Bioaccumulation Data**

| Analyte Name | Transect | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Replicate | T1 1 | T1 2 | T1 3 | T3 1 | T3 2 | T3 3 | T4 1 | T4 2 | T4 3 |
| **Physical and Conventional Data** | California Halibut Whole Body | | | | | | | | |
| Lipids (mg/kg) | 3790 | 5120 | 3440 | 680 | 3640 | 6270 | 7140 | 7550 | 8610 |
| **Metals, mg/kg** | | | | | | | | | |
| Arsenic | 0.7 | | | | | | | | |
| Beryllium | | | | 0.6 | | | 0.6 | | |
| Chromium | | | | | | | | | |
| Copper | | | | | | | | | |
| Lead | | | | 1 | | 1 | 1 | 37 | 1 |
| Mercury | | | | | | | | 1.7 | |
| Nickel | 0.01 | 0.01 | 0.02 | 0.05 | 0.02 | 0.04 | 0.04 | 0.03 | 0.04 |
| Selenium | | | | | | | | | |
| Zinc | 9 | 16 | 11 | 12 | 10 | 0.9<br>11 | 15 | 33 | 14 |
| **Butyltin, µg/kg** | | | | | | | | | |
| Dibutyltin | 1.7 | 1.4 | 1.5 | 3 | 2 | 4 | 2.7 | | 2.7 |
| Tributyltin | 3.4 | 2.9 | 3.8 | 7.8 | 9.3 | 20 | 7.6 | 1.1 | 8.9 |
| **Pesticides, µg/kg** | | | | | | | | | |
| alpha-BHC (HCH)[a] | | | | | | | | | |
| Endosulfan II | | | | | | | | | |
| Endrin | | | | | | | | | |
| p,p'-DDD[b] | | | | | | | | | |
| p,p'-DDE[c] | 60 | 25 | 15 | 60 | 41 | 89 | 52 | 65 | 75 |
| Total DDT[d] | 60 | 25 | 15 | 60 | 41 | 89 | 52 | 65 | 75 |

(table continues)



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**Table 9-5**
**Preliminary Results of Detected Compounds: Fish Tissue Bioaccumulation Data**

| Analyte Name | Transect | | | | | |
|---|---|---|---|---|---|---|
| Replicate | T5 1 | T5 2 | T5 3 | T5 4 | T6 1 | T6 2 |
| | California Halibut Whole Body | | | | | |
| **Physical and Conventional Data** | | | | | | |
| Lipids (mg/kg) | 9030 | 9880 | 7950 | 6610 | 24,500 | 15,600 |
| **Metals, mg/kg** | | | | | | |
| Arsenic | | | | | 0.5 | |
| Beryllium | | | | | | |
| Chromium | | | | | | |
| Copper | | 1 | 1 | | 1 | 3 |
| Lead | | | | | | |
| Mercury | 0.02 | 0.03 | 0.05 | 0.05 | 0.03 | 0.04 |
| Nickel | | | | | | |
| Selenium | | | | | | |
| Zinc | 8 | 11 | 12 | 8 | 16 | 19 |
| **Butyltin, µg/kg** | | | | | | |
| Dibutyltin | 2 | 3 | 2.1 | 1.4 | 2.7 | 2.9 |
| Tributyltin | 3.4 | 8.1 | 7.8 | 6 | 8.3 | 5.9 |
| **Pesticides, µg/kg** | | | | | | |
| alpha-BHC (HCH)[a] | | | | | | |
| Endosulfan II | | | 13 | 20 | | |
| Endrin | | | | | | |
| p,p'-DDD[b] | 8.6 | | | | | |
| p,p'-DDE[c] | 63 | 380 | 71 | 120 | 340 | 67 |
| Total DDT[d] | 71.6 | 380 | 71 | 120 | 340 | 67 |

(table continues)



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**Table 9-5** (continued)

Data Qualification Note: Data shown are preliminary unvalidated values. Undetected analytes are not shown. Tissue data are reported on a wet weight basis.

Notes:

[a] BHC (HCH) – hexachlorocyclohexane
[b] DDD – dichloro-diphenyl-dichloroethane
[c] DDE – dichloro-diphenyl-ethane
[d] DDT – Dichloro-diphenyl-trichloroethane



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**Table 9-6**
**Preliminary Results of Detected Compounds: Fish Bile Bioaccumulation Data**

| Analyte Name | Transect | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | T1 | T1 | T1 | T1 | T2 | T4 | T4 | T5 | T5 | T5 | T5 | T6 | R1 | 40010 R1 | R1 | R2 | 40018 R2 | R2 |
| Replicate | 1 | 2 | 3 | 4 | 1 | 1 | 2 | 1 | 2 | 3 | 4 | 1 | 1 | 2 | 3 | 1 | 2 | 3 |
| HPAH[a], Equivalents | | | | | | | | | | | | | | | | | | |
| Benzo(a)pyrene, µg/mL | 6.67 | 3.69 | 5.63 | 4.06 | 58.8 | 11.4 | 5.23 | 17 | 33.2 | 18.3 | 20.6 | 2.73 | 7.98 | 5.63 | 16.7 | 3.74 | 1.94 | 14.7 |
| Pyrene, µg/mL | 52.8 | 34.2 | 43.2 | 24.2 | 469 | 92.6 | 38.8 | 120 | 220 | 132 | 142 | 21.4 | 60.4 | 32.5 | 118 | 29.5 | 13.2 | 118 |
| LPAH[b], Equivalents | | | | | | | | | | | | | | | | | | |
| Naphthalene, µg/mL | 153 | 154 | 104 | 81.5 | 655 | 174 | 95.5 | 268 | 506 | 261 | 315 | 58.4 | 122 | 80.1 | 206 | 74.9 | 72.4 | 312 |
| Phenanthrene, µg/mL | 104 | 76.7 | 76.9 | 51.3 | 535 | 133 | 71.3 | 170 | 323 | 203 | 226 | 43.6 | 94.6 | 59.3 | 165 | 68.9 | 45.9 | 250 |

Data Qualification Note: Data shown are preliminary unvalidated values. Undetected analytes are not shown. Tissue data are reported on a wet weight basis.

Notes:

[a] HPAH – high molecular weight polynuclear aromatic hydrocarbons

[b] LPAH – low molecular weight polynuclear aromatic hydrocarbons



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## Table 9-7
## Preliminary Results of Detected Compounds: Clam Bioaccumulation Test

| Analyte Name | Stations | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 6 49 | Pier 2 51 | 40010.1 | 40010 40010.2 | 40010.3 | 40018 40018.3 | 40032 40032.1 |
| **Physical and Conventional Data** | | | | | | | | | | | | | | |
| Lipids, mg/kg | 1700 | 1000 | 430 | 840 | 1040 | 1240 | 777 | 1160 | 415 | 952 | 1440 | 684 | 921 | 1370 |
| **Metals, mg/kg** | | | | | | | | | | | | | | |
| Arsenic | 3.2 | 2.8 | 2.8 | 3.3 | 2.9 | 2.6 | 3.2 | 2.7 | 2.9 | 2.5 | 3 | 3.2 | 3 | 2.7 |
| Chromium | | | 0.4 | | | | | | | | 0.4 | | 0.4 | |
| Copper | 1.5 | 1.4 | 1.7 | 1.3 | 1.1 | 2.4 | 1.5 | 1.3 | 1.4 | 1 | 1.5 | 1.6 | 1.4 | 1.1 |
| Mercury | 0.02 | | 0.02 | | | | | | 0.02 | | 0.04 | | 0.03 | |
| Thallium | | | | | | | | | | | | 0.6 | | |
| Zinc | 11 | 12 | 12 | 16 | 12 | 15 | 13 | 14 | 13 | 13 | 11 | 14 | 12 | 11 |
| **Butyltins, µg/kg** | | | | | | | | | | | | | | |
| Tributyltin | 3.4 | 2.8 | 2.6 | 3 | 1.5 | 1.5 | 1.6 | 1.8 | 1.8 | 1.3 | | 1.9 | 1.4 | 5.1 |
| **HPAH[a], µg/kg** | | | | | | | | | | | | | | |
| Pyrene | | | | | | 20 | | 30 | 20 | | | | | |
| **Pesticides, µg/kg** | | | | | | | | | | | | | | |
| p,p'-DDE[b] | 35 | 17 | 23 | 36 | 26 | 37 | 88 | 5.4 | 28 | 4.8 | 26 | 57 | 22 | 59 |

Data Qualification Note: Data shown are preliminary values. Undetected analytes are not shown. Tissue data are reported on a wet weight basis.

Notes:

[a] HPAH – high molecular weight polynuclear aromatic hydrocarbons

[b] DDE – dichloro-diphenyl-ethane



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**Table 10-1**
**West Basin Test Stations and Matching Reference Station**
**Most Ideally Suited for Statistical Comparisons of Solid Phase Bioassay Data**

| Test Station | Reference Station |
|---|---|
| 1 | 40018 |
| 2 | 40018 |
| 3 | 40018 |
| 4 | 40018 |
| 5 | 40018 |
| 6 | 40018 |
| 7 | 40018 |
| 8 | 40018 |
| 9 | 40018 |
| 10 | 40010 |
| 11 | 40018 |
| 12 | 40018 |
| 13 | 40018 |
| 14 | 40018 |
| 15 | 40010 |
| 16 | 40018 |
| 17 | 40010 |
| 18 | 40010 |
| 19 | 40018 |
| 20 | 40018 |
| 21 | 40010 |
| 22 | 40010 |
| 23 | 40018 |
| 24 | 40032 |
| 25 | 40018 |
| 26 | 40010 |
| 27 | 40010 |
| 28 | 40018 |
| 29 | 40018 |
| 30 | 40018 |
| 31 | 40032 |
| 32 | 40032 |
| 33 | 40018 |
| 41 | 40018 |
| 42 | 40018 |
| 43 | 40010 |
| 44 | 40018 |
| 45 | 40018 |
| 46 | 40018 |
| 47 | 40018 |
| 48 | 40018 |
| 49 | 40018 |
| 50 | 40018 |
| 51 | 40010 |
| 52 | 40010 |



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**Table 10-2**
**Test Stations That Exceeded the**
**Relative Difference Performance Criterion**
**When Compared to Reference Stations - Solid Phase Bioassays**

| Organism | Station | Endpoint | Relative Mean Difference |
|---|---|---|---|
| Amphipod | 41 | mortality | 28% |
| | 42 | mortality | 56% |
| | 44 | mortality | 69% |
| | 45 | mortality | 32% |
| | 46 | mortality | 64% |
| | 48 | mortality | 62% |
| | 42 | reburial | 36% |
| | 44 | reburial | 72% |
| | 45 | reburial | 34% |
| | 46 | reburial | 60% |
| | 48 | reburial | 43% |

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**Table 10-3**
**Test Stations That Exceeded the**
**Relative Difference Performance Criterion**
**When Compared to Reference Stations - Porewater Bioassays**

| Organism | Station | Endpoint | Relative Difference |
|---|---|---|---|
| Echinoderm[a] | 2 | mortality | 50% |
| | 5 | mortality | 52% |
| | 6 | mortality | 32% |
| | 8 | mortality | 20% |
| | 13 | mortality | 42% |
| | 14 | mortality | 20% |
| | 17 | mortality | 38% |
| | 24 | mortality | 24% |
| | 25 | mortality | 33% |
| | 31 | mortality | 59% |
| | 33 | mortality | 38% |
| | 42 | mortality | 32% |
| | 45 | mortality | 48% |
| | 46 | mortality | 33% |
| | 1 | abnormality | 82% |
| | 2 | abnormality | 83% |
| | 4 | abnormality | 83% |
| | 5 | abnormality | 76% |
| | 6 | abnormality | 83% |
| | 7 | abnormality | 83% |
| | 8 | abnormality | 82% |
| | 9 | abnormality | 72% |
| | 12 | abnormality | 83% |
| | 13 | abnormality | 83% |
| | 14 | abnormality | 83% |
| | 15 | abnormality | 26% |
| | 17 | abnormality | 83% |
| | 24 | abnormality | 83% |
| | 25 | abnormality | 83% |
| | 31 | abnormality | 83% |
| | 32 | abnormality | 43% |
| | 33 | abnormality | 83% |
| | 41 | abnormality | 32% |
| | 42 | abnormality | 83% |
| | 43 | abnormality | 83% |
| | 44 | abnormality | 83% |
| | 45 | abnormality | 83% |
| | 46 | abnormality | 83% |
| | 47 | abnormality | 83% |
| | 48 | abnormality | 83% |
| | 49 | abnormality | 83% |
| | 50 | abnormality | 83% |
| | 51[b] | abnormality | 83% |
| | 52 | abnormality | 83% |

Notes:
[a] 100% porewater concentration
[b] Dissolved oxygen (DO) levels fell below 60% saturation during test



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**Table 10-4**
**Test Stations That Exhibited a Statistically Significant Response Relative to Reference - Solid Phase Bioassays**

| Station | Response | | | |
|---|---|---|---|---|
| | Amphipod Mortality | Amphipod Reburial | Polychaete Mortality | Polychaete Growth |
| 11 | | | • | |
| 21 | | | • | • |
| 28 | | | | • |
| 41 | • | | | |
| 42 | • | • | | |
| 44 | • | • | | |
| 45 | • | • | | |
| 46 | • | • | | |
| 48 | • | • | • | |
| 49 | | • | | |
| 51 | • | | | |
| 52 | | | • | |

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**Table 10-5**
**Test Stations That Exhibited a Statistically Significant Response Relative to Reference - Porewater Bioassays**

| Station | Porewater Concentration | | | | |
|---|---|---|---|---|---|
| | 6.25% | 12.50% | 25% | 50% | 100% |
| **Mortality** | | | | | |
| 2 | | | | | • |
| 5 | | | | | • |
| 6 | | | | | • |
| 13 | | | | | • |
| 17 | | | | | • |
| 24 | | | • | • | • |
| 25 | | | | | • |
| 31 | | | | | • |
| 33 | | | | | • |
| 42 | | | • | | • |
| 45 | | | • | • | • |
| 46 | | | | • | • |
| 47 | | | | • | |
| **Abnormality** | | | | | |
| 1 | | | | | • |
| 2 | | | | | • |
| 4 | | | | | • |
| 5 | | | | • | • |
| 6 | | | | | • |
| 7 | | | | | • |
| 8 | | | | • | • |
| 9 | | | | | • |
| 12 | | | | | • |
| 13 | | | | | • |
| 14 | | | | • | • |
| 15 | | | | | • |
| 16 | | | | | • |
| 17 | | | | | • |
| 24[a] | | • | • | • | • |
| 25 | | | | | • |
| 31 | | | | • | • |
| 32 | | | | | • |
| 33 | | | | • | • |
| 41 | | | | | • |
| 42 | • | | | • | • |
| 43 | | | | • | • |
| 44 | | | | • | • |
| 45 | | | | • | • |
| 46 | | | • | • | • |
| 47 | | | | • | • |
| 48 | | | | • | • |
| 49 | | | | • | • |
| 50 | | | • | • | • |
| 51[a] | • | • | • | • | • |
| 52 | | | | • | • |

Note [a] Dissolved oxygen (DO) levels fell below 60% saturation during bioassay



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**Table 10-6**
**Evaluation Criteria and Determination of Hits for Solid Phase Bioassays**

| Station | Statistically Significant | Relative Mean Difference | Observed Pattern | Test Result |
|---|---|---|---|---|
| **Amphipod Mortality** | | | | |
| 41 | Y[a] | Y | N[b] | Hit |
| 42 | Y | Y | Y | Hit |
| 44 | Y | Y | Y | Hit |
| 45 | Y | Y | Y | Hit |
| 46 | Y | Y | Y | Hit |
| 48 | Y | Y | Y | Hit |
| 51 | Y | N | Y | Possible Hit |
| **Amphipod Reburial** | | | | |
| 42 | Y | Y | Y | Hit |
| 44 | Y | Y | Y | Hit |
| 45 | Y | Y | Y | Hit |
| 46 | Y | Y | Y | Hit |
| 48 | Y | Y | Y | Hit |
| 49 | Y | N | Y | Possible Hit |
| **Neanthes Mortality** | | | | |
| 11 | Y | N | N | Probably No Hit |
| 21 | Y | N | N | Probably No Hit |
| 48 | Y | Y | N | Hit |
| 52 | Y | N | Y | Possible Hit |
| **Neanthes Growth** | | | | |
| 4 | N | Y | N | Possible Hit |
| 17 | N | Y | N | Possible Hit |
| 21 | Y | Y | N | Hit |
| 28 | Y | Y | N | Hit |
| 30 | N | Y | N | Possible Hit |

Notes: [a] Y – yes
[b] N – no



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**Table 10-7**
**Evaluation Criteria and Determination of Hits for Porewater (100% Concentration) Bioassays**

| Station | Statistically Significant | Relative Mean Difference | Observed Pattern | Test Result |
|---|---|---|---|---|
| **Echinoderm Mortality** | | | | |
| 2 | Y[a] | Y | N[b] | Hit |
| 5 | Y | Y | Y | Hit |
| 6 | Y | Y | Y | Hit |
| 8 | N | Y | N | Possible Hit |
| 13 | Y | Y | Y | Hit |
| 14 | N | Y | Y | Possible Hit |
| 17 | Y | Y | Y | Hit |
| 24 | Y | Y | Y | Hit |
| 25 | Y | Y | Y | Hit |
| 31 | Y | Y | Y | Hit |
| 33 | Y | Y | Y | Hit |
| 42 | Y | Y | N | Hit |
| 45 | Y | Y | Y | Hit |
| 46 | Y | Y | Y | Hit |
| **Echinoderm Abnormality** | | | | |
| 1 | Y | Y | Y | Hit |
| 2 | Y | Y | Y | Hit |
| 4 | Y | Y | Y | Hit |
| 5 | Y | Y | Y | Hit |
| 6 | Y | Y | Y | Hit |
| 7 | Y | Y | Y | Hit |
| 8 | Y | Y | Y | Hit |
| 9 | Y | Y | Y | Hit |
| 12 | Y | Y | Y | Hit |
| 13 | Y | Y | Y | Hit |
| 14 | Y | Y | Y | Hit |
| 15 | Y | Y | Y | Hit |
| 16 | Y | N | Y | Possible Hit |
| 17 | Y | Y | Y | Hit |
| 24 | Y | Y | Y | Hit |
| 25 | Y | Y | Y | Hit |
| 31 | Y | Y | Y | Hit |
| 32 | Y | Y | Y | Hit |
| 33 | Y | Y | Y | Hit |
| 41 | Y | Y | Y | Hit |
| 42 | Y | Y | Y | Hit |
| 43 | Y | Y | Y | Hit |
| 44 | Y | Y | Y | Hit |
| 45 | Y | Y | Y | Hit |
| 46 | Y | Y | Y | Hit |
| 47 | Y | Y | Y | Hit |
| 48 | Y | Y | Y | Hit |
| 49 | Y | Y | Y | Hit |
| 50 | Y | Y | Y | Hit |
| 51[c] | Y | Y | Y | Hit |
| 52 | Y | Y | Y | Hit |

Notes: [a] Y – yes, [b] N – no
[c] Dissolved oxygen (DO) levels below 60% saturation during test



R0062599

## Table 10-8
## Preliminary Evaluation Matrix for West Basin Surface Sediments

| Station | Physical Test | | | | Bioassay Test | | | | | | Chemical Test | | Preliminary Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Rhepoxynius* | | *Neanthes* | | *Dendraster* | | | | |
| | Bathymetry (m[a], MLLW[b]) | TOC[c] (% carbon) | Grain Size (% fines) | SEM/AVS[d] Ratio (total) | Mortality | Reburial | Mortality | Growth | Mortality | Devlpmt | Surface Sediment (ratio above reference) | Clam Bioaccumulation (detected chemicals) | |
| 1 | 7.6 | 0.79 | 43.1 | 8.6 | ns[e] | ns | ns | ns | ns | * | HPAH[f](2.5); LPAH[g](4.2); PCBs[h] (7.2); Hg(1.6) | NA[i] | |
| 2 | 10.5 | 1.08 | 51.9 | 2.3 | ns | ns | ns | ns | * | * | PCBs(14.3); Cu(1.4); Hg(1.8); Ag(1.4) | NA | |
| 3 | 10.5 | 1.18 | 71.2 | 1.4 | ns | ns | ns | ns | ns | ns | HPAH(2.6); LPAH(2.6); PCBs(11.7); As(1.3); Cu(1.5); Pb(1.3); Hg(2.5); Ag(1.4) | NA | |
| 4 | 9.5 | 1.31 | 71.4 | 28.0 | ns | ns | ns | P[j] | ns | * | PCBs(12.5); As(1.4); Pb(1.3); Hg(2.1); Ag(1.4) | NA | |
| 5 | 4.6 | 0.42 | 45.2 | 21.0 | ns | ns | ns | ns | * | * | HPAH(1.7); PCBs(3.3) | NA | |
| 6 | 10.4 | 0.61 | 51.1 | 0.63 | ns | ns | ns | ns | * | * | HPAH(1.7); LPAH(2.4); PCBs(5.3) | DDE[k]; TBT[l]; 4 metals | |
| 7 | 11.1 | 0.67 | 42.1 | 2.0 | ns | ns | ns | ns | ns | * | HPAH(2.9); LPAH(3.4); PCBs(7.2); Ag(1.2) | NA | |
| 8 | 10.4 | 0.65 | 44.3 | 0.84 | ns | ns | ns | ns | ns | * | PCBs(4.8) | DDE; TBT; 3 metals | |
| 9 | 13.5 | 0.92 | 65.4 | 1.4 | ns | ns | ns | ns | ns | * | PCBs(7.6); Hg(1.8); Ag(1.2) | NA | |
| 10 | 13.1 | 1.76 | 82.4 | 0.31 | ns | ns | ns | ns | ns | ns | HPAH(8.1); LPAH(8.9); DDD[m] (1.5); As(1.3); Cr(1.4); Cu(2.3); Pb(1.9); Hg(1.7); Ag(1.8); Zn(1.5) | NA | |
| 11 | 14.1 | 1.31 | 69.6 | 1.6 | ns | ns | P | ns | ns | ns | HPAH(4.4); LPAH(4.8); PCBs(15.5); As(1.3); Pb(1.6); Hg(2.1) | NA | |
| 12 | 13.6 | 0.63 | 61.9 | 0.25 | ns | ns | ns | ns | ns | * | HPAH(1.8); LPAH(2.4); PCB(5.5) | NA | |
| 13 | 9.5 | 0.60 | 55.8 | 6.7 | ns | ns | ns | ns | * | * | PCBs(18.5); Cu(1.7); Pb(1.4); Hg(2.0); Ag(1.2) | NA | |



(table continues)



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Table 10-8 (continued)

| Station | Physical Test | | | | Bioassay Test | | | | | | Chemical Test | | Preliminary Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Rhepoxynius* | | *Neanthes* | | *Dendraster* | | | | |
| | Bathymetry (m, MLLW) | TOC (% carbon) | Grain Size (% fines) | SEM/AVS Ratio (total) | Mortality | Reburial | Mortality | Growth | Mortality | Devlpmt | Surface Sediment (ratio above reference) | Clam Bioaccumulation (detected chemicals) | |
| 14 | 11 | 0.46 | 41.6 | 1.7 | ns | ns | ns | ns | P | * | PCBs(3.1) | DDE; TBT; 5 metals | |
| 15 | 12.6 | 0.92 | 83.8 | 0.57 | ns | ns | ns | ns | ns | * | DDD(1.5); PCBs(5.7); Hg(1.5); Ag(1.3) | NA | |
| 16 | 12.6 | 0.89 | 77.8 | 0.61 | ns | ns | ns | ns | ns | P | DDD(3.2); PCBs(7.2); Hg(1.6); Ag(1.4) | NA | |
| 17 | 10.6 | 1.82 | 86.7 | 4.4 | ns | ns | ns | P | * | * | HPAH(7.6); DDD(2.5); DDE(1.4); DDT[a] (1.6); PCBs(43.7); As(2.1); Cr(2.2); Cu(5.9); Pb(4.5); Hg(5.3); Ni(1.3); Ag(2.0); Zn(2.8) | NA | |
| 18 | 13.5 | 0.41 | 83.3 | 0.97 | ns | ns | ns | ns | ns | ns | HPAH(4.6); PCBs(10.1); Pb(1.2); Hg(1.7); Ag(1.3) | NA | |
| 19 | 13.5 | 0.60 | 67.5 | 0.83 | ns | ns | ns | ns | ns | ns | PCBs(2.8) | NA | |
| 20 | 13.6 | 0.69 | 75.5 | 0.62 | ns | ns | ns | ns | ns | ns | PCBs(3.7); Ag(1.4) | NA | |
| 21 | 12.6 | 1.48 | 92.4 | 1.1 | ns | ns | P | * | ns | ns | HPAH(8.4); LPAH(9.1); PCBs(11.4); As(1.7); Cr(1.7); Cu(2.5); Pb(2.0); Hg(2.2); Ni(1.4); Ag(1.6); Zn(1.8) | NA | |
| 22 | 13.1 | 0.71 | 93.1 | 0.64 | ns | ns | ns | ns | ns | ns | HPAH(4.5); LPAH(3.3); PCBs(20.1); As(1.9); Cr(1.8); Cu(2.3); Pb(2.2); Hg(1.4); Ni(1.5); Ag(1.9); Zn(1.8) | NA | |
| 23 | 13.1 | 0.72 | 70.3 | 0.63 | ns | ns | ns | ns | ns | ns | HPAH(3.7); PCBs(8.1) | NA | |
| 24 | 13 | 0.07 | 3.9 | 2.5 | ns | ns | ns | ns | ns | ns | ns | DDE; TBT; 3 metals | |
| 25 | 12.6 | 0.56 | 30.2 | 0.39 | ns | ns | ns | ns | * | * | ns | NA | |

(table continues)



R0062601

Table 10-8 (continued)

| Station | Physical Test | | | | Bioassay Test | | | | | | Chemical Test | | Preliminary Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Rhepoxynius* | | *Neanthes* | | *Dendraster* | | | | |
| | Bathymetry (m, MLLW) | TOC (% carbon) | Grain Size (% fines) | SEM/AVS Ratio (total) | Mortality | Reburial | Mortality | Growth | Mortality | Devlpmt | Surface Sediment (ratio above reference) | Clam Bioaccumulation (detected chemicals) | |
| 26 | 12.6 | 1.32 | 84.2 | 0.94 | ns | ns | ns | ns | ns | ns | PCBs(11.4); As(1.4); Pb(1.4); Hg(1.4); Ag(10.2) | NA | |
| 27 | 14.7 | 1.69 | 90.8 | 1.0 | ns | ns | ns | ns | ns | ns | PCBs(21.5); As(1.4); Cr(1.6); Cu(2.4); Pb(1.9); Hg(2.6); Ni(1.3); Ag(1.8); Zn(1.4) | NA | |
| 28 | 9.1 | 0.71 | 67.8 | 1.2 | ns | ns | ns | * | ns | ns | PCBs(7.1); As(1.3); Ag(2.8) | NA | |
| 29 | 17.6 | 0.64 | 70.4 | 0.45 | ns | ns | ns | ns | ns | ns | ns | DDE; TBT; 3 metals | |
| 30 | 13.5 | 0.52 | 73.3 | 1.0 | ns | ns | ns | P | ns | ns | PCBs(2.5) | NA | |
| 31 | 19.1 | 0.49 | 46.9 | 1.8 | ns | ns | ns | ns | * | ns | Phenol(2.3) | NA | |
| 32 | 22.5 | 0.44 | 23.9 | 0.61 | ns | ns | ns | ns | ns | ns | ns | NA | |
| 33 | 22.5 | 0.58 | 75.5 | 1.2 | ns | ns | ns | ns | * | * | PCBs(1.5); Ag(1.2) | NA | |
| 41 | 11.6 | 1.07 | 76.6 | 0.76 | * | ns | ns | ns | ns | * | HPAH(5.1); LPAH(4.7); DDD(1.5); PCBs(10.9); TBT(1.3); Pb(1.8); Hg(3.1); Ag(1.3); Zn(1.3) | NA | |
| 42 (Pier 16) | 12.6 | 1.62 | 72.0 | 0.051 | * | * | ns | ns | * | * | Cr(1.2); Pb(1.4); Ni(1.3) | NA | |
| 43 (Pier 15) | 11.6 | 2.15 | 93.9 | 0.065 | ns | ns | ns | ns | ns | * | HPAH(31.2); LPAH(35.3); Cr(1.5); Cu(2.9); Pb(2); Hg(1.8); Ag(1.4); Zn(1.8) | HPAH; DDE; TBT; 3 metals | |
| 44 (Pier 12) | 12.6 | 1.73 | 54.3 | 0.066 | * | * | ns | ns | ns | * | HPAH(4.1); Cr(1.4); Cu(1.8); Pb(2); Hg(1.5); Ag(1.4); Zn(1.5) | NA | |

(table continues)



R0062602

Table 10-8 (continued)

| Station | Physical Test | | | | Biossay Test | | | | | | Chemical Test | | Preliminary Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Rhepoxynius* | | *Neanthes* | | *Dendraster* | | | | |
| | Bathymetry (m, MLLW) | TOC (% carbon) | Grain Size (% fines) | SEM/AVS Ratio (total) | Mortality | Reburial | Mortality | Growth | Mortality | Devlpmt | Surface Sediment (ratio above reference) | Clam Bioaccumulation (detected chemicals) | |
| 45 (Pier 12) | 15.6 | 1.44 | 70.5 | 0.087 | * | * | ns | ns | * | * | HPAH(2.1); Cu(1.4); Pb(1.6); Ag(1.3) | NA | |
| 46 (Pier 12) | 11.2 | 1.88 | 71.8 | 0.053 | * | * | ns | ns | * | * | TBT(1.4); Pb(1.5); Hg(1.4) | DDE; TBT; 3 metals | |
| 47 (Pier 9) | 11.6 | 1.27 | 50.2 | 0.68 | ns | ns | ns | ns | ns | * | HPAH(5.1); LPAH(6); PCBs(17.1); phenol(5.2); Cu(2); Pb(1.3); Hg(2.6) | NA | |
| 48 (Pier 7) | ND° | 2.32 | 71.0 | 0.11 | * | * | * | ns | ns | * | HPAH(41); LPAH(146.9); DDD(2.7); As(1.7); Cr(8.4); Cu(3.7); Pb(2.3); Hg(1.6); Zn(2.3) | NA | |
| 49 (Pier 6) | 13.5 | 1.60 | 75.9 | 0.087 | ns | P | ns | ns | ns | * | HPAH(19.1); LPAH(18.6); PCBs(19.2); As(1.4); Cr(1.5); Cu(2.5); Pb(1.9); Hg(2.1); Ag(1.5); Zn(1.8) | HPAH; DDE; TBT; 3 metals | |
| 50 (Pier 3) | 12.1 | 1.56 | 38.4 | 0.077 | ns | ns | ns | ns | ns | * | HPAH(21.9); LPAH(59.1); Cu(1.9); Pb(2.1); Ni(1.3); Ag(2.2); Zn(3.7) | NA | |
| 51 (Pier 2) | 11.1 | 2.08 | 85.1 | 0.055 | P | ns | ns | ns | ns | *P | HPAH(8.8); LPAH(17.1); As(1.4); Cr(1.3); Cu(2.3); Pb(1.8); Ag(1.3); Zn(1.5) | HPAH; DDE; TBT; 4 metals | |
| 52 (Pier 1) | 11.8 | 2.14 | 81.7 | 0.058 | ns | ns | P | ns | ns | * | HPAH(6); LPAH(6); Be(2.1); Cr(1.6); Cu(2.9); Pb(2.2); Hg(1.4); Ni(1.3); Ag(1.5); Zn(2) | NA | |

(table continues)



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**Table 10-8** (continued)

Notes:

[a] – hit: exceedance of **both** a relative mean numerical and statistically significant ($P \leq 0.05$) difference between test and reference stations
[b] m – meter
[c] MLLW – mean lower low water
[d] TOC – total organic carbon
[e] SEM/AVS – simultaneously extracted metals/acid volatile sulfides
[f] ns – not significant: no hit (bioassay) or ratio above reference $\leq 1$ (chemistry)
[g] HPAH – high molecular weight polynuclear aromatic hydrocarbons
[h] LPAH – low molecular weight polynuclear aromatic hydrocarbons
[i] PCBs – polychlorinated biphenyls
[j] NA – not applicable
[k] P – possible hit: exceedance of **either** a relative mean numerical **or** a statistically significant ($P \leq 0.05$) difference between test and reference stations
[l] DDE – dichloro-diphenyl-ethane
[m] TBT – tributyltin
[n] DDD – dichloro-diphenyl-dichloroethane
[o] DDT – dichloro-diphenyl-trichloroethane
[p] ND – no data
[q] Dissolved oxygen (DO) levels below 60% saturation during test



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APPENDIX

# HEALTH AND SAFETY ACTIVITIES

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Appendix
# HEALTH AND SAFETY ACTIVITIES

## 1.0 INTRODUCTION

From July through September 1994, a remedial investigation feasibility study (RI/FS) was conducted in the Long Beach Harbor West Basin (West Basin) of the Long Beach Naval Station (NAVSTA) located in Long Beach, California. Activities were conducted in response to the Installation Restoration Program RI/FS Work Plan issued April 1994 under Contract No. N68711-92-D-4670. On-site activities were designed to conform to federal, state and local environmental regulations All work was conducted under the Contract Task Order (CTO) No. 0026.

This report documents and summarizes the Health and Safety activities for CTO-0026 conducted in the West Basin (also referred to as Site 7 of the NAVSTA). Work operations included sediment sampling and fish bioassay conducted from the harbor piers and from water vessels. Field activities included fish collection by trolling operations, underwater diving, and sediment drilling from piers and Vibra-Core drilling from vessels.

## 2.0 PURPOSE/BACKGROUND

The purpose of Health and Safety is to support site activities, ensuring that project personnel and the immediate community are not exposed to harmful contaminants/materials from operations which have been recognized as potential sources of injury and illness. The overall objectives of the Remedial Investigation for marine sediments were to:

- identify chemicals of potential concern (COPCs),
- identify areas of potential concern (AOPCs),
- rank the AOPCs,
- assess which of the AOPCs need sediment remediation and identify appropriate cleanup levels; and
- assess whether further investigation is warranted for the remaining AOPCs.

The Comprehensive Long-Term Environmental Action Navy (CLEAN) II Project Health and Safety Procedures were used on a daily basis as guidelines to assess and correct/modify potential exposure sources and to promote safe and healthful work practices. This report documents the results of airborne contaminant monitoring, decontamination procedures, and other health and safety issues which were associated with Site 7 field activities

The Long Beach Harbor West Basin has been jointly used by both the NAVSTA and the Long Beach Naval Shipyard (LBNSY) since the early 1940s as a location to dock sea vessels. Both the NAVSTA and LBNSY have been selected as one of many military bases for closure in compliance with the Base Closure and Realignment Act of 1990.



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## 3.0 SITE DESCRIPTION

The West Basin is located on the south side of Terminal Island within the Los Angeles and Long Beach Harbor districts. A Site Location Map is included in the Site-Specific Health and Safety Plan Supplement (Supplement).

CTO-0026 field work was conducted throughout the West Basin. Below is a brief description of Site 7. A Detailed Facility Map is included in the Supplement.

Site 7 has been defined as the sediments found in the West Basin. The main facilities of the Long Beach Naval Complex are located to the north while the NAVSTA Mole is located to the south and west. Storm sewers discharge into the harbor at 14 locations. A marina is located in the southwest corner of the harbor.

From the early 1940s to the mid-1970s, drainage from cleaning and processing tanks and from the various industrial areas were discharged into the West Basin through the storm sewer system and from flushing the drydocks. It is suspected that storm sewer discharges settled on the ocean floor and infiltrated into the harbor sediments. Previous reports have identified the following materials as being discharged into the West Basin:

- sodium nitrite,
- hydrazine,
- polychlorinated biphenyls (PCBs,)
- acids,
- solvents,
- oils, and
- greases.

## 4.0 SCOPE OF WORK

The scope of work for CTO-0026 involved surface and subsurface sediment sampling and biological testing/dissecting of West Basin fish. Tasks necessary to conduct these activities included the following:

- over water Vibra-Core subsurface sediment sampling,
- hollow stem drilling from Piers 2, 12 and 15,
- over water trolling,
- over water fish collection, and
- underwater (diving) surface sediment sampling.

## 5.0 HEALTH AND SAFETY COVERAGE

During non-intrusive activities, CTO-0026 field work was staffed by a member of Bechtel Safety and Health Services who conducted health and safety field operations and supervised members of



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the CLEAN II Site Health and Safety Officer (SHSO) program. SHSOs are technical field personnel who have met the CLEAN II criteria for conducting collateral health and safety responsibilities.

When non-hazardous materials operations (i.e., non-intrusive) were conducted, field operations staffed a health and safety coordinator to document field activities to ensure that the specific health and safety guidelines provided by the Health and Safety Supervisor (HSS) were practiced. Health and Safety Coordinators are technical field personnel who, while not participating in the CLEAN II SHSO training Program, have been designated by the HSS to oversee health and safety for non-hazardous materials environments.

Health and Safety coverage was provided continuously during field activities and was focused on operations where there was the greatest potential exposure to safety and health hazards. These operations included work over water, extended time periods away from land, and exposure to airborne contaminants. During sediment sampling activities, airborne monitoring was conducted to assess potential airborne exposures. Minimum coverage (i.e., no airborne monitoring) was provided during non-intrusive operations, such as fish collection within the West Basin.

## 6.0 CHEMICALS OF POTENTIAL CONCERN

Using previous site investigation reports, various exposures for chemical and physical hazards have been identified. These include volatile and semivolatile organic hydrocarbons (VOCs and SVOCs), petroleum hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), PCBs, pesticides and heavy metals.

At each location where airborne contaminants were a concern, real time air monitoring was conducted. Air monitoring was conducted during work operations and was documented according to the CLEAN II Site Health and Safety Plan, Section 10.2, 'Responsibility for Monitoring." Specific attention was given to employee exposures in the exclusion zones during intrusive operations.

Appropriate personal protective equipment (PPE) was required for all CTO-0026 locations where field personnel were expected to handle potentially contaminated sediments. In addition, airborne monitoring was conducted to assess personal exposure to COPCs.

The following subsections describe detailed monitoring and sampling methods that were used, or available for use, for site-specific contaminant assessments.

### 6.1 Airborne Hydrocarbons

Airborne monitoring for various solvents and oils was generally conducted using a photoionization detector (PID). This instrument is designed to detect various airborne materials by ionizing molecules, as they enter the instrument, using ultraviolet (UV) light. While the PID can detect many types of airborne hydrocarbons, it does not have the capability to speciate individual contaminants. Therefore, the PID was used as a principal screening device. The PID used for CTO-0026 field work, the ThermoEnvironmental Model 580 B, has a sensitivity of 0.1 part per million (ppm) and was calibrated daily with a known concentration of isobutylene.



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In some cases, airborne contaminants were monitored with a flame ionization detector (FID). This instrument is designed to detect various airborne materials by ionizing molecules, particularly organic materials, as they enter the instrument, by a controlled burning hydrogen gas source. Similar to the PID, the FID was used as a screening device, as it cannot speciate specific airborne contaminants. The FID used for CTO-0026 field work, a Foxboro organic vapor analyzer (OVA) Model 128, has a sensitivity of 1 ppm. Calibration was conducted daily with a known concentration of methane.

Elevated FID/PID readings were further evaluated with a Drager bellows pump and detector tubes. This is a direct reading calorimetric method where the length of color change within a contaminant-specific detector tube correlates to the concentration of the specific contaminant in ppm. While this method yields a more specific quantification than the FID or PID, substantial errors can result from various sources, such as interferences from other contaminants and actual measurement of the length of color change.

## 6.2 Physical/Safety Hazards

Prior to conducting field activities, an assessment was made by noting appropriate accident control measures, such as verification of U.S. Coast Guard certifications for vessel specifications and personnel, first aid and rescue equipment, and appropriate communication devices. As a result of this assessment, appropriate health and safety supplies were documented in the Hazardous Work Permit (refer to Section 7.1). A checklist was developed by the HSS and approved by the Health and Safety Manager (HSM). This checklist was used prior to all work over water operations.

As a method to control accidental falling off vessels, personnel not directly involved with fish collection (trolling) were required to stay within a "safe-zone," established by the vessel captain (subcontractor health and safety coordinator) and approved by the HSS. Personnel conducting the fish collection were required to wear skid-resistant rubber boots. Rescue equipment and emergency medical supplies were available for the duration of all over water activities.

# 7.0 HEALTH AND SAFETY PROGRAM ELEMENTS

This section describes the program elements of the Site Health and Safety Plan implemented during CTO-0026 field activities.

## 7.1 Hazardous Work Permits

A Hazardous Work Permit (HWP) program was established to control all work and to specify the PPE and the monitoring and control requirements for each task. General HWPs were prepared for site reconnaissance, vessel operations, and sampling. Specific HWPs were prepared for each task that required specific health and safety requirements.



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## 7.2 Personal Protective Equipment

Each HWP specifies appropriate protective equipment required for each task. Most field work for CTO-0026 required level D personal protective equipment (PPE). This ensemble consisted of sturdy work garments, work gloves, work boots with steel toe and shank, hard hat, and safety glasses. Personnel working within the exclusion zone during subsurface sediment sampling through the piers wore a modified level D ensemble, as specified in the CLEAN II Program Procedures, HS 3.2, 'Personal Protective Equipment."

Certain activities required specific PPE, such as underwater surface sampling (i.e., diving) and work on a vessel. Diving operations were required to comply with the following documents:

- USACE EM-385-1-1 Section 30, Contract Diving Operations,
- CFR 1910, Subpart T,
- US Navy Diving Manual, Volume 1, and
- CCR Subchapter 7, Article 152 & 153.

Work on vessels required a modification to Level D PPE, such as skid-resistant boots to replace steel toe boots. Hard hats were not required while working on the vessel; however, cloth hats were necessary for sun protection.

## 8.0 SITE CONTROL

All intrusive activities were performed according to the Site Specific Health and Safety Plan, which required an HWP, an applicable site configuration, decontamination, and site entry logs. Site configurations were designed to support personal decontamination and control hazardous materials from leaving the work area and reducing the threat of contamination to nearby people and areas. Refer to Section 7.1 (Hazardous Work Permit).

## 9.0 TRAINING PROGRAM

All personnel working at the project location were required to attend a CLEAN II Health and Safety Orientation, plus a Site Orientation. The CLEAN II Orientation was required only upon the initial visit to a CLEAN II Site. Hard hat stickers with individual CLEAN II employee numbers were issued to all field personnel. The Site Orientation was given to all personnel upon initial visit to a new CLEAN II location.

The purpose of the orientations were to brief the project personnel on project and site-specific elements of the CLEAN II Health and Safety Program, brief project personnel on the site-specific Health and Safety Plan requirements, and to provide site specific hazard communication information.

The briefing followed the standard CLEAN II Training Course Content. Respiratory protection training/fit testing was not required for this particular CTO, as field work was considered to be



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'hon-hazardous" as defined by Federal and California Occupational Safety and Health Administration (OSHA) Hazardous Worker Operations and Emergency Response regulations.

Title 8 of the Code of California Regulations, Section 5192, and the project protocol require proof of completion of the 40-hour training and 8-hour refresher training courses for intrusive operations within sites that have been recognized as a hazardous cleanup site or emergency materials release area. Because the West Basin has not been identified as either of these scenarios, only drilling operations on Piers 2, 12, and 15 required compliance to these regulations.

## 10.0 HEALTH AND SAFETY PROGRAM FIELD RESULTS

The following is a description of the results of the program elements as implemented during CTO-0026 field activities.

### 10.1 Airborne Chemical Surveillance

#### 10.1.1 SOLVENTS

Direct reading monitoring around employee breathing zones were recorded as nondetectable.

#### 10.1.2 SAFETY HAZARDS

Daily inspections of PPE and HWPs were documented in the Daily Inspection Checklist. Health and safety equipment and supplies, such as fire extinguishers, life preservers, first aid kits, rubber boots, and sun protection, were checked prior to the start of site activities. If any hazard was identified which was not identified prior to the start of field activities, a procedure would have been developed and used as an established protocol to conduct field work.

### 10.2 Respiratory Protection

Respiratory protection was not utilized during this project.

## 11.0 UNUSUAL INCIDENTS

There were no unusual incidents, occurrences, or reportable injuries during the field work.

## 12.0 RECORDS

Health and Safety records generated during the field investigation are kept on file.



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# ACRONYMS / ABBREVIATIONS

| | |
|---|---|
| $\alpha$ | significance level |
| AA | atomic absorption |
| AgCl | silver chloride |
| ANOVA | analysis of variance |
| AOC | area of concern |
| AOEC | area of ecological concern |
| AOPC | area of potential concern |
| AOPEC | area of potential ecological concern |
| ARAR | Applicable or Relevant and Appropriate Requirement |
| As | arsenic |
| ASTM | American Society for Testing and Materials |
| AT | averaging time |
| ATSDR | Agency for Toxic Substances and Disease Registry |
| AVS | acid volatile sulfide |
| | |
| BCA | benthic community analysis |
| BCF | bioconcentration factor |
| BCP | BRAC Cleanup Plan |
| BEIDMS | Bechtel Environmental Integrated Data Management System |
| BHC | hexachlorocyclohexane |
| Bight | Southern California Bight |
| BNI | Bechtel National, Inc. |
| BOD | biochemical oxygen demand |
| BPTCP | Bay Protection and Toxic Cleanup Program |
| BRAC | Base Realignment and Closure |
| BW | human body weight |
| | |
| °C | degrees Celsius |
| Cal-EPA | California Environmental Protection Agency |
| CAS | chemical abstract service |
| $CdCl_2$ | cadmium chloride |
| CDFG | California Department of Fish and Game |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| $C_f$ | concentration of chemical in fish tissue |
| CFR | Code of Federal Regulations |
| CH3D | three-dimensional hydrodynamic model |
| Cl | Chlorine |
| CLEAN | Comprehensive Long-Term Environmental Action Navy |
| CLP | contract laboratory protocol |
| cm | centimeter |
| $CN^-$ | cyanide |
| $CO_3^{2-}$ | carbonate |



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# EXECUTIVE SUMMARY

This report presents methods, data, and findings of a remedial investigation (RI) conducted at the Long Beach Naval Complex (LBNC) on behalf of the Department of the Navy (DON). The work was performed by Bechtel National, Inc. (BNI) at Site 7 under the Installation Restoration (IR) Program developed by the DON. For the purposes of implementing the IR program at the Long Beach Harbor West Basin (Site 7), the DON elected to follow the methodologies promulgated by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986.

The objective of this RI was to characterize the toxicity of West Basin sediments and fish. This objective was accomplished by acquiring chemical, physical, and biological measurements of, and assessing the extent of chemicals, their concentrations and toxicity in these media. This objective was outlined in the Remedial Investigation/Feasibility Study (RI/FS) Work Plan (JEG 1993a) and the Sampling and Analysis Plan (SAP) (JEG 1993b). These documents were approved by the DON and the United States Environmental Protection Agency (U.S. EPA), the Regional Water Quality Control Board (RWQCB), and the Department of Toxic Substances Control (DTSC).

At the onset of this RI and at the request of the technical oversight agencies, which included the U.S. EPA, RWQCB, and DTSC as well as the National Oceanic and Atmospheric Administration (NOAA), U.S. Fish and Wildlife Service (U.S. FWS) and the California Department of Fish and Game (CDFG), several addenda to the Work Plan and the SAP were developed, with the participation and acceptance of the technical oversight agencies. These addenda further defined specialized tasks and methodologies such as sample collection, laboratory analysis, data evaluation, and interpretation of results.

The LBNC, composed of the Naval Station (NAVSTA) Long Beach, the Long Beach Naval Shipyard (LBNSY), and the West Basin, is located on the south side of Terminal Island within the Los Angeles and Long Beach (LA/LB) Harbor districts. The LBNC was constructed in the early to mid-1940s. The West Basin is approximately 700 acres, with water depths on the order of 45 feet. Eleven piers, used for the purposes of ship docking for maintenance and loading, and a small-craft marina presently exist in the West Basin. Three dry docks are located at the LBNSY.

This RI addresses Operable Unit (OU) 3, which encompasses all of Site 7 under the IR Program. Site 7 designates the West Basin of Long Beach Harbor. The West Basin has been jointly used by the former Naval Station (NAVSTA) Long Beach, and the Long Beach Naval Shipyard (LBNSY) which will cease operations by September 1997.

Environmental investigations conducted within the LBNC, and regional scientific surveys were reviewed as part of this RI. Documents containing information of discharges into the LA/LB Harbor and the West Basin, and dredging plans were also reviewed and summarized in this RI. These documents indicate that most of the sources of discharge entering the West Basin are historical, whereas currently identifiable sources are generally



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under permit. Pollution control measures during the past years have been enacted to reduce or eliminate new contaminant sources into the West Basin.

## SITE CHARACTERIZATION METHODOLOGIES

The findings of the site characterization were used in conducting a human health risk assessment which focused on ingestion of fish caught in West Basin by recreational and subsistence anglers. In addition, the site characterization findings were used in conducting an ecological risk assessment which focused primarily on West Basin sediments, as well as on ingestion of West Basin fish by an aquatic predator (harbor seal).

In support of these tasks, reference locations outside of West Basin, which were not impacted by the activities of LBNC, were selected and also characterized for the purposes of comparing West Basin data with local reference data. Fish and sediment samples were collected from both West Basin and reference locations. Fish samples included whole body, muscle tissue, and gall bladder bile. Two species dominated the catch and were used in this RI: California halibut and white croaker.

Both surface sediment (upper 10 cm) and subsurface sediment (up to 5 meters in depth) samples were collected. Benthic infaunal invertebrate samples were collected from the upper 10 cm at the locations of surface sediment samples. Sampling was generally conducted from a 40-foot scientific survey vessel; divers and land-based drill rigs were used to sample surface and subsurface sediments beneath piers.

Physical, chemical, and biological analyses were conducted on the sediment samples: grain size, total organic carbon (TOC), metals, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, semivolatile organic compounds (SVOCs), and simultaneously extracted metals/acid volatile sulfide (SEM/AVS). In addition, laboratory clam bioaccumulation tests, and bioassays were performed using amphipods and polychaete worms (solid phase), and echinoderm larvae (pore water) as test organisms. Benthic community analysis was undertaken by specialists who identified and quantified the infaunal invertebrates in the samples. The results of laboratory chemical analyses were validated by a third-party laboratory.

Rigorous statistical methods and cluster analysis were used in evaluating West Basin and reference data. These evaluation methods clustered sampling stations on the basis of physical and chemical data, and allowed identification of sediment evaluation zones (SEZs) within West Basin. The individual SEZs were compared with the reference data for the purpose of establishing areas of potential concern (AOPCs) and chemicals of potential concern (COPCs).

## RESULTS OF SITE CHARACTERIZATION

Surface sediment samples were collected from 7 reference stations, 34 basin stations representing the general basin area, and from 11 pier stations representing sediments beneath the piers, to characterize the distribution of physical, chemical, toxicity, and benthic infaunal properties of the surface sediments. Subsurface sediment core samples were collected from 2 reference stations, 5 basin stations and from 3 pier stations to describe the vertical distribution of the sediment physical and chemical properties.



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**Reference Station Data**

Seven reference stations in the outer Los Angeles/Long Beach (LA/LB) Harbor were selected during the project planning stage with participation and acceptance of the U.S. EPA, RWQCB and DTSC. The reference stations represent sediments that were exposed to the normal port activities of the LA/LB Harbor, but were not affected by the activities of the LBNC. The sediments of the reference stations represented a wide range of sediment grain size and TOC distribution, similar to the range found in the West Basin sediments. Reference stations generally contained low levels of metals, DDT, and PAHs. No butyltins, PCBs, or SVOCs were found at the reference stations. Surface sediment toxicity at reference stations was very low. Only reference station toxicity data passing the performance criterion (i.e. comparison to laboratory control standard) were retained. Community indices at the reference stations suggest a healthy and normal benthic infaunal community. Mean and 95 percent predictive limits were calculated from the seven reference station sample data and used for comparison with data from West Basin stations.

**Physical Properties of West Basin Sediments**

West Basin sediments contained a wide range of sediment grain size distribution, probably influenced by earlier dredging activities, sediment sources (e.g. stormwater drains), and sediment depositional patterns within West Basin. The sediments collected from beneath piers contained substantial amounts of shell hash material that was not found in appreciable quantities at the basin stations. Sediments of the West Basin were primarily fines (sediment particles smaller than 62.5 μm), averaging 65 percent fines overall. Several surface sediment samples collected near the basin entrance contained a high percentage of sand-sized particles. West Basin stations located beneath piers, and along the seawall and Navy Mole contained a greater percentage of fines than the central areas of the West Basin. TOC was found in a distribution similar to the sediment fines, with greater concentrations along the seawall and Navy Mole, and beneath the piers.

**West Basin Sediment Chemistry**

Most of the detected metals, including arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc, were found in similar distributions among stations within West Basin. Metals concentrations were generally higher along the seawall and the Navy Mole, and between and beneath piers. In general, metals concentrations in West Basin sediments were not statistically significantly different than metals concentrations found at the reference stations, except for those stations beneath piers and adjacent to piers. Silver and selenium were detected in West Basin sediments but were not distributed in a recognizable pattern. PAH compounds were found at highest concentrations beneath the piers and adjacent to piers. Similar to patterns observed with the metals, the PAH concentrations exceeded the reference levels at the stations beneath the piers and adjacent to piers. Other chemical compounds were detected at many stations in West Basin, such as DDT derivatives, PCB, and di-n-octylphthalate, but displayed no clear distributional pattern. A few compounds were only detected at a few of the West Basin stations: dibutyltin, monobutyltin, aldrin, lindane, bis(2-ethylhexyl)phthalate, and phenol.



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**West Basin Biological Characteristics**

Bioaccumulation tests included analyses of whole body samples from laboratory clams, California halibut, and white croaker, fillet samples from California halibut and white croaker, and gall bladder bile from California halibut. Mean values of chemical analytes detected in West Basin clam, fish tissue, and bile were compared to mean values found at the reference stations. No statistically significant differences were noted for concentrations of chemical analytes in the clam tissue between West Basin and reference stations. No statistically significant difference was noted between the West Basin and reference station values for California halibut whole body, fillet, or bile. A statistically significant difference was found between the West Basin and reference stations for chemical concentrations of mercury for white croaker fillet, and of arsenic, copper, and tributyltin for white croaker whole body. The chemical concentrations were higher in the samples collected from West Basin. However, mercury concentrations in fillet samples collected from the West Basin were within the range of values commonly measured in southern California harbors. Furthermore, based on the number of fish captured and their external physical appearance, there was no evidence of the elevated levels of chemicals having any detrimental effects on the white croaker population in the West Basin.

Toxicity results of the echinoderm, amphipod, and polychaete bioassays showed a wide range of response. Echinoderm larval development were more sensitive than the other bioassay tests with 67 percent of the West Basin stations exhibiting a response. The other bioassays showed a range of sensitivity: 27 percent of the West Basin stations showed a measurable response for echinoderm survival; 13 percent for amphipod survival, 11 percent for amphipod reburial; 2 percent for polychaete survival; and 0 percent for polychaete growth. Toxicity response for echinoderm larval development was observed at stations beneath the piers, adjacent to piers, near the entrance to the West Basin, and in the western area of the basin. No clear pattern of correlation to concentrations of detected chemicals was apparent in distribution of echinoderm toxicity results. Amphipod bioassay results showed toxicity response at three piers and at one sampling station. Polychaete bioassays showed only one location with a toxicity response beneath a pier.

Benthic infauna throughout the West Basin generally appeared abundant and diverse. No significant differences were noted between reference stations and West Basin stations for community indices. The most abundant West Basin benthic infauna species were recognized as indicators of healthy sediment conditions. A unique invertebrate assemblage was found in sediments collected from beneath the piers, attributed to the habitat diversity and abundance represented by hard substrate (shell hash). The community was very complex compared to communities from areas of soft mud. Therefore, comparisons among pier stations, basin stations and reference stations were difficult at best.

The infaunal community, the chief ecosystem of concern, for basin areas appears to be robust in terms of number of taxa, ecological function of different taxa (i.e., 'healthy', 'semihealthy' species), number of individuals, and total biomass. The infauna appears to have improved significantly since abatement of chemical discharges to the West Basin over the last 30 years, and there does not appear to be an ecological risk from surface sediment chemical concentrations. The invertebrate community beneath the piers exceeds basin and



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reference stations in number of taxa, number of total individuals, and total biomass and is also a mixture of healthy and semihealthy species.

**Sediment Evaluation Zones**

SEZs were established by grouping sampling stations of the West Basin that exhibited similar physical and chemical properties. Surface sediment physical and chemical data were evaluated with a cluster analysis procedure, a multivariate statistical technique that evaluates a similarity matrix for West Basin stations based on the physical and chemical variables. Stations presented as similar by the cluster analysis were considered members of a single SEZ. The cluster analysis presented eight SEZs in the West Basin. Because of the similar nature of physical and chemical properties of the stations within an SEZ, mean values were calculated for chemical, toxicity, and benthic infauna variables at each SEZ and compared to the mean values of reference stations for statistical differences.

The SEZs were labeled as follows: SEZ "A" located near the entrance to the West Basin; SEZs "B", "C", and "D" located in the central and western areas of West Basin; SEZs "E" and "F" located adjacent to the piers; and SEZs "G" and "H" located beneath the piers. Metals concentrations at SEZs F and H were found significantly higher than at reference stations. PAH concentrations were significantly higher than reference stations, primarily at SEZs E, F, G, and H. PCB was detected at concentrations greater than the reference stations at all SEZs except SEZ G. A few pesticides and SVOCs were detected at SEZs at concentrations exceeding the reference.

**Chemicals of Potential Concern**

Chemical analytes at each SEZ that statistically significantly exceeded the reference station concentrations, or that were not detected at the reference stations, were considered sediment chemicals of potential ecological concern (COPECs) for that SEZ. All SEZs contained sediment COPECs, although SEZs E, F, G, and H contained more sediment COPECs and at noticeably greater concentrations than the other SEZs.

Fish COPECs for hazard quotient calculations were comprised of analytes that were at significantly greater concentrations in West Basin fish samples than at reference station fish samples, or were only detected in West Basin fish samples and not in reference station fish samples.

Any chemical analyte detected in the fish tissue samples were considered COPHCs for the human health risk assessment. A list of COPHCs was prepared for the West Basin stations and for the reference stations for each fish species and each tissue sample type.

**Areas of Potential Concern**

Areas of potential ecological concern (AOPECs) were identified according to the preponderance-of-evidence evaluation matrix developed for this RI with participation and acceptance of the agencies. SEZs B, G, and H were shown as AOPECs upon application of data to the evaluation matrix because of chemical analyte concentrations and echinoderm toxicity. The remaining SEZs, although containing chemical concentrations



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exceeding the reference stations showed no adverse toxicity response or benthic infauna patterns were not considered AOPECs.

## HUMAN HEALTH RISK ASSESSMENT

Both cancer and noncancer risks to recreational and subsistence anglers consuming fish caught in West Basin were estimated for both California halibut and white croaker. The assessment of cancer risk did not show an appreciable difference in the cancer risks associated with consumption of California halibut and white croaker from the West Basin and the reference stations. The results indicate, however, that the upper-bound cancer risk associated with consumption of California halibut and white croaker, regardless of the source, is within the range considered to be unacceptable in accordance with criteria presented in the National Contingency Plan (NCP). Thus, concentrations of carcinogenic chemicals identified in some of the West Basin and reference California halibut and white croaker appear to be high enough to adversely affect individuals who consume these two species of fish. The fish consumption advisory recommended by the California EPA Office of Environmental Health Hazard Assessment (Cal-EPA OEHHA) supports this finding.

The results of the noncancer risk assessment suggest that, with the exception of arsenic, there appears to be no appreciable difference between the noncancer risk for the COPHCs in California halibut and white croaker from the West Basin and the reference stations. Noncancer risk associated with arsenic is probably overstated because a very conservative estimator was used. Generally, arsenic values found in the West Basin fish tissue samples are similar to results from other southern California harbors.

## ECOLOGICAL RISK ASSESSMENT

The ERA focused on the assessment of risk that was related to contaminants existing in the West Basin sediment. Two methods were employed to assess the potential for risk: preponderance-of-evidence from sediment tests, and hazard quotient (HQ) calculations. The preponderance-of-evidence approach evaluated chemical analytes identified in sediment samples with the benthic biological systems, as indicated by benthic infauna composition, sediment toxicity, and bioaccumulation tests. The HQ approach evaluated the potential risk to an aquatic predator (harbor seal) exposed to chemical analytes in a benthic feeding prey species (white croaker).

Results of bioassays and the benthic infaunal study were evaluated for patterns related to the distribution of chemical analytes. Correlation analysis was used to evaluate relationships between individual chemical analytes and the biological response indicators (bioassays and benthic infauna indices). Principal component analysis and stepwise multiple regression were used to evaluate relationships between groups of co-occurring chemical analytes and the biological responses. The statistical analyses did not reveal any strong relationships between chemical analytes and biological responses. However, it appeared that a strong relationship existed between the biological responses and the location of the station. Biological responses were significantly different from reference at stations beneath the piers, although the responses were not consistent. Most bioassays



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performed poorly beneath the piers except for the polychaete growth, while the benthic infaunal indices improved at stations beneath the piers.

Sulfide was detected at significant concentrations at pier stations. This appears to be a natural phenomenon resulting from reducing conditions in these sediments, which are probably poorly oxygenated and remain largely undisturbed beneath the piers. The high sulfide content at pier stations made the interpretation of bioassay results difficult, especially for echinoderm larvae development. The distribution of echinoderm larval development results were quite paradoxical when compared to concentrations of detected chemicals.

A review of the bioaccumulation data for biological significance did not reveal any adverse conditions for the fish, clam, or harbor seal. Tissue concentrations in the fish and clam were within the range reported from other studies in the area, and were not indicative of detrimental levels. Hazard quotients calculated for the harbor seal indicated that risk exists for the harbor seal feeding exclusively on West Basin fish, however, the risk appeared similar to the risk posed to the harbor seal feeding on fish from the reference stations.

Most of the SEZs contained sediment COPECs at concentrations that were less than those used to indicate levels of adverse conditions, such as ER-Ls, effects range-median (ER-Ms), and no-effect levels observed in this RI. Several of the metals and PAHs at SEZs F and H exceeded such guideline concentrations.

AOPECs were evaluated for levels of chemical analytes, toxicity responses, and benthic infauna data for consideration as areas of ecological concern (AOECs), an area containing demonstrable adverse conditions. None of the AOPECs appeared at risk due to the measured chemical analytes. The toxicity response observed at the AOPECs appeared to be more related to an unmeasured feature of the piers than to any other measured parameter. Benthic infaunal communities found at the AOPECs were abundant and diverse, although the invertebrates found beneath the piers were quite different from those found at other basin stations. The benthic community beneath the piers appears to have adjusted to the mixed habitat conditions found beneath the piers and apparently not adversely affected by the chemical concentration found in the sediments.

## CONCLUSIONS AND RECOMMENDATIONS

Based on discussions related to, and the results of the human health risk assessment and the ecological risk assessment provided in this RI Report, no chemicals or areas of concern were identified for the West Basin which require remedial action or further characterization, such as water column investigations. Therefore, no further action is recommended for the West Basin.



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## Acronyms/Abbreviations (continued)

| | |
|---|---|
| COC | chain-of-custody |
| COPC | chemical of potential concern |
| COPEC | chemical of potential ecological concern |
| COPHC | chemical of potential health concern |
| Cr | chromium |
| $CrO_4^{2-}$ | chromate |
| $Cr_2O_7^{2-}$ | dichromate |
| CRP | Community Relations Plan |
| CSF | cancer slope factor |
| CTO | Contract Task Order |
| Cu | copper |
| CWA | Clean Water Act |
| | |
| DDD | 4,4'-dichloro-diphenyl-dichloroethane |
| DDE | 4,4'-dichloro-diphenyl-ethane |
| DDT | 4,4'-dichloro-diphenyl-trichlorethane |
| DHS | Department of Health Services |
| DO | dissolved oxygen |
| DON | Department of the Navy |
| DQO | data quality objective |
| DTSC | Department of Toxic Substances Control |
| dw | dry weight |
| | |
| $EC_{50}$ | median effective concentration |
| ECD | electron capture detector |
| ECAO | Environmental Criteria and Assessment Office |
| ED | exposure duration |
| EES | Environmental Engineering Survey |
| EF | exposure frequency |
| ERA | ecological risk assessment |
| EP | equilibrium partitioning |
| EPH | Eastern Pacific High |
| ER-L | Effects Range-Low |
| ER-M | Effects Range-Median |
| | |
| F | ratio of fish consumed from West Basin to total fish consumed |
| °F | degrees Fahrenheit |
| $F^-$ | fluoride |
| FID | flame ionization detector |
| $f_{oc}$ | fraction of organic carbon |
| FPD | flame photometric detector |
| FS | Feasibility Study |
| FSAP | Fish Sampling and Analysis Plan |



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## Acronyms/Abbreviations (continued)

| | |
|---|---|
| ft | foot, feet |
| ft/s | feet per second |
| $ft^2$ | square feet |
| $ft^3$ | cubic feet |
| $ft^3/s$ | cubic feet per second |
| g | gram |
| GC | gas chromatograph |
| GF | graphite furnace |
| GPC | gel permeation chromatography |
| gpd | gallons per day |
| GPS | global positioning system |
| $HCrO_4$ | hydrochromate |
| $HCO_3^-$ | bicarbonate |
| $H_2O$ | water |
| $H_2S$ | hydrogen sulfide |
| HEAST | Health Effects Assessment Summary Tables |
| Hg | mercury |
| HI | hazard index |
| HPAH | high molecular weight polynuclear aromatic hydrocarbon |
| HPLC | high performance liquid chromatograph |
| HQ | hazard quotient |
| hr | hour |
| HRS | Hazard Ranking System |
| HSD | honestly significant difference |
| HSM | health and safety manager |
| HSP | Health and Safety Plan |
| HSS | Health and Safety Supervisor |
| HWP | Hazardous Work Permit |
| HX | halogen |
| IAS | Initial Assessment Study |
| $IC_{50}$ | inhibitory concentration for 50% of test organisms |
| ICP | inductively coupled plasma |
| ID | indentification |
| IDCS | impact driven coring system |
| IDW | investigation derived waste |
| IR | Installation Restoration |
| $Ir_f$ | fish ingestion rate |
| IRIS | Integrated Risk Information System |
| IRP | Installation Restoration Program |
| IWS | Industrial Waste Study |



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## Acronyms/Abbreviations (continued)

| | |
|---|---|
| JEG | Jacobs Engineering Group |
| kg | kilogram |
| $K_d$ | distribution coefficient |
| Koc | sediment partition coefficient |
| $K_{ow}$ | octanol-water partition coefficient |
| L | liter |
| LA | Los Angeles |
| LA/LB | Los Angeles and Long Beach |
| LARWQCB | Regional Water Quality Control Board - Los Angeles Region |
| LB | Long Beach |
| LBNC | Long Beach Naval Complex |
| LBNSY | Long Beach Naval Shipyard |
| $LC_{50}$ | lethal concentration for 50% of test organisms |
| LCL | lower confidence limit |
| LDC | Laboratory Data Consultants |
| ln | logarithm base e (natural log) |
| $\log_{10}$ | logarithm base 10 |
| $\log_2$ | logarithm base 2 |
| LPAH | low molecular weight polynuclear aromatic hydrocarbon |
| LPL | lower predictive limit |
| µg | microgram |
| µg/g | microgram per gram |
| µg/L | micrograms per liter |
| µL | microliter |
| µmol | micromole |
| m | meter |
| MCL | minimum clean-up level |
| mg | milligram |
| mg/L | milligrams per liter |
| mgd | million gallons per day |
| mL | milliliter |
| mm | millimeter |
| $m^2$ | meter square |
| MEC | MEC Analytical Systems, Inc. |
| MLLW | mean lower low water |
| MOH | hydroxylated metal |
| MS | mass spectrometer |
| MS/MSD | matrix spike/ matrix spike duplicate |

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## Acronyms/Abbreviations (continued)

| | |
|---|---|
| NAVSTA | Naval Station |
| NCP | National Contingency Plan |
| NEESA | Naval Energy and Environmental Support Activity |
| $NH_3$ | ammonia |
| Ni | nickel |
| NISZ | Newport-Inglewood Structural Zone |
| nm | nanometer |
| No. | number |
| $NO_3$ | nitrate |
| NOAA | National Oceanic and Atmospheric Administration |
| NOEC | no observable effects concentration |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priority List |
| NS&T | National Status and Trends |
| NSY | Naval Shipyard |
| | |
| $O_2$ | oxygen |
| OD | outside diameter |
| OEHHA | Office of Environmental Health Hazard Assessment |
| OH | hydroxyl group |
| OSHA | Occupational Safety and Health Administration |
| OU | operable unit |
| | |
| % | percent |
| ‰ | parts per thousand |
| PA | Preliminary Assessment |
| PAH | polynuclear aromatic hydrocarbon |
| Pb | lead |
| PCA | principal component analysis |
| PCB | polychlorinated biphenyl |
| PEL | permissible exposure limit |
| pH | hydrogen potential |
| $p_i$ | abundance of species i |
| PID | photoionization detector |
| $PO_4^{3-}$ | phosphate |
| POLA | Port of Los Angeles |
| POLB | Port of Long Beach |
| POTW | publicly owned treatment works |
| ppb | part per billion |
| PPE | personal protective equipment |
| ppm | part per million |
| ppt | part per trillion |
| PQL | practical quantitation limit |



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## Acronyms/Abbreviations (continued)

| | |
|---|---|
| PRG | preliminary remediation goal |
| PSDDA | Puget Sound Dredge Disposal Analysis |
| QA | quality assurance |
| QA/QC | quality assurance/quality control |
| QAPP | Quality Assurance Project Plan |
| QC | quality control |
| RAB | Restoration Advisory Board |
| RACSM | risk assessment conceptual site model |
| RAWP | Risk Assessment Work Plan |
| RCRA | Resource Conservation and Recovery Act |
| RFA | RCRA Facility Assessment |
| RfD | reference dose |
| RI | Remedial Investigation |
| RI/FS | Remedial Investigation/Feasibility Study |
| $RO\bullet$ | alkoxy radical |
| $RO_2\bullet$ | alkyl peroxyl radical |
| ROH | alcohol |
| RPD | relative percent difference |
| RWQCB | Regional Water Quality Control Board |
| $\Sigma$ | summation |
| s | second |
| $S^{2-}$ | sulfide |
| SAP | Sampling and Analysis Plan |
| SCAQMD | South Coast Air Quality Management District |
| SCCWRP | Southern California Coastal Water Research Project |
| SEM | simultaneously extracted metal |
| SEZ | sediment evaluation zone |
| SHSO | Site Health and Safety Officer |
| SI | site inspection |
| SL | screening level |
| $SO_4^{2-}$ | sulfate |
| SOP | Standard Operating Procedure |
| SQL | sample quantification limit |
| sp. | Species |
| SR | species richness |
| SS | sum of squares |
| SVOC | semivolatile organic compound |
| SWDIV | Southwest Division Naval Facilities Engineering Command |
| SWDMP | Storm Water Discharge Management Plan |
| SWMP | Storm Water Management Plan |



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## Acronyms/Abbreviations (continued)

| | |
|---|---|
| SWMU | solid waste management units |
| SWPPP | Storm Water Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TB | toxicity benchmark |
| TBC | to be considered |
| TBT | tributyltin |
| TEL | threshold exposure limit |
| TIC | tentatively identified compound |
| TITP | Terminal Island Treatment Plant |
| TM | Technical Memorandum |
| TOC | total organic carbon |
| TRC | technical review committee |
| TRPH | total recoverable petroleum hydrocarbon |
| TRV | toxicity reference value |
| UCL | upper confidence limit |
| UPL | upper predictive limit |
| U.S. ACOE | United States Army Corps of Engineers |
| USDA | Unites States Department of Agriculture |
| U.S. EPA | United States Environmental Protection Agency |
| U.S. FWS | United States Fish and Wildlife Service |
| UV | ultraviolet |
| VOC | volatile organic compound |
| West Basin | Long Beach Harbor West Basin |
| WESTDIV | Western Division |
| WIFM | Waterways Experiment Station Implicit Flooding Model |
| ww | wet weight |
| WWC | Woodward-Clyde Federal Services |
| Zn | zinc |



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SECTION 1

# INTRODUCTION

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Section 1
# INTRODUCTION

This report presents the methods, data, interpretations, and conclusions of a Remedial Investigation (RI) conducted at the Long Beach Harbor West Basin (West Basin). This site is located within the Long Beach Naval Complex (LBNC), and it is part of the Installation Restoration (IR) Program developed by the Department of the Navy (DON). The IR Program is designed, in part, to evaluate and remediate, if necessary, past contamination caused by hazardous substances, pollutants, or contaminants. To implement the IR Program at West Basin, the DON elected to follow the RI methodologies promulgated by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986.

The RI described herein was conducted and this RI Report was prepared by Bechtel National, Inc. (BNI) on behalf of the DON, Southwest Division Naval Facilities Engineering Command (SWDIV). The West Basin, which has been jointly used by the Long Beach Naval Shipyard (LBNSY) and the former Naval Station (NAVSTA) Long Beach, was the subject of this RI in accordance with Contract Task Order (CTO)-0026, under the Comprehensive Long-Term Environmental Action Navy (CLEAN) II Contract No. N68711-92D-4670.

## 1.1 PLANNING DOCUMENTS

At the onset of this RI, various plans were developed, describing the rationale, methodology, and details of the multitude of tasks to be implemented during the course of the work. These planning documents are listed below, with brief descriptions of their contents and objectives.

- Final Remedial Investigation/Feasibility Study Work Plan (JEG 1993a). This Work Plan provides an extensive program to conduct RI activities for West Basin, and includes discussions of background information related to West Basin.
- Final Sampling and Analysis Plan (SAP) (JEG 1993b). The SAP, which is a companion document to the Work Plan listed above, provides guidance on conducting a site investigation for West Basin. Guidelines are provided for sampling strategy, laboratory analyses, and data usage, and procedures are provided for sample handling and quality assurance(QA)/quality control (QC). The SAP also includes the following:
  - Quality Assurance Project Plan (QAPP). The objectives of the QAPP are to develop and implement procedures for acquiring data of known and appropriate quality.
  - Health and Safety Plan (HSP). The HSP contains procedures for implementation during field work activities. These procedures have been established to ensure that field staff are familiar with the hazards associated with their work and take reasonable precautions to provide a safe work environment in conformance with Occupational Safety and Health Administration (OSHA) requirements and applicable DON orders and directives.

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- Final Community Relations Plan (CRP) (JEG 1993c). The CRP describes activities intended to keep the community informed and involved in the RI/Feasibility Study (FS) process.
- Final Risk Assessment Work Plan (BNI 1994a). This Work Plan describes methodologies for use in assessing human health and ecological risk posed by exposure to chemicals present in West Basin sediments.
- Final Fish Sampling and Analysis Plan (BNI 1994b). This plan describes procedures to be used in selecting fish sampling locations, collecting fish, and measuring concentrations of selected chemicals in fish tissue. It also provides the results of a creel census conducted at the LBNC and provides a list of fish species targeted for collection.
- Final Implementation of Final RI/FS Sampling and Analysis Plan - Technical Memorandum (TM) No. 4 (BNI 1994c). TM No. 4 provides clarification and, where appropriate, revisions to the strategies for sampling and characterizing West Basin sediments as initially described in the SAP (JEG 1993b). TM No. 4 also provides additional details of the rationale on implementing key elements of the SAP related to sediments, such as characterization of indigenous benthic infaunal communities and delineation of reference stations. Appendix A of this RI Report contains a copy of TM No. 4.
- Final Fish Sampling and Analysis Plan - Technical Memorandum No. 5 (BNI 1994d). TM No. 5 significantly expands the fish collection, analysis, and data usage strategies for this RI, thereby replacing in its entirety the Final Fish Sampling and Analysis Plan (BNI 1994b). TM No. 5 identifies the number of fish required, representative species of fish targeted for collection, and types of samples to be obtained (whole body, fillet and bile) and analyzed for each species to support both human health and ecological risk assessments; sample collection locations within the West Basin and at project reference area; target analytes; and laboratory analytical methods. In addition, TM No. 5 describes specific fish collection and sample handling methods. Appendix B of this RI Report contains a copy of TM No. 5.
- Final Addendum to RI/FS Work Plan and Risk Assessment Work Plan (RAWP), (BNI 1995a). The RAWP describes how the sediment and tissue data acquired during the course of this RI will be evaluated and used to support the assessment of ecological risk (focused on sediments) and human health risk (focused on fish). This RAWP is significantly expanded in scope when compared to the preceding Final Risk Assessment Work Plan (BNI 1994a). The RAWP also describes the statistical methods for use in evaluating physical, chemical and biological data; the preponderance-of-evidence approach for use in toxicity evaluation; and the evaluation matrix developed for characterization of ecological risk. Appendix C of this RI Report contains a copy of the RAWP.



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## 1.2 OBJECTIVE AND SCOPE OF THE REMEDIAL INVESTIGATION

The overall objective of this RI was to characterize West Basin fish and sediment toxicity through assessment of human health and ecological risks. This objective was achieved by performing these major tasks:

- obtain samples of fish and sediments within West Basin and at reference stations;
- identify chemicals of potential concern (COPCs) associated with fish and sediments for purposes of human health and ecological risk assessments;
- identify areas of potential concern (AOPCs) within West Basin on the basis of sediment characterization;
- assess human health and ecological risks; and
- assess whether, on the basis of these findings, remedial action is warranted and, if so, identify remedial action objectives and potential remedial action alternatives.

At the onset of this RI, in agreement with the technical oversight agencies, reference stations outside of West Basin, at areas known not to have been affected by LBNC activities, were selected to provide a benchmark for this project. Subsequently, sediment and fish samples were collected both from within West Basin and from the reference stations. The sediment and fish samples were analyzed in the laboratory for selected chemicals. In addition, physical and biological tests were conducted on the sediment samples. The analytical data were evaluated using statistical methods. The results of the data evaluation were used in human health and ecological risk assessments.

The human health risk assessment focused on ingestion of fish by recreational and subsistence anglers. The ecological risk assessment focused on the sediments and an aquatic predator of West Basin fish. The human health and ecological risk assessments were conducted using available standardized procedures. The purpose of the risk assessments was to evaluate whether the COPCs found in West Basin fish could potentially pose a threat to human health and to an aquatic predator, and whether COPCs found in sediments could potentially present a hazard to the local ecology. For the purposes of this RI, the harbor seal was selected as the aquatic predator, as discussed in the RAWP (BNI 1995a) and in subsequent sections of this RI Report. The results of the risk assessments were used to assess whether the risks posed by human health or ecological exposures to the COPCs would warrant remedial action.

## 1.3 FACILITY LOCATION AND DESCRIPTION

This section describes the local and regional setting, and presents an overview of the geographical, physical, historical, meteorological, and oceanographic attributes of the West Basin.



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### 1.3.1 Location and Physical Attributes

The LBNC, composed of NAVSTA Long Beach, the LBNSY and the West Basin, is located on the south side of Terminal Island within the Los Angeles and Long Beach Harbor districts (Figure 1-1, Regional Setting), approximately 3 miles west of downtown Long Beach, California. The LBNC is bounded by oil fields and container yards of Terminal Island on the north, Los Angeles Harbor on the west, San Pedro Bay on the south, and Long Beach Harbor Channel on the east.

The Long Beach Harbor West Basin, which is the focus of this RI, has been jointly used by NAVSTA Long Beach and the LBNSY. It is bounded on the west by the former NAVSTA, on the south by the Navy Mole, on the north by the LBNSY, and on the east by the ship-turning basin, which is part of the Port of Long Beach (POLB) complex. Ships leaving the Inner Harbor and East Basin use the entrance to the West Basin as a turning basin. Figure 1-2, Facility Plan, shows the locations of these major Naval facilities relative to West Basin.

The West Basin is approximately 700 acres, with water depths on the order of 45 feet. Eleven piers, used for the purposes of ship docking for maintenance and loading, presently exist in the West Basin (Figure 1-3, Project Base Map). These piers, generally constructed with concrete pilings, range from approximately 30 to 125 feet in width and 250 to 1,200 feet in length. Piers 1, 2, and 3 are located at the LBNSY, along the northern seawall of the West Basin. The other eight piers, located at the NAVSTA Long Beach, include Piers 6 and 7 along the northern seawall of the West Basin; Pier 9 in the northwest corner of the West Basin; and Piers 10, 11, 12, 15, and 16 in the southern portion of the West Basin along the Navy Mole. A pipeline system delivers fuel to the Defense Fuels Support Point in San Pedro from Pier 12 at the Navy Mole. A small-craft marina is located near the southwest corner of the West Basin. There are three dry docks in West Basin, located at the LBNSY, in the general area of Piers 1, 2, and 3.

### 1.3.2 History

In 1935, the U.S. Navy negotiated a 30-year lease with the City of Los Angeles for property to be developed into a naval facility. The Navy purchased a strip of coastline along the southern portion of Terminal Island from the Cities of Long Beach and Los Angeles in 1938. LBNC land, in general, was reclaimed through hydraulic fill operations conducted between 1938 and the early 1940s. A review of past aerial photographs has shown that in the early 1940s, the seawall that currently forms the northern boundary of the West Basin was constructed, and the area between the seawall and the former shoreline was filled with dredged materials and imported fill materials. During this period, Piers 1 through 7, the dry docks, and a breakwater north of the present Pier 9 location were constructed. The Navy Mole, which forms the western and southern boundaries of the West Basin, was constructed of dredged material and imported rock in late 1944 through early 1945. Construction of NAVSTA Long Beach and the Navy Mole created the West Basin in its present form. Following the construction of the Navy Mole, Piers 10, 15, and 16 were constructed in the mid to late 1940s. Pier 9 was constructed in the



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1950s during which time the breakwater was removed. Piers 11 and 12 were constructed in the late 1960s and mid- to late 1980s, respectively. Piers 4 and 5 were removed and the marina was constructed in the 1970s to early 1980s (JEG 1993a, NEESA 1983).

Since the creation of the West Basin, dredging has been conducted for the purpose of construction or relocation of West Basin piers. Maintenance dredging has also been conducted between these piers. The piers and dry docks were constructed for ship maintenance activities and fueling (JEG 1993a).

By 1946, NAVSTA Long Beach began maintaining facilities for the operation and berthing of tugboats, barges, and similar vessels. In 1948, the U.S. Naval Base, Terminal Island changed its name to U.S. Naval Station Long Beach. At that time, NAVSTA Long Beach provided support for active service ships and inactive ships of the Reserve Fleet (SWDIV 1994a).

From the early 1940s to the mid-1970s, drainage from various industrial areas and from cleaning and process tanks was discharged into the West Basin. Wastes were discharged through the storm drain system and from flushing of the dry docks (JEG 1993a).

During the 1940s and 1950s, a subsidence depression developed as a result of reservoir pressure reduction caused by oil production activities. The compaction of poorly consolidated reservoir sand threatened the eastern portion of Terminal Island with inundation (Strehle 1987). Maximum total subsidence at the center of the depression exceeded 29 feet. Subsidence has been controlled by water-flooding of production zones and continued monitoring of production and injection volumes. During this period, the West Basin subsided from less than 2 feet in the southwest to over 14 feet in the northeast (Mayuga 1968).

Currently, the West Basin harbors an active berthing and repair shipyard. Its primary use is for naval and other activities, such as providing maintenance facilities for the berthing operations of tugboats, barges, and similar vessels. The LBNSY provides logistical support for assigned ships, performing work in connection with construction, conversion, overhaul, repair, alteration, dry-docking, and fitting out of ships. Manufacturing operations, research, development, and test work have also been conducted at the LBNSY (JEG 1993a).

The West Basin is not used for recreational swimming. The outboard side of the Navy Mole, as well as its tip and inboard side extending to Pier 16, was permitted for pole fishing while NAVSTA Long Beach was in operation. As this RI Report was being written, the fishing areas on the Navy Mole were closed and off limits to all but authorized personnel.

NAVSTA Long Beach, which closed 30 September 1994, was one of the 11 military installations in California scheduled for closure under the Base Realignment and Closure Act II (BRAC II). The LBNSY has been ordered to close by September 1997 under BRAC IV.



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### 1.3.3 Operable Unit Designation

Thirteen sites suspected of being contaminated have been identified at the LBNC under the IR Program. These 13 sites have been grouped into three operable units (OUs) which define an installation's remediation strategy. Contamination within an installation may be ultimately addressed as one or several OUs or portions of OUs. OUs represent areas in which discrete investigations and remedial response actions may be implemented to manage migration of contaminants, or eliminate or mitigate releases of contaminants, as well as reduce or eliminate potential pathways of exposure. OUs are typically defined as:

- areas with similar media or with similar types of contaminants,
- areas that are geographically contiguous,
- areas that could be remediated using similar techniques,
- areas which could be remediated within a parallel time frame, and
- areas that are amenable to being managed in a single RI/FS.

The RI/FS Work Plan for LBNC (JEG 1993a) identified the West Basin of Long Beach Harbor as Site 7, and designated the site as OU-3. With the exception of Site 7, all IR Program sites at the LBNC are land-based sites, wherein the media of concern consist of soil and groundwater. For Site 7, on the other hand, the media of concern were defined as subtidal sediments. Since harbor sediments are unique among the 13 IR Program sites, Site 7 was designated as a single operable unit.

### 1.3.4 Regional Climate

The climate in the general region of West Basin is classified as Mediterranean, characterized by warm, dry summers and mild winters. The average high and low temperatures, recorded at the Long Beach Airport, are 83 degrees Fahrenheit (°F) and 63°F in July and 66°F and 44°F in January (Los Angeles/Long Beach [LA/LB] Harbor Departments and United States Army Corps of Engineers [U.S. ACOE] 1990). Most of the precipitation throughout the year occurs between November and March, with an average annual rainfall of about 12 inches. Heavy rains occasionally contribute to flooding and significant sediment discharge from adjoining streams and rivers. Because of the relatively arid climate, annual evaporation is 63.6 inches (National Weather Service 1982). The dominant wind direction is westerly, with prevailing winds blowing off the ocean. At night, air cooled from the surrounding hills typically produces a gentle offshore flow (JEG 1993a).

The Eastern Pacific High (EPH) pressure system and the moderating effect of the cool Pacific Ocean are the major influences on the regional climate (LA/LB Harbor Departments and U.S. ACOE 1990). In the summer, the EPH is at its strongest, most northerly position and is centered west of northern California. The EPH shelters southern California from polar storm systems. Descending air due to the EPH produces an elevated temperature inversion with a base of 1,000 to 3,000 feet. Marine air trapped within the



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inversion is condensed into fog and stratus clouds by the cool temperature of the ocean, which typifies summer weather in San Pedro Bay. Stratus clouds formed offshore move onshore during the evening hours, but retreat to the coastline during the morning hours when land temperatures rise. Summer tropical storms may also infrequently move in from the west coast of Mexico.

During winter, the EPH weakens and shifts to the south, allowing polar storm systems to pass through the region. The storms are characterized by strong, shifting winds and occasionally heavy precipitation. Winter storms are followed by low pressure troughs that are characterized by clear skies, cool temperatures, and gusty west to north winds as the systems move eastward. Simultaneously with the EPH, a thermal low persists in the interior desert region of southern California which results in a westerly, onshore flow of air for most of the year. Easterly winds are due to nocturnal and wintertime land breezes; daytime heating reverses the flow back onshore. During the fall and winter, the EPH often combines with high pressure over the continent resulting in extended periods of light winds and inversion conditions. Excessive buildup of high pressure can produce "Santa Ana" conditions characterized by warm, dry, northeasterly winds.

### 1.3.5 Sedimentology

Sediments in the West Basin can be mobilized and moved away from their existing locations to settle somewhere else, or to move out of the West Basin entirely. Conversely, sediments from outside could enter and settle in the West Basin. Redistribution of bottom sediments typically requires their initial mobilization, and subsequent transport by currents. The intensity of currents required to initiate sediment motion is far greater than that required for subsequent transport. The overall circulation (i.e., persistent currents) in the West Basin is not strong enough to mobilize bottom sediments. However, there are other mechanisms that can mobilize the bottom sediments and make them available for transport by relatively weak currents (JEG 1993a).

Induced turbulence from ship propellers as well as construction and dredging activities, which are relatively localized and of short duration, form the major mechanisms for suspension and mobilization of West Basin sediments. Once mobilized and suspended in the water column, currents caused by tides and wind are potentially capable of transporting the sediments. The suspended sediments susceptible to such transport generally consist of fine particulates such as clays, silts and fine sands (JEG 1993a).

Sediment particle size is a characteristic that determines the extent of sediment dispersion throughout the West Basin. Dispersion may be attributed to ship propeller disturbance, tides, currents, and other phenomena. Particle sizes have been observed to be highly variable, ranging from fine particulates in suspected depositional areas to coarse-grained sediments in open areas of the main channel where maintenance dredging has been conducted. Part of these sediments may have originated from the fill materials brought in during the 1930s and 1940s to construct the Navy Mole and other portions of the LBNC



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The areas beneath the West Basin piers represent suspected depositional areas, with accumulated shell hash due to concentrated mussel populations colonizing pier pilings. These suspected depositional areas are characterized by fine particulates, the presence of shell hash, and a strong odor, probably caused by anaerobic degradation of organic matter. In general, sediments underneath the piers have been described as dark, micaceous silt with some sand, gravel, and shell fragments (JEG 1993a). It is possible also that to some extent, sediments beneath the piers at the LBNSY may be remnants of the historical beach which is known to have existed there before the seawall and piers were constructed.

## 1.3.6 Oceanography

The West Basin is located in the San Pedro Bay region of the Southern California Bight (Bight). This region, which lies southeast of Santa Monica Bay, is defined oceanographically as the submarine shelf bounded by the Palos Verdes peninsula to the north, the Newport Submarine Canyon to the south, and the mainland shelf break extending 18 miles seaward (south) of Long Beach. The Bight itself is a 100,000 square mile submerged continental borderland of the Pacific Ocean bounded on the north, east, and southeast by a large mountainous reach of the North American coastline. The Bight extends from Point Conception, California, 360 miles south of Cabo Colnett, Baja California, Mexico (Dailey et al. 1993). The Bight is bounded on the west by the inner border of the southward-flowing California Current and by the outer edge of the continental shelf. The prominent distinguishing feature of the Bight is the eastward indentation of the coastline that allows for a northward flowing return eddy, the Southern California Countercurrent. As a result of its unique circulation patterns and complex bathymetry, the Bight acts as an enclave of region-specific populations of marine life, a trap for warm, equatorial water, and a reservoir for chemical components entering from the land, air, and sea.

Understanding the physical processes (e.g., currents, tides, and waves), chemical characteristics (e.g., naturally occurring chemical constituents in water and sediment), biological habitats, and indigenous organisms of the West Basin facilitates comprehending its specific oceanographic characteristics. Physical characteristics, such as water transparency and temperature, may reflect overall water quality. Currents, tides, and waves are responsible for water circulation patterns which, in turn, affect the concentration and distribution of chemicals within West Basin. Water chemistry, including dissolved oxygen (DO), pH, salinity, metals and organic compound concentrations, is also an indication of overall water quality and closely related to biological activity. Important marine biological components of West Basin include plankton, plant life, benthic invertebrates, fish, and marine birds.

### 1.3.6.1 PHYSICAL OCEANOGRAPHY

Aspects of physical oceanography considered in this section include tides, waves, currents, temperature, transparency, and bathymetry. Tidal, wave, current, and bathymetric data



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provide a basis for predicting sediment-bound contaminant transport dynamics. Water temperature and transparency provide a general measure of water quality.

Tidal currents generally create water circulation patterns. Southern California coastal tides are semidiurnal, with two low and two high tides of unequal height every 25 hours. Rising tides, which vary with the phase of the moon, enter Long Beach Harbor and flow up the various channels and basins; flows reverse during falling tides. The tidal range is greatest during spring tides (i.e., during new and full moons), resulting in the strongest currents. Tidal range is least during neap tides (i.e., during first and third quarter moons), resulting in the weakest currents.

The mean tide in the Long Beach Harbor has been determined to have a maximum range of 5.5 feet; a maximum tidal discharge of 23,333 cubic feet per second ($ft^3/s$) (flood flow discharge) and 19,444 $ft^3/s$ (ebb flow discharge); an average flow volume of 278 x $10^6$ $ft^3$/tidal cycle (flood flow) and 277 x $10^6$ $ft^3$/tidal cycle (ebb flow); and a net flood flow volume per tidal cycle of 1 x $10^6$ cubic feet ($ft^3$) (Seabergh and Outlaw 1984). The maximum velocity at the entrance to the LA/LB Harbor has been estimated at 0.54 feet per second (ft/s) for ebb tide and 0.46 ft/s for flood tide. Velocity magnitudes throughout the LA/LB Harbor, in general, are small, usually less than 1 ft/s. Water circulation patterns within West Basin are clockwise. The small differences in tidal elevations (5.5 feet for West Basin), which normally govern water flow patterns, indicate that other factors (e.g., wind) have a stronger influence on circulation within inner LA/LB Harbor areas such as West Basin (Seabergh and Outlaw 1984).

Waves and swells in the Long Beach Harbor are small due to abundant seawalls and breakwaters throughout the harbor complex, with wave periods of 1 to 3 seconds and swell periods of 10 to 20 seconds. Seiche waves occur in the Long Beach Harbor with periods of 30 seconds to greater than 1 hour. Regular seiching is estimated to occur at intervals of 1.25 hours and equals 5 percent of the total tidal exchange (LA/LB Harbor Departments and U.S. ACOE 1990).

The temperature within the West Basin water column varies spatially and by season. It is cooler in the winter and warms up during the spring and summer. In addition to climatic conditions, water temperature of the West Basin reflects the proximity of open ocean, port facilities, and surface water discharges. Temperatures measured in the West Basin during June 1988 indicate a water surface temperature of 61°F and a 20-foot depth temperature of 57°F (POLB 1988). Mean water temperatures, as measured by the POLB at two stations within West Basin between 1971 and 1991, were 64°F at the surface and 62°F at a 20-foot depth (JEG 1993a).

Water transparency, a measure of vertical visibility in depth below surface, is affected by suspended materials from runoff, dredging activities, and shipping operations. It is also affected seasonally by plankton blooms. As a representative data point for the West Basin, transparency was measured to be 12 feet during June 1988 (POLB 1988). Mean transparency, as recorded monthly by POLB between 1971 and 1991 in West Basin, was measured at 12.2 feet (JEG 1993a).



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Depths within the West Basin range from 30 feet close to the seawall at LBNSY to 69 feet at the entrance to West Basin. This entrance also acts as a turning basin for Navy and POLB ships. Water depths at the piers within West Basin average about 46 feet, except at Pier 9, where the water depth averages 36 feet (JEG 1993a).

### 1.3.6.2 CHEMICAL OCEANOGRAPHY

Aspects of chemical oceanography considered in this section include DO, pH, salinity, nutrients, and metals. These measurements provide background levels with which to compare potentially adverse effects caused by discharges to the West Basin.

DO levels vary by area, water depth, and season. Low levels of DO may occur due to a number of factors, including eutrophication (e.g., localized phytoplankton blooms) as a result of various types of discharge. In June 1988, the DO concentration of West Basin surface waters was found to be 9.3 milligrams per liter (mg/L) and 7.0 mg/L at 20 feet below surface (POLB 1988). Mean DO levels within West Basin, as recorded monthly between 1971 and 1991 by POLB, have been reported as 8.4 mg/L at the surface and 8.1 mg/L at a depth of 20 feet. These DO levels are above the 5 mg/L level recommended for marine environments to maintain a healthy aquatic habitat (U.S. EPA 1986).

The pH of Long Beach Harbor waters ranges from 7.0 to 8.7 (LA/LB Harbor Departments and U.S. ACOE 1990). Higher values occur at the surface during warm weather periods and lower readings are found in deeper, cooler water. The measured pH levels in the Long Beach Harbor are within the pH range of 6.5 and 8.5 necessary in marine waters to maintain a healthy aquatic habitat (U.S. EPA 1986).

Salinity in harbors is influenced by the influx of ocean water, evaporation, precipitation, freshwater runoff, and wastewater discharges. The salinity of Long Beach Harbor waters ranges from 10 to 34.2 parts per thousand (‰) (LA/LB Harbor Departments and U.S. ACOE 1990). Mean salinity of the inner harbors of Los Angeles and Long Beach has been reported as 33.5 ‰ (Allan Hancock Foundation 1975), which is similar to the salinity of open ocean water. This is reflective of relatively little freshwater input into the receiving waters of the LA/LB Harbor.

Nutrient levels are highly variable in the LA/LB Harbor waters due to varying types of discharges and climatic conditions. Nutrient concentrations tend to increase dramatically during periods of heavy rainfall, and may provide a nutrient base for localized algal blooms. This phenomenon, in turn, may lead to eutrophication and severe pollution episodes. During a survey of nutrient concentrations conducted in 1978, concentrations in Long Beach Harbor ranged from 0.12 to 120 mg/L for ammonia, up to 5.4 mg/L for nitrite, up to 83 mg/L for nitrate, and 0.17 to 12 mg/L for phosphate (LA/LB Harbor Departments and U.S. ACOE 1990). Some of these concentrations could be problematic if sustained over a period of time, but no time-series measurements of nutrients in water are known to have been made for the LA/LB Harbor waters.

Concentrations of United States Environmental Protection Agency (U.S. EPA) priority pollutant metals have been measured in the past in association with different surveys



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including the receiving waters of eastern Long Beach Harbor in support of the Pier J expansion project (LA/LB Harbor Departments and U.S. ACOE 1990). These measurements provide a backdrop for more current water column measurements, should they be taken at a later date. Values ranged from 1.9 to 16 micrograms per liter (µg/L) for chromium; 8.7 to 14 µg/L for copper; 0.21 to 0.26 µg/L for lead; up to 0.4 µg/L for nickel; up to 0.7 µg/L for silver; and 6.2 to 9.6 µg/L for zinc. Some of these metals concentrations, especially copper, exceed federal ambient water quality criteria (2.9 µg/L for copper). Without time-series measurements, however, it is difficult to determine whether the measured levels are relatively constant or variable over time.

## 1.4 DEMOGRAPHICS AND LAND USE

General land use in the vicinity of the LBNC and West Basin is primarily port-related, commercial or industrial. Facilities in the vicinity of the LBNC include tank farms, automobile terminals, a cement terminal, cargo handling, and storage terminals. The areas east and west of the LBNC on Terminal Island are used for commercial shipping, liquid bulk handling, heavy industrial activities, and commercial fishing activities. The area north of the LBNC on Terminal Island is used for oil production activities. Terminal Island comprises the western portion of POLB and the eastern portion of the Port of Los Angeles (POLA). These ports participate in heavy shipping traffic, container storage, cargo handling, dredging activities, and loading/offloading operations.

## 1.5 COMMUNITY RELATIONS

As part of the environmental investigation and cleanup effort at the LBNC under the IR Program, a CRP was prepared in August 1993 to be implemented concurrently with the RI/FS work being performed at West Basin. The CRP describes the public participation program designed to assure involvement by the local community.

A Technical Review Committee (TRC) was formed for the IR Program at the LBNC in April 1992. The TRC includes the DON and environmental regulatory agency representatives. The purpose of this TRC is to review IR Program documents and comment on the cleanup activities.

The LBNC formed a Restoration Advisory Board (RAB) in April 1994 to invite members of the public to become involved in the environmental restoration program. The RAB expanded the TRC by including members of the public in the existing committee of regulatory agency representatives and Navy personnel.

Since April 1994, the 20-member RAB has met regularly, and has participated in site tours and educational workshops. The LBNC RAB will be invited to review and comment on this RI Report at the Draft stage.

## 1.6 REGULATORY STATUS

The State Department of Health Services issued a Resource Conservation and Recovery Act (RCRA) hazardous waste facility permit to the LBNSY in September 1983 (U.S. EPA



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ID No. CA6170023109) to operate a hazardous waste storage facility. The permit expired in August 1988 and the LBNSY applied for a RCRA Part B permit to modify its listed permit requirements. The permit authorized the LBNSY to receive, handle, and store hazardous wastes generated by the LBNSY and by two additional off-site facilities, the former NAVSTA Long Beach (closed 30 September 1994) and the former Naval Hospital Long Beach (closed 31 March 1994). In 1993 the LBNSY received the RCRA Part B modification for changes to the facility and changes to specific hazardous waste activities.

Although the West Basin (Site 7) is not listed on the U.S. EPA National Priorities List (NPL), the DON's current policy is that response actions at both NPL and non-NPL sites be accomplished in accordance with the National Contingency Plan (NCP) under CERCLA. The Department of Toxic Substances Control (DTSC) has agreed to accept CERCLA remedial action documents under the corrective action provisions of the LBNSY's RCRA permit (RCRA Corrective Action Program), since these provisions will be addressed in the environmental response actions taken at the West Basin. The DON is the lead federal agency for the implementation of these actions, and the DTSC is the lead state agency.

## 1.7 CONSIDERATION OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

The CERCLA Compliance Policy, as set forth in Section 121(d)(2)(A) of CERCLA, specifies that Superfund remedial actions meet any federal standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate requirements (ARARs). Federal statutes that are specifically cited in CERCLA include the Solid Waste Disposal Act (SWDA), the Toxic Substances Control Act (TSCA), the Safe Drinking Water Act (SDWA), the Clean Air Act (CAA), the Clean Water Act (CWA), and the Marine Protection Research and Sanctuaries Act (MPRSA) (U.S. EPA 1988a). The Compliance Policy also includes the provision that states ARARs must be met if they are more stringent than federal requirements. If no ARARs exist that address a particular circumstance at a site, or if existing ARARs do not provide for adequate protection of human health and the environment, then non-promulgated advisories, criteria, and guidelines are "to be considered" (TBC) in setting remedial action objectives.

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ARARs are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that:

- specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA cleanup site (i.e., an applicable requirement), or
- address problems or situations sufficiently similar to those encountered at the site, that their use is suited to the particular site (i.e., a relevant requirement).



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In some circumstances, however, a requirement may be relevant but not necessarily appropriate for the site-specific situation; in such a case, the requirement is not considered an ARAR.

Section 121(d)(4) of CERCLA identifies six circumstances under which ARARs may be waived (U.S. EPA 1988a):

- The remedial action selected is only a part of a total remedial action (interim remedy) and the final remedy will attain the ARAR upon its completion.
- Compliance with the ARAR will result in a greater risk to human health and the environment than alternative options.
- Compliance with the ARAR is technically impracticable from an engineering perspective.
- An alternative remedial action will attain an equivalent standard of performance through the use of another method or approach.
- The ARAR is a state requirement that the state has not consistently applied (or demonstrated the intent to apply consistently) in similar circumstances.
- For Section 104 Superfund-financed remedial actions, compliance with the ARAR will not provide a balance between protecting human health and the environment and the availability of Superfund money for response at other facilities.

ARARs may be categorized as chemical-, location-, and action-specific (U.S. EPA 1988a). Chemical- and location-specific requirements provide the basis for determining the objectives and goals of remedial action by defining acceptable exposure levels and setting restrictions on activities within specific locations (e.g., floodplains or wetlands), respectively. Potential chemical- and location-specific ARARs are identified on the basis of the compilation and evaluation of existing site data. Action-specific requirements provide the basis for determining how the remedial action will be carried out during the feasibility study process by setting controls or restrictions for particular treatment and disposal activities.

The actual determination of which requirements are applicable or relevant and appropriate is made by the lead state agency in consultation with the support agency at a time when the lead state agency has had the opportunity to review data and interpretations. Upon completing its review of this Draft RI Report for the West Basin, it is expected that the lead state agency (DTSC) will provide to SWDIV federal and California state ARARs for West Basin sediments and fish. In the meantime, however, several principal potential chemical- and location-specific ARARs and TBCs were reviewed for the purpose of this RI. These ARARs and TBCs are described in the following paragraphs.



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### 1.7.1 Water Quality Control Plan for Ocean Waters of California (California Ocean Plan)

The State Water Resources Control Board (SWRCB) adopted the Ocean Plan on 6 July 1972 and revised the plan in 1978, 1983, 1988, 1990, and 1995. The Ocean Plan requires the control of the discharge of waste to ocean waters to protect the quality of such waters for human use and enjoyment. The Ocean Plan is reviewed at least every 3 years to guarantee that the current standards are adequate and that they do not allow degradation of marine species or pose a threat to public health. Chapter II of the Ocean Plan currently contains three narrative sediment quality objectives, prohibiting deposition of 1) inert solids, 2) toxic chemicals, and 3) other organic materials in sediments to levels which would cause degradation of marine life (SWRCB 1990). However, no numerical objectives for sediment quality are included to define unacceptable levels of pollutants.

### 1.7.2 Water Quality Control Plan for Enclosed Bays and Estuaries of California (California Enclosed Bays and Estuaries Plan)

The SWRCB adopted the Enclosed Bays and Estuaries Plan on 11 April 1991 to protect the quality of enclosed bays and estuaries for use and enjoyment by the people of California. The plan was amended in 1993, and it is reviewed at least every 3 years to ensure that the water quality objectives defined within the plan are appropriate and that the plan does not allow degradation of beneficial uses. Chapter II of the Enclosed Bays and Estuaries Plan contains a narrative sediment quality objective stating that the concentrations of toxic pollutants in sediments shall not adversely affect beneficial uses (SWRCB 1993). However, no numerical objectives for sediment quality are included to define unacceptable levels of toxic pollutants.

### 1.7.3 Work Plan for the Development of Sediment Quality Objectives for Enclosed Bays and Estuaries in California

California Water Code Section 13392.6 requires the adoption of sediment quality objectives by the SWRCB. The Work Plan describes the activities to be undertaken in order to develop sediment quality objectives and contains the SWRCB's estimates of time and costs required for the development of such objectives for California's enclosed bays and estuaries (SWRCB 1991). Numerical sediment quality objectives, however, had not been finalized at the time of writing this RI Report.

### 1.7.4 National Sediment Quality Criteria and Guidelines

Sediment quality criteria and guidelines have been issued by the U.S. EPA (1993a) and Long et al. (1995). The U.S. EPA has issued final criteria documents for five chemicals: phenanthrene, acenaphthene, fluoranthene, endrin, and dieldrin. Long et al. have issued criteria (referred to as "effects range-low" [ER-L] and "effects range-median" [ER-M] values) for trace metals, polychlorinated biphenyls (PCBs), pesticides, and polynuclear aromatic hydrocarbons (PAHs). Although not official California State guidance, these



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values can be used as guidelines to evaluate whether sediment at a site would possibly have toxic effects based on chemical concentrations.

## 1.8 REPORT ORGANIZATION

This RI Report is divided into eight sections of text, and includes figures, tables, and Appendices A through V. The report summary and a listing of acronyms and abbreviations used are presented at the beginning of this report.

Section 1 is the introduction to the RI Report, and describes the planning documents that were the basis of this RI, discusses the purposes and scope of the work of this RI, presents information on the location of West Basin and its history, and provides a general overview comprising regional climate, sedimentology, and oceanography. Section 1 also summarizes land use; presents an overview of the community relations strategy; and discusses the regulatory status of LBNC and West Basin. Section 1 concludes with an overview of this RI Report.

Section 2 summarizes previous investigations at and in the vicinity of West Basin, including environmental assessments and studies conducted at the LBNC; scientific surveys including physiochemical and biological investigations; and dredging activities. In addition, Section 2 provides a survey of documents describing the past and current discharges into West Basin waters.

Section 3 discusses the site characterization procedures beginning with the rationale for the overall sampling and analysis program. Also discussed are the field methods used to collect sediment and biological samples; sample documentation, storage, processing, and shipping procedures; sampling equipment decontamination procedures; and procedures on collection, storage, and disposal of investigation-derived waste.

Section 3 also provides descriptions of the laboratory methods, including descriptions of physical and chemical analyses, bioassay testing, and benthic community analysis, and provides a discussion of methods used to analyze clam and fish tissue. Other topics include QA/QC procedures used throughout the various field and laboratory analysis operations; the verification and validation measures taken to assess the quality of analytical and biological data; and database management issues. Section 3 closes with a description of the statistical methods used to analyze project data.

Section 4 presents the results of site characterization and describes general sediment characteristics, followed by discussions of project reference conditions, and chemical and biological site characteristics. Sediment evaluation zones are discussed in detail, followed by selection of COPCs and AOPCs for human health and ecological risk assessments.

Section 5 presents the human health risk assessment and its conclusions. The methods used and the exposure and toxicity assessments, as well as the risk characterization, are discussed in detail.

Section 6 presents the focused ecological risk assessment and its conclusions. An overview of the methods used, as well as the development of the conceptual framework,



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are provided, followed by an assessment of ecological effects. Subsequently, risk characterization is presented, including estimation of risk and uncertainty analyses of risk characterization. Section 6 also identifies whether or not any portions of West Basin sediments are found to require remedial action.

Section 7 presents conclusions and recommendations.

Section 8 contains a listing of the references cited in this RI Report.

A Glossary of scientific and miscellaneous terms used throughout this RI Report follows the list of references. The subjects discussed in this report are of a scientifically complex nature. To provide clarity and a handy quick-reference resource, the Glossary was carefully prepared and contains a comprehensive collection of terms and their definitions.

The following appendices are attached in support of and for completeness of this RI Report:

| Appendix No. | Appendix Title |
|---|---|
| A | Technical Memorandum No. 4: Implementation of Final RI/FS Sampling and Analysis Plan |
| B | Technical Memorandum No. 5: Fish Sampling and Analysis Plan |
| C | Addendum to RI/FS Work Plan and Risk Assessment Work Plan |
| D | Sediment Analytical Data Excerpted from NAVSTA Long Beach and LBNSY Site Inspection Reports |
| E | Regional Ambient Conditions |
| F | Health and Safety Close-Out Summary Report |
| G | Chain of Custody Forms |
| H | Investigation-Derived Waste Management Plan and Removal Report |
| I | Laboratory Standard Operating Procedures for Test Methods not Included in SW-846 |
| J | Laboratory Reports: Sediment Particle Size Distribution |
| K | Laboratory Reports: Sediment Total Organic Carbon |
| L | Laboratory Reports: Sediment, Tissue, and Fish Bile Chemical Analysis |
| M | Laboratory Reports: Sediment and Pore Water Toxicity Bioassay |
| N | Benthic Community Analysis Report |
| O | Data Validation Reports |
| P | Project Database |
| Q | Subsurface Sediment Boring Logs |
| R | Particle Size Distribution Curves |
| S | Statistical Calculations |
| T | Human Health Risk Assessment Results |
| U | COPEC Fate and Transport |
| V | Life History and Biology of California Halibut and White Croaker - A Synopsis |

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## SECTION 2

# SUMMARY OF PREVIOUS INVESTIGATIONS AND IDENTIFICATION OF DISCHARGES

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Section 2

# SUMMARY OF PREVIOUS INVESTIGATIONS AND IDENTIFICATION OF DISCHARGES

This section summarizes environmental investigations conducted at the LBNC as well as regional scientific surveys conducted at or in the vicinity of the West Basin. In addition, documents containing information on discharges into the LA/LB Harbor and the West Basin that were reviewed as part of this RI are summarized herein, as well as dredging plans both within the West Basin and the LA/LB Harbor. Unless otherwise indicated, no attempt was made to perform independent verification of materials in the reports discussed herein.

## 2.1 SUMMARY OF PREVIOUS INVESTIGATIONS

This section provides a review of previous investigations relevant to the West Basin as well as a historical backdrop for the current understanding of site-specific and regional environmental conditions.

### 2.1.1 Studies Within the LBNC

Since the 1960s, several environmental investigations have been conducted at the LBNC. Few, however, have related specifically to West Basin sediments. An overview of the key investigations relevant to the IR Program and West Basin in general is provided below in chronological order.

#### 2.1.1.1 1969 INDUSTRIAL WASTE STUDY

In December 1969, SWDIV conducted an Industrial Waste Study at LBNC (SWDIV 1969). One of the objectives of this study was to determine the nature and quantity of liquid and solid industrial wastes being discharged into the storm drain system, discharged directly into the West Basin, or buried underground. This was the first known environmental investigation of "industrial" (now generally referred to as "hazardous") waste at LBNC. This study reported the discharge of industrial wastewater into the West Basin, placement of industrial waste liquids and sludges into pits on the Navy Mole, and the use of solid waste and sandblast grit to enlarge the Navy Mole.

#### 2.1.1.2 1983 INITIAL ASSESSMENT STUDY

An Initial Assessment Study (IAS) for the LBNC was completed in August 1983 (NEESA 1983). The IAS was similar to a Preliminary Assessment (PA) under the CERCLA process. The purpose of this IAS was to identify and assess potential threats to human health and the environment caused by past hazardous materials storage, handling, or disposal practices at Naval installations. As such, the IAS was the first comprehensive study by the DON to identify contaminated areas at LBNC resulting from past operations. The study included information on waste generating sources, waste handling practices, storage and transportation procedures, waste processing practices, and descriptions of disposal sites and potentially contaminated areas.



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The IAS included a review of available records, aerial photographs, surface and aerial surveys, and personnel interviews. Based on information obtained from the study, 12 potentially contaminated sites were identified at LBNC (JEG 1993a), one of which was Site 7, consisting of the West Basin sediments. Each of the 12 sites was assessed with regard to contamination characteristics, migration pathways, and potential receptors. The study concluded that none of the 12 sites posed a sufficient threat to human health or the environment to warrant a confirmation study, but recommended various precautionary measures (JEG 1993a).

#### 2.1.1.3 1989 RCRA FACILITY ASSESSMENT

A RCRA Facility Assessment (RFA) of the LBNC was prepared in 1989 by the California Environmental Protection Agency (Cal-EPA) DTSC, formerly the Department of Health Services (DHS 1989). The RFA was performed to identify and evaluate solid waste management units (SWMUs) and other areas of concern at LBNC. A records review, evaluation of existing data, personnel interviews, and a visual site inspection were conducted to evaluate the potential for releases of hazardous constituents from identified SWMUs. The RFA recommended further action at the 12 sites identified in the IAS.

#### 2.1.1.4 1991/1992 SITE INSPECTION

Site Inspections (SIs) were conducted concurrently in 1991 at the NAVSTA Long Beach and LBNSY; reports for these SIs were finalized in November 1992 (JEG 1992a and 1992b). The objectives of the SIs, which followed the PA in the CERCLA process, were to:

- verify the presence of hazardous substance contamination at the 12 sites identified in the IAS,
- assess whether contamination at these sites exists at concentrations which warrant further action, and
- evaluate potential contaminant migration pathways and potential targets for scoring under the U.S. EPA Hazard Ranking System (HRS).

The NAVSTA Long Beach SI addressed Sites 1 through 7, which lie within the NAVSTA Long Beach boundaries, and the LBNSY SI addressed Sites 7 through 12, which lie within the LBNSY's boundaries. Site 7 is shared by both the NAVSTA Long Beach and LBNSY; therefore, portions of the site contiguous with the NAVSTA Long Beach and the LBNSY were designated as Sites 7A and 7B, respectively, and were addressed in separate SI reports.

To accomplish the SI objectives at Site 7, a total of 15 sediment core samples were collected as part of the field effort. No surface sediment collections (uppermost 10 cm or less) or biological samples were collected as part of this effort. No sediment sampling was conducted under the piers in the West Basin. Fourteen of the sampling locations were targeted to be as close to the storm water outfalls as possible (along the northern seawall), and a background sample was taken just off the tip of the Navy Mole near the entrance to



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West Basin. The results of the laboratory analyses conducted on these samples were used to evaluate contaminant releases via various pathways in accordance with U.S. EPA guidance. Analytical data for sediments, excerpted from the SIs, are presented in Appendix D. Field data indicated the presence of numerous organic contaminants in sediments, in particular PAHs, at moderate to high levels, and several metals in sediments at low to moderate levels. Because of the limited number of samples collected and the restricted spatial coverage, further investigation was recommended for Site 7.

#### 2.1.1.5 1993 RI/FS WORK PLAN

The RI/FS Work Plan (JEG 1993a) is a facilitywide document that outlines a program for evaluating potentially contaminated areas at the LBNC as part of this RI/FS process. The following tasks were performed to develop work plans for each of the sites identified within the LBNC:

- review of existing data,
- development of a conceptual model representing site conditions and potential exposure pathways,
- performance of a screening-level assessment to identify where risk-based or regulatory-based protectiveness criteria may have been exceeded, and
- determination of whether the site required further investigation or warranted a removal action.

Existing sediment chemistry data specific to West Basin (JEG 1992b and 1993a) were reviewed as part of the Work Plan development process. Field work, conducted as part of the SI, resulted in the identification of chemicals of potential concern, such as PAHs, PCBs, pesticides (e.g., dichloro-diphenyl-trichloroethane [DDT]), arsenic, copper, lead, mercury, and zinc. The SI results indicated that measured concentrations of these chemicals in sediment exceeded sediment screening-level criteria. The screening levels (SLs) included ER-L, ER-M, and equilibrium partitioning (EP) (Long and Morgan 1990); and the Puget Sound Standards (WSDOE 1991) of minimum cleanup levels and SLs. As a result of this screening evaluation, it was determined that further evaluation of sediment toxicity would be required prior to specifying remediation of sediment.

The conceptual site model prepared for West Basin sediments identified potential exposure pathways via bottom sediments and surface water. Potential human receptors were identified as those individuals who consume fish caught in West Basin. Significant aquatic receptors were identified as invertebrates (including polychaete worms and crustaceans) and fish. A sediment transport conceptual model was also developed to describe sediment mobilization and transport within West Basin.

The Work Plan also presented an approach to characterize risk associated with contaminated sediments. This approach was based on evaluation of sediment analytical data, bioassay results, and tissue bioaccumulation test results to determine the need for sediment remediation. Potential remedial action alternatives proposed in the Work Plan included capping, dredging and disposal, and natural recovery.



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## 2.1.2 Scientific Surveys

This section presents an overview of some of the key physicochemical and biological investigations conducted specifically within the West Basin as well as those conducted within the LA/LB Harbor and the Bight. Areas within the Bight, outside the LA/LB Harbor, are appropriately comparable to West Basin, especially those areas with similar land/water use and contaminant sources/inputs (e.g., San Diego Bay). The Bight's unique geography and hydrography results in a regionally specific marine ecosystem that extends from Point Conception, Santa Barbara County, California to Cabo Colnett, Baja California, Mexico.

Dailey et al. (1993) report that the LA/LB Harbor may have been studied and characterized more thoroughly and for a longer time than any other similar body of water in the world. The first comprehensive survey of environmental conditions in the LA/LB Harbor was performed in 1951 (Anon. 1952) and included analyses of water, sediment, and benthic populations. A more detailed seasonal study was conducted in 1954 (Reish 1959) using bottom conditions, species composition, and water characteristics as a basis for documenting environmental quality at the time. This survey distinguished "polluted" zones and "very polluted" zones through identification of specific benthic organisms inhabiting the bottom. Generally, the most "polluted" zones occurred between piers located along the seawall of West Basin shared by the NAVSTA Long Beach and the LBNSY, as well as other locations within the LA/LB Harbor.

Various pollution abatement programs were initiated by the state of California, beginning in Dominguez Channel in 1968, which extended throughout the LA/LB Harbor during the 1970s. Complying with these orders, the improvement in biological conditions was immediate (Dailey et al. 1993). One factor contributing to the recovery was that many of the local benthic invertebrate species have extended reproductive periods throughout the year as a result of the mild climate, and such reproductive capability undoubtedly played an important role in the rapid recovery of the polluted harbor. Benthic species which were formerly dominant and known to be resistant to pollution gave way to more sensitive species; species diversity increased dramatically as well during this time. This improvement has been documented by a series of publications edited by Soule and Oguri (Soule and Oguri 1974; 1975; 1976; 1978a; 1978b; 1979; 1980; 1986; 1987; 1990). Improvements in biological conditions were accompanied by decreases in chemical and total organic carbon (TOC) concentrations in sediment as a result of discontinuing waste discharges into LA/LB Harbor receiving waters and sediment. Investigations conducted between 1973 and 1978 have chronicled changes over time in the LA/LB Harbor, with decreases in cadmium, nickel, lead, and total PCB concentrations. Other contaminants remained about the same, although arsenic concentrations were shown to increase to a small extent.

Regional chemical concentrations in sediment and fish tissue, and West Basin benthic biological data, most recently characterized in 1978, are presented in Appendix E. Data deemed appropriate to describe regional ambient conditions for the West Basin are those which have been obtained from the West Basin itself, LA/LB Harbor, and certain areas of



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the Bight (i.e., areas with similar land/water use and contaminant sources/inputs like San Diego Bay). Appendix E also provides an overview of contaminant concentrations measured in surface sediment, white croaker tissue, and California halibut tissue, respectively, which provide a basis for comparison with project-specific sediment and tissue data.

### 2.1.2.1 PHYSICAL OCEANOGRAPHIC SURVEYS

Few investigations of physical oceanography have been conducted within the West Basin and its environs. The principal studies include the POLB water quality monitoring program and the hydrodynamics investigations conducted by the U.S. ACOE.

The POLB has collected monthly water quality data at 16 stations throughout the Long Beach Harbor and its channels over the last 20 years (JEG 1993a). Physical water quality measurements included water temperature and transparency. A comparison of the mean values for these parameters, as measured between 1971 and 1991, between the two stations located in West Basin and all 16 stations was documented in the CLEAN I RI/FS Work Plan (JEG 1993a). The data indicate that water quality in the West Basin is comparable to that in other parts of Long Beach Harbor and may even be slightly better in terms of transparency.

The most extensive investigations of LA/LB Harbor hydrodynamics have been conducted by the U.S. ACOE Waterways Experiment Station (McAnally, Jr. 1975; Seabergh and Outlaw 1984; Sargent 1989; Vemulakonda et al. 1991). These studies were conducted to determine tide- and wind-driven circulation patterns and flushing rates of the LA/LB Harbor's inner basins. In general, these studies found that water circulation in the West Basin is restricted; its configuration and location results in less mixing of water than in the outer harbor.

Tidal circulation patterns for spring, mean, and neap tidal conditions were determined using a two-dimensional, depth-averaged, second order finite-difference model by Seabergh and Outlaw (1984); tidal verification was previously conducted by McAnally, Jr. (1975). The fluid flow equations used in the numerical tidal circulation model, titled the Waterways Experiment Station Implicit Flooding Model (WIFM), were derived from the Navier-Stokes equations. The WIFM predictions were verified using dye tests conducted in the outer LA/LB Harbor Complex (Seabergh and Outlaw 1984).

The U.S. ACOE also investigated harbor oscillations caused by long waves using a finite element numerical model (Sargent 1989) and determined where ship motion problems were most likely to develop. Numerical modeling of tide- and wind-driven circulation of LA/LB Harbor was conducted by applying a three-dimensional, hydrodynamic model called CH3D (Vemulakonda et al. 1991), the results of which were used to drive a water quality model. Flushing rates, water circulation, and DO levels were compared at various stations throughout the LA/LB Harbor. The CH3D model was calibrated and verified using field data collected in 1987 (surface elevation data, current measurements, current velocities, drogue study) (McGehee et al. 1989). Comparison of the CH3D model results with the 1987 observed surface elevation and currents indicated that the model reproduced



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prototype behavior (i.e., the calibration and verification proved successful [U.S. ACOE 1990]).

Tracer studies of the LA/LB Harbor were conducted by the U.S. ACOE to determine flushing rates of the inner basins. The flushing studies consisted of inserting a tracer and observing its movement and dilution with time. Results of the tracer simulation for West Basin indicated that dilution to 20 percent of the initial tracer concentration was achieved in 16 days (Hall 1990). This moderate level of dilution is suggestive of the flushing rates predicted by the models summarized above. Tracer simulations for the East Basin channel of LA Harbor, which is more restricted by land than West Basin, and Seaplane Anchorage (the area between West Basin of Middle Harbor and Fish Harbor) of LA Harbor, which is less restricted by land than West Basin, were conducted. Results revealed 20 percent of initial tracer concentration remained after 25 days in the LA Harbor East Basin channel; the tracer was diluted to 20 percent of initial concentration after 10 days in Seaplane Anchorage.

### 2.1.2.2 CHEMICAL SURVEYS

The following section provides an overview of water column chemical surveys and sediment and marine fish tissue contaminant monitoring studies conducted both within and in areas surrounding West Basin.

#### *Water Column Surveys*

The literature review conducted for water column data indicated that the POLA and POLB, with their corresponding Harbor Departments, have most frequently taken measurements of DO, pH, salinity, nutrient levels, and trace metals concentrations in surface water, although most were taken outside of the immediate West Basin area. It is difficult to apply historical water column data to the understanding of current conditions in the West Basin due to its dynamic state, and because most of the contaminant inputs have changed over time as well.

#### *Sediment Surveys*

In 1973, Chen and Lu (1974) analyzed surface sediment samples for trace metals and organochlorine compounds (DDT, PCBs, and dieldrin) within the LA/LB Harbor as part of the Harbors' Environmental Projects sponsored by the University of Southern California's Allan Hancock Foundation. More sampling and analysis within the LA/LB Harbor was conducted for trace metals, DDT, and PCBs in 1974 (Allan Hancock Foundation 1975). Soule and Oguri (1980) produced analytical data for metals, DDT, and PCBs from the LA/LB Harbor in 1978. The general trend, as documented by the Allan Hancock studies, in sediment chemical concentrations over time is that while arsenic and zinc concentrations seemed to be increasing, cadmium, chromium, lead, total PCBs, and total DDT concentrations have actually decreased within the LA/LB Harbor. Copper and mercury levels remained the same throughout the 1970s, according to these studies.



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The Southern California Coastal Water Research Project (SCCWRP), a scientific body established to study the effects of pollution in the Southern California marine environment, has conducted several major surveys of chemical and biological conditions in reference areas off the coast of Southern California in the last 15 years (1977, 1985, and 1990). The objectives of these surveys were to determine distribution of marine pollutants within the Bight, to evaluate potential biological effects, and to evaluate potential sources of these problems. Sampling stations were located along the 30-, 60-, and 150-meter isobaths of the mainland shelf and bracketed the major ocean municipal wastewater discharges (Woodland Mearns 1979, Thompson et al. 1987, and Thompson 1992). As a result of these surveys, SCCWRP has found that trace metal concentrations were at or near background levels and similar among the different depths sampled. Concentrations of total DDT, as measured in 1990, were highest at the northern 60-meter and 150-meter isobath sites. Total PCB (Aroclor 1254 and Aroclor 1260) concentrations were highest off Point Dume and Dana Point. Total PAH concentrations resulting from the 1990 survey were highest off Oxnard (Thompson 1992).

The SWRCB, through its Bay Protection and Toxic Cleanup Program (BPTCP), including the National Oceanic and Atmospheric Administration (NOAA) and the California Department of Fish and Game (CDFG) undertook a 3-year cooperative study effort to characterize the magnitude and extent of potential contaminant-induced biological effects in LA/LB Harbor and other areas of Southern California (SWRCB and NOAA 1994). The BPTCP used the results of sediment chemistry and bioassay testing from 35 replicated sampling sites to determine which areas could be potentially impacted by chemical contaminants. The concentrations of several sediment contaminants were correlated with amphipod mortality and abnormal abalone development using a sediment pore water test. Part of the significance of this study is that three of the established study sites (Sites 40010, 40018, 40032) in the BPTCP were adopted as reference stations for this RI. These stations are situated in the outer portion of San Pedro Bay, outside of the West Basin.

The BPTCP observed that PAH concentrations were higher in samples from the LA/LB Harbor than in samples collected from other Southern California areas when compared to the state of Florida threshold exposure limit (TEL) and permissible exposure limit (PEL) screening levels. The highest levels of PAHs were measured in samples from Los Angeles and Long Beach inner harbors and Fish Harbor (Station 40019); Long Beach outer harbor (Station 40018) had lower levels of PAHs (Figure 2-1). Significant amphipod toxicity was also observed at many LA/LB inner harbor sampling sites as well as some stations inside the San Pedro Breakwater (Figure 2-2). Undiluted pore water toxicity was widespread throughout the 35 sampling stations (Figure 2-3). Pore water toxicity at 50 percent dilution was observed to be also widespread throughout the sampling sites with several exceptions, notably Station 40009 located at the entrance to the West Basin, and off Cabrillo Beach (Station 40010) (Figure 2-4). The amphipod and undiluted pore water bioassays collectively identified Huntington Harbor, Consolidated Slip, and portions of Alamitos Bay as areas that were most toxic (SWRCB and NOAA 1994).



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NOAA is currently monitoring a surface sediment station in Long Beach Harbor as part of its National Status & Trends (NS&T) Mussel Watch Project. The NS&T program's objectives include defining the geographic distribution of contaminant concentrations in tissues of marine organisms and sediments, and evaluating potential biological responses to contamination. Samples have been collected since 1984 under the Benthic Surveillance Project and, since 1986, under the Mussel Watch Project, the two components of the NS&T program. Chemicals and related parameters measured in sediment include chlorinated pesticides, PCBs, PAHs, trace elements, grain size, and TOC (NOAA 1991). The NS&T program concentrates considerable effort in Southern California, with 20 of its approximately 200 sampling sites nationwide located within the Bight (Mearns et al. 1991).

As a result of data gathered during 1986 through 1988, NOAA found 14 chemicals, sampled from stations located within the Bight, whose mean concentrations were at the "high" end of the overall, national log-normal distribution (i.e., greater than one standard deviation above the geometric mean). West Santa Monica Bay had the greatest number of chemicals with "high" concentrations (11), with South San Diego Bay having 10 chemicals and Palos Verdes having 9 chemicals exhibiting "high" concentrations in surface sediments. The Long Beach station had "high" concentrations of lead, total DDT, and total PCB (NOAA 1991).

### *Fish Tissue Surveys*

Several investigators have surveyed and continue to survey fish tissue concentrations within the LA/LB Harbor and the Bight in general. This extensive database is expected to provide a viable means of comparing project-specific data and evaluating ecological conditions within the West Basin. In 1972, as part of a nationwide program, Butler and Schutzmann (1978) began a 4-year analysis of organochlorines (PCBs and DDT) in whole juvenile estuarine fish from three Southern California sites including LA/LB Harbor. Species collected included California halibut (*Paralichthys californicus*), queenfish (*Seriphus politus*), white croaker (*Genyonemus lineatus*), walleye surfperch (*Hyperprosopon argenteum*), and northern anchovy (*Engraulis mordax*). In 1978, SCCWRP launched the first of several studies to examine the potential for biomagnification of organochlorine compounds, trace elements, and other chemicals in various marine ecosystems of the Bight. Kelp, clam, and three fish species from LA Harbor were sampled and analyzed for metals and benzo(a)pyrene in 1979, as part of the Harbor Ecosystem Survey (Mearns and Young 1980; Goeders 1982). At the same time, Gadbois and Maney (1983) analyzed PCBs in fin fish muscle collected by the University of Southern California within and outside of LA Harbor as part of the nationwide NOAA Microconstituents Survey. Organic contaminants in Los Angeles area fish muscle and liver were analyzed for PCBs, DDT, other pesticides, and metals by the Los Angeles Regional Water Quality Control Board (LARWQCB) in 1985 (Risebrough 1987).

More recently, the U.S. EPA's National Study of Chemical Residues in Fish (previously referred to as the National Bioaccumulation Study) was initiated in 1986 as an outgrowth of U.S. EPA's National Dioxin Study. Composite fish samples were collected primarily in



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1987 from approximately seven sites along the Southern California coast, including the LA/LB Harbor. The fish were analyzed for dioxins, furans, PCBs, pesticides, and mercury (U.S. EPA 1992b). Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA) conducted a comprehensive study and risk assessment of chemical contaminants (PCBs, DDT, chlordane, mercury, and tributyltin) in fish species, including California halibut and white croaker, in Southern California (Cal-EPA 1991). Fish were collected in 1987 from numerous sampling sites along the Southern California coast, with several sites located within the LA/LB Harbor. California halibut contained very low levels of chemical contaminants; few composite samples had quantifiable levels of DDT or PCBs (Aroclor 1254 and Aroclor 1260). The highest levels of DDT or PCB in white croaker were found at White's Point, Point Vicente, and Malibu. White croaker sampled from Belmont Pier and Pier J of Long Beach Harbor had the lowest DDT and PCB concentrations. Concentrations of chlordane in white croaker were relatively high at Point Dume, Malibu, White's Point, Point Vicente, and Cabrillo Pier. Mercury concentrations in California halibut were low. Tributyltin was detected in white croaker tissues collected from Marina Del Rey. NOAA currently surveys fish liver for metals, PAHs, PCBs, and pesticides from six sampling sites located between Santa Monica Bay and San Diego Harbor as part of its NS&T Benthic Surveillance program.

### 2.1.2.3 MARINE BIOLOGICAL SURVEYS

Numerous marine biological investigations have been conducted in LA/LB Harbor and surrounding areas. This section focuses on those surveys which evaluate potential biological effects in benthic biota and demersal (bottom-dwelling) fish rather than those inhabiting the upper water column. As noted earlier, the University of Southern California's Allan Hancock Foundation published a series of comprehensive studies on LA/LB Harbor biota, called the Harbors Environmental Projects, including a detailed 1971-1974 biological baseline assessment of LA/LB Harbor (Allan Hancock Foundation 1976). This assessment was supplemented and updated by Soule and Oguri in 1980.

A number of investigators have conducted fish surveys as part of biological studies, including Chamberlain (1973), Long Beach Harbor Consultants (1976), and Horn and Allen (1981). Specific harbor development projects were frequently preceded by biological studies, including those by Reish (1971), Environmental Quality Analysts and MBC (1978), Hill and Reish (1975), Loi (1981), and MBC (1984). In addition to summarizing earlier studies of the two harbors, the biological baseline surveys of Long Beach outer harbor and Queensway Bay by MBC Applied Environmental Sciences (1984) and of Los Angeles Harbor and adjacent waters by MEC Analytical Systems (1988a) included sampling methods and quantitatively described biological communities found in the LA/LB Harbor.

SCCWRP has conducted three surveys of biological conditions in reference areas off the coast of Southern California during the years 1977, 1985, and 1990. The results of the biological component of these studies indicate that the macrobenthic communities (organisms greater than 1 mm in length) of the Southern California mainland shelf are



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dominated by variations of the *Amphiodia urtica-Spiophanes missionensis* assemblage. Megabenthic invertebrates (large, motile invertebrates) are dominated by asteroids (*Astropecten verrilli*), sea urchins (*Lytechinus pictus* and *Allocentrotus fragilis*), and prawns (*Sicyonia ingentis*). Speckled, longfin, and Pacific sanddabs (*Citharichthys sp.*) represent the majority of demersal fish at the 30-meter and 60-meter isobaths. The species composition of macro- and megabenthic invertebrates and demersal fishes collected in 1990 were similar to those collected in the 1977 and 1985 reference surveys (Thompson 1992).

Benthic samples have been collected throughout the LA/LB Harbor from 1951 through 1968, and benthic data specific to West Basin have been collected in 1970-1971. At that time, these and other environmental studies concluded that the inner LA/LB Harbor waters, including West Basin, were polluted since benthic communities were either absent or stressed (e.g , dominated by the polychaete *Capitella capitata*), and there was little to no available DO. Figure 2-5 illustrates the findings of these studies. The information depicted on Figure 2-5 was prepared by combining data reported in 1954 for the LA/LB Harbor with data reported in 1971 for the West Basin. The outer LA/LB Harbor, however, indicated adequate DO levels, and benthic communities were rich, diverse, and healthy. These general benthic conditions remained static until the late 1960s.

In 1968, a pollution abatement program was initiated by the State of California to control industrial, domestic, and storm water wastes; this program was implemented within the LBNC during the mid-1970s. Benthic studies of the LA/LB Harbor began again in 1971 and continued on a regular basis throughout the 1970s (Soule and Oguri 1975, 1976, 1978a, 1978b, 1979). As a result of the pollution abatement program, benthic conditions greatly improved except for the West Basin, Dominguez Channel, Fish Harbor, and a few blind-ending slips in the LA/LB Harbor. West Basin was resampled in 1978 and was found to support a healthy benthic community more in common with the relatively unpolluted outer LA/LB Harbor than those associated with traditional polluted marine harbor areas (WESTDIV 1986). Figure 2-6 illustrates the findings of these studies. The information depicted on Figure 2-6 was prepared by combining data reported in 1973 for the LA/LB Harbor with data reported in 1978 for the West Basin. Benthic conditions of this post-pollution abatement period may be considered a more recent basis for defining baseline conditions and evaluating possible environmental changes within the LA/LB Harbor, including West Basin.

### 2.1.3 Dredging Activities

Dredging of sediments are typically associated with temporary increases in turbidity, resuspension, and migration of contaminated sediment, and decreases in DO. The type of dredging equipment used would affect the amount of resuspension of sediments. Contaminated sediments mobilized during dredging activities are capable of migrating and settling elsewhere, including settling in unimpacted areas. In addition, resuspension of such sediments could affect the water column in the event that the chemicals desorb from sediment particles (U.S. ACOE 1983).



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Dredging activities in the LA/LB Harbor are generally conducted in accordance with monitoring requirements dictated by the particular dredging permit. During dredging activities, water column samples are collected and analyzed for various chemicals in accordance with U.S. EPA, U.S. ACOE, and the Regional Water Quality Control Board (RWQCB) requirements. The appropriate regulatory agency is notified if specific chemical concentrations exceed the permit requirements (LARWQCB 1994). As a result of such monitoring, significant quantities of sediments are not expected to be resuspended and mobilized during dredging activities if equipment and methods that minimize resuspension are used.

Prior to 1979, dredging activities were conducted in West Basin fairly regularly. Since 1979, dredging has been conducted every 2 to 3 years. Sediment samples reportedly have been collected and analyzed for pesticides, heavy metals, and organohalides. In addition, bioassay tests have been conducted using sediment samples collected from West Basin. No record of chemical analysis of West Basin sediments was found during a review of available Western Division (WESTDIV) files conducted as part of the IR Program. No relevant information was available from the Los Angeles office of the U.S. ACOE (JEG 1992b).

The following section describes dredging plans and associated sampling both within the LA/LB Harbor and within the West Basin. Information was obtained mainly through a review of documents describing studies in the LA/LB Harbor.

### 2.1.3.1 LOS ANGELES/LONG BEACH HARBOR

During recent years, numerous dredging activities have been conducted by the POLA and POLB within the LA/LB Harbor. These dredging activities have been related to development of harbor facilities (e.g., construction of new piers), maintenance of harbor facilities which requires deepening of channels, or sampling investigations conducted in support of development or maintenance activities.

The steady growth of the POLA over the past 100 years to the present complex of several thousand acres of docks, piers, channels, basins, and anchorages has changed the character of the natural environment. Dredging and filling have converted former wetlands and shallow open water areas to deep channels and slips. Breakwater construction has converted the San Pedro Bay from exposed coastline to a protected embayment with restricted circulation. In addition to these physical changes, the increased urbanization and industrialization of the area and, consequently, the increased discharges of various contaminants, have altered sediment and water quality in the LA/LB Harbor (MEC 1988a).

Harbor development activities conducted during the 1980s have substantially altered the Los Angeles Harbor. These development activities included deepening of the Main Channel in the Inner and Outer Harbors, filling (approximately 190 acres) of shallow water on the south side of Terminal Island, relocating the Terminal Island Treatment Plant (TITP) outfall within the Outer Harbor, constructing a marina complex near Cabrillo



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Beach, creating a salt marsh near Cabrillo Beach, and establishing a kelp bed directly inboard of the San Pedro Breakwater (MEC 1988a).

Very large development projects, collectively known as the POLA 2020 Plan, are currently being planned and implemented to meet anticipated future cargo demands. New terminals are being constructed on land created by dredging and filling areas within the LA/LB Harbor. The channels, basins, and slips are routinely dredged to promote navigation of larger ships.

In general, sediment sampling and analysis are conducted prior to dredging activities, according to POLA. Some of the dredged materials are expected to be disposed of in open water at LA-2, a dredge material disposal site located 4.7 nautical miles south of the San Pedro Breakwater. Before dredging begins, these materials undergo chemical and biological testing in accordance with guidance criteria in the "Green Book" (U.S. EPA/U.S. ACOE 1991) (Smith, pers. com. 1994).

The following paragraphs summarize a number of dredging plans, associated sampling, and planned disposition of the dredged materials, to be conducted in the LA/LB Harbor.

### *Pier E, Berth 121-122 (Planned Relocation of ARCO Tanker Terminal) (1981)*

The planned relocation of the ARCO tanker terminal on Pier E from Berth 118 to the vicinity of Berths 121 and 122, located in the Back Channel of Long Beach Harbor, included dredging and disposal of dredged material. Under this plan, the berthing area would be dredged to a depth of -66 feet mean lower low water (MLLW), thereby providing more vessel clearance and increasing available maneuvering room in the Back Channel. Approximately 150,000 cubic yards of dredged material would be used as fill material at the project site and approximately 400,000 cubic yards of dredged material would be disposed of at the LA-2 ocean disposal site.

### *Coal Terminal Project, POLB (1982)*

Sediment samples were collected at three areas planned to be dredged adjacent to the proposed coal terminal facility along the north shore of Cerritos Channel by the POLB. The three sampling areas consisted of the Cerritos Channel (north side), the Turning Basin, and the Back Channel. Samples were collected and bioassays conducted to assess potential impacts of the disposal of dredged materials derived from construction dredging for a berthing slip adjacent to the proposed coal terminal facility. The bioassays were performed on the three phases of dredge material (liquid phase, suspended particulate, and solid phase), as well as chemical analyses of the liquid and solid phases, and assessment of bioaccumulation potential. A control sediment sample was also collected along the perimeter of the LA-2 ocean disposal site. Trace metals, petroleum hydrocarbons, and halogenated hydrocarbons (pesticides and PCBs) were detected in the samples. Bioassays conducted using the three phases of dredge materials demonstrated little statistically significant evidence of mortality or other toxic effects. The sediment samples demonstrated statistically significant bioaccumulation potential for specific trace metals and petroleum hydrocarbons (MBC 1982).



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***Proposed Pier 400, POLA (1990)***

An environmental study in support of the POLA 2020 Plan was conducted to identify regions within the potential dredge areas harboring contaminated sediment or sediment with significant acute or chronic toxicity to marine organisms. Sediment samples were collected at various locations in the vicinity of the proposed Pier 400 for analysis. Metals detected included chromium, copper, lead, mercury, nickel, silver, and zinc. Organics detected included PCBs, PAHs, and DDT. Test results indicated that concentrations were above action thresholds but the sediments would not pose a problem if disposed of (capped) in a landfill (Kinnetic Laboratories, Inc. 1991).

***Pier J Expansion Site, POLB (1991)***

Sediment samples were collected from the East Channel and the area east of Pier J. Sediment and elutriate chemical analyses, grain-size analyses, liquid and suspended particulate phase bioassays, solid phase bioassays, and an evaluation of the bioaccumulation potential were conducted according to "Green Book" methods (U.S. ACOE/U.S. EPA 1991). The sediment samples were similar in chemical constituent composition and concentration to other sites within the LA/LB Harbor. Elutriate chemistry analyses indicated no substantial leaching of chemical constituents from sediments to water, and no dissolved concentrations that exceeded water quality standards. Based on these results, the dredge materials were deemed to present no long-term degradation potential if disposed of at the LA-2 ocean disposal site (MEC 1992).

***Pier 400 Maintenance Dredging and Design Program, POLA (1993)***

Sediment samples were collected at various locations within Los Angeles Harbor and its adjoining basins where future maintenance dredging would be required in relation to the Pier 400 design program. Sample analysis results indicated that no single area was highest for all constituents measured. Test results indicated no consistent horizontal trend in the distribution of contaminants between areas or within an area, or vertically throughout the length of the core. This was attributed to the different sources of inputs each of the areas has received and historical deposition of contaminants each has accumulated. No biological testing was conducted as part of this sampling program. Metals detected in the samples included arsenic, cadmium, chromium, copper, lead, mercury, and nickel. Organics detected included total PAHs, DDTs, and PCBs (Kinnetic Laboratories, Inc. 1993).

***Construction of Pier 400, POLA (1994)***

The POLA current expansion project involves the construction of Pier 400, south of Pier 300. Dredging activities and associated sampling and analysis for this construction started in September 1994 and were ongoing at the time of writing this RI report. During dredging, the water quality is monitored on a weekly basis for DO, light transmittance, temperature, and pH at 2-meter increments throughout the water column. Suspended solids are monitored on a bimonthly basis at the water surface, mid-depth, and bottom. Quarterly monitoring of the water column is conducted at three sampling locations, at



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mid-depth of the water column. The samples are collected at 30.5 meters up-current, and 30.5 and 91.5 meters down-current of the dredge operation. Samples are analyzed for trace metals (arsenic, chromium, copper, lead, mercury, nickel, silver, selenium, and zinc) and organics (p,p'-dichloro-diphenyl-ethane [DDE], PCBs, PAHs, phthalates, tributyltin, and oil and grease). As part of Pier 400 construction activities and as mitigation for project-related impacts to the existing shallow water habitat site, a permanent shallow water habitat is planned to be constructed adjacent to the San Pedro Breakwater using contaminated sediments which, in turn, will be capped with uncontaminated sediments (LARWQCB 1994).

### 2.1.3.2 WEST BASIN

Records of dredging plans in the West Basin are summarized in this section. A review of historical files pertaining to each of these dredging plans was conducted. These files were obtained from NAVSTA Long Beach, the LBNSY, the POLB, the U.S. Coast Guard, the U.S. ACOE, and the CLEAN I contractor. However, records of the dredging activities were not found. Most dredging plans were associated with the construction or maintenance of LBNC piers supporting vessel operations within the West Basin. Some of the dredging activities may have impacted bottom conditions of sediments through changes in depth or resuspension, and resettlement of particulates.

#### *Maintenance Dredging at Piers 7 and 9 (1982)*

In 1982, approximately 400,000 cubic yards of sediments were to be dredged from the West Basin at Piers 7 and 9 as part of a periodic removal of accumulated sediment from the berthing areas. Bioassay results indicated that the dredged material between Piers 7 and 9 would not have a significantly adverse effect on the marine environment after ocean disposal. The dredged material would be disposed of at the LA-2 ocean disposal site. The project would deepen the area between Piers 7 and 9 to -30 to -35 feet MLLW, plus 2 feet overdredge.

#### *Fuel Pier Relocation (Pier 12) (1984)*

This project included the construction of both a new fuel pier (Pier 12) extending into the West Basin from the Navy Mole at the LBNC, and a pipeline system to deliver fuel from the new fuel pier to the Defense Fuels Support Point in San Pedro. The pipeline system presently crosses the Los Angeles Main Channel in a trench. Dredging was to be conducted at the location of Pier 12 and in the Main Channel.

#### *Maintenance Dredging at Pier 6 (1986)*

This project, known as Project MI-85, involved the maintenance dredging of certain areas on both sides of Pier 6 to accommodate operational schedules and required berthing for deep-draft vessels. Dredging to a depth of -45 feet MLLW was found to be necessary to prevent fouling of battleships and amphibious landing ships. Bioassay tests were conducted as required by U.S. EPA and U.S. ACOE (1977) regulations to assess the potential toxicity associated with ocean disposal. These tests indicated that the dredged



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material was acceptable for ocean disposal. Approximately 46,000 cubic yards of dredged material were to be removed and disposed of at the LA-2 ocean disposal site. The project was planned to be completed in the spring of 1987.

***Maintenance Dredging at the South Face of Pier E (1991)***

This LBNSY project, conducted in 1991, is referred to as Project MI-87 by the DON. This project involved maintenance dredging along the south face of Pier E to prevent the fouling or grounding of battleships and oiler class vessels. The harbor bottom along the south face of Pier E was to be dredged to an elevation of -47 feet MLLW (-45 feet plus 2 feet over depth). The total volume of dredged material would be approximately 18,300 cubic yards. The planned dredging project area extended for about 1,400 feet in the east-west direction along the south face of Pier E, and for a distance of 200 feet in the north-south direction (WESTDIV 1989).

Activities conducted in conjunction with this dredging project included a geotechnical investigation as well as sediment sampling and analysis (chemical, physical, and bioassay testing). These pre-dredging activities were required under the Ocean Disposal Program to provide results for submittal to the U.S. ACOE and the U.S. EPA to determine whether the dredged material was suitable for open water disposal.

The geotechnical investigation at Pier E showed that the bottom sediment strata between -5 and -18 feet MLLW depth consisted of very loose to loose sandy/clay soils with some shell hash, and very soft clay layers. These loose and soft sediments were found beneath the east end of the pier; they were underlain below the 18-foot depth by medium dense to very dense sands with shell hash. On the basis of developing and evaluating a geotechnical model for this project, it was concluded that the maintenance dredging project would not significantly affect the stability of the pier (WESTDIV 1989).

Results of the sediment sampling and analysis indicated that sediments were contaminated with moderately elevated levels of heavy metals and petroleum hydrocarbons. PAH concentrations ranged from moderate to high. Bioassay and bioaccumulation results indicated that sediments caused a reduction in sea urchin (echinoderm) development, affected mortality of worms and mysids, and were associated with elevated concentrations of zinc, PAHs, and chromium in clam tissue (WESTDIV 1990). Based on a review of these data, the CDFG and the U.S. EPA determined that the dredged materials were not suitable for ocean disposal. Upon comparing the sampling results with U.S. EPA ocean dumping criteria in 40 *Code of Federal Regulations* (CFR) Part 227, it was determined that the top 7-foot layer of the harbor bottom represented the zone of contamination, and the contaminated sediments would have to be removed and transported to a suitable disposal site.

As a result, the project involved dredging at two different locations within the project area and disposal of the dredged materials in the POLB Ford/Melamed Landfill. According to the dredging permit application filed with the U.S. ACOE, the dredged material that was unsuitable for ocean disposal (3,000 cubic yards) would be removed by clam-shell dredge to a depth of -47 feet MLLW, placed on a barge, and disposed of at the landfill. The



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3,000 cubic yards of unsuitable material would be capped at the landfill with the addition of 15,300 cubic yards of uncontaminated dredged material from the project area. The dredged material was further capped by 50,000 cubic yards of material suitable for open water disposal.

## 2.2 IDENTIFICATION OF DISCHARGES

Identification of discharges to surface waters is an attempt to identify sources of discharge into the LA/LB Harbor in general, and the West Basin in particular. This task included researching possible points of origin, facility operations, discharge generators, and locations of discharge points into the receiving waters of the West Basin. This information was utilized in characterizing and delineating the nature and extent of COPCs in West Basin sediments.

Various historical documents were reviewed and Navy personnel interviews were conducted to identify potential discharge sources to the West Basin. The types of records reviewed and data collected included:

- records relating to waste characteristics, to the extent possible, such as the types and quantities of chemicals or materials that may have been released to the LA/LB Harbor;
- water quality conditions in the LA/LB Harbor with respect to the various industries operating in the area; and
- the physical or chemical characteristics of chemicals discharged or spilled into the LA/LB Harbor.

References reviewed included:

- CLEAN I RI/FS Work Plan and Sampling and Analysis Plan (JEG 1993a and b);
- Site Inspection Report (JEG 1992a and b;
- Initial Assessment Study (NEESA 1983);
- Storm Water Pollution Prevention Plan (Brown and Caldwell 1992b);
- Storm Water Discharge Management Plan (WWC 1993);
- Historical and Recent Water Quality Conditions in the Port of Long Beach (MBC 1992); and
- various records of LBNC operations, land-based or ship-based, that described the source location and potential releases.

### 2.2.1 Discharges to the LA/LB Harbor

Southern California's large, diverse urban population has facilitated input of many types of chemicals into the Bight. Chemical inputs have resulted through spills, sewage discharges, power plant cooling water discharges, various industrial discharges, atmospheric deposition, and runoff from flood control channels (Mearns et al. 1991).



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Various point and nonpoint sources of discharges present in areas surrounding the LBNC have the potential of adversely affecting the water quality as well as the biological community of the LA/LB Harbor. Potential point sources would include industries such as: 1) the TITP, located approximately 1 mile west of the LBNC; 2) Southern California Edison Company's Long Beach Generating Station, located to the north of the LBNSY on Terminal Island; 3) petroleum refineries as well as petroleum shipping, receiving, and storage facilities in the South Bay area; and 4) manufacturing plants that may affect the LA/LB Harbor area. Nonpoint sources would include aerial fallout, advective transport, ocean dumping, and boating and shipping activities (MBC 1992).

Specifically, the sources that could potentially impact the LA/LB Harbor waters were identified (MBC 1992) as follows:

- surface runoff from piers and docks;
- surface runoff from storm drains which drain the Los Angeles basin, drainage channels of the Los Angeles and San Gabriel rivers and the Dominguez Channel;
- industrial wastes that have been discharged into San Pedro Bay; and
- ballast water and other wastes that may be introduced into the LA/LB Harbor by marine traffic (recreational, commercial, and naval) operating in the LA/LB Harbor.

Historically, sewage outfalls have been considered the principal sources of contaminants to the Bight. Sewage discharges have significantly decreased over the past two decades, however, as a result of enforcement of the 1972 Clean Water Act and its statewide counterpart, the Porter-Cologne Act by the California SWRCB and the U.S. EPA Region IX. This enforcement has resulted in much greater regulation of effluent discharge into the receiving waters of the Bight. Consequently, sources such as dredge material disposal, atmospheric deposition, and surface runoff have surpassed those of sewage outfalls, and they are currently considered of greater importance to Bight water quality (Mearns et al. 1991).

Bioassay tests of TITP effluent conducted in the early 1980s indicated no evidence of toxicity or bioaccumulation. Adverse effects to the biological community in the LA/LB Harbor receiving waters, due to potential contaminants in the TITP effluent, have not been found. Monitoring surveys, conducted and reported since 1979 under the National Pollutant Discharge Elimination System (NPDES) program, do not indicate adverse impacts to the receiving waters or associated biota as a result of cooling water being discharged by the Long Beach Generating Station (MBC 1992).

### 2.2.2 Discharges to the West Basin

Primary sources of discharges into the West Basin waters were found to occur from numerous land- and ship-based activities, such as lead caulking, painting or paint removal, boiler cleaning, and pipe-flushing operations (JEG 1992b and 1993a). Storm water



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discharge and flushing of dry docks represent historical primary release mechanisms and potential sources of chemicals in West Basin sediments.

As a result of disposal and accidental releases of hazardous substances used in support of the LBNC operations, some areas of the West Basin may have been contaminated from approximately the mid-1930s to 1980. Types of major activities which supported the overall LBNC and their locations are illustrated on Figure 2-7, Land Use Map. Hazardous substances have, in the past, been discharged to the West Basin via the outfalls of the storm drain system. These past practices, together with leaks and spills, may have resulted in some areas of contamination that may potentially pose some level of risk to human health or the environment (WESTDIV 1991a).

Most of the sources of discharge entering the West Basin are historical, whereas currently identifiable sources are generally under permit. Pollution control measures during the past years, including the California Porter-Cologne Act and federal Clean Water Act, have been enacted to reduce or eliminate new contaminant sources into the marine environment.

The identified sources of discharge to the West Basin, discussed within this section, are presented according to the following general categories:

- land-based discharges,
- ship-related discharges, and
- accidental spills.

### 2.2.2.1 LAND-BASED DISCHARGES

Land-based discharges are identified herein as sanitary wastewater discharges, storm water discharges, industrial wastewater discharges, and indirect discharge sources. Both point and nonpoint sources are included in land-based sources. This investigation included long-term and short-term sources, as well as historical and current sources, as discussed below.

The single largest source of wastes discharged to the West Basin has been from the blowdown and flushing of utility shop boilers, water softeners, and cooling systems. The majority of chemicals in these waste streams, which are expected to have contained disinfectants (e.g., chlorine) to prevent algal growth, are easily dispersed, soluble in water, and considered nonhazardous at low concentrations (WESTDIV 1991b).

#### *Sanitary Wastewater Discharges*

A 1969 industrial waste study (IWS) indicated that sanitary wastewaters originating from activities on the Navy Mole were discharged directly to the West Basin or to septic tanks. Effluent from the septic tanks was disposed of by the use of leaching fields or discharged directly to the West Basin. Sanitary wastewaters from ships in floating dry docks or moored at the complex were discharged untreated directly to the West Basin (SWDIV 1969).



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Raw sewage has been bypassed to the storm water system at LBNSY when the NAVSTA Long Beach sewerage system could not handle the peak sewage flows or when repairs were being conducted to the force main system. During sewage bypassing periods, the average flow was estimated to be 50,000 to 75,000 gallons per day (gpd). Bypassing NAVSTA Long Beach sewage to the West Basin has occurred during major power failures or when mechanical difficulties were encountered at the pumping stations (SWDIV 1969).

As part of the 1969 IWS, a composite sample of 32 wastewater samples, collected every 15 minutes while sewage was being bypassed into the storm sewer system, was analyzed for specific constituents. Results of this analysis indicated the presence of hexavalent chromium, possibly as a result of discharge from a process or cleaning tank. The specific conductance of the wastewater sample indicated the presence of seawater, possibly from seawater utilized aboard ships in the dry docks. It was estimated that 50,000 gallons of sewage was bypassed to the West Basin on the day samples were collected (SWDIV 1969).

According to an Environmental Engineering Survey (EES) conducted in 1976 at NAVSTA Long Beach, untreated sanitary and industrial wastewaters from the Navy Mole were disposed of into the West Basin at that time under a U.S. EPA permit, or into the ground by means of septic tanks and leach fields. Wastewater discharges into the West Basin were discontinued when facilities were constructed in late 1976 to collect and transport sanitary, industrial, and shipboard wastewater from the Navy Mole and the piers northerly for disposal through the pumping facilities located on the mainland. These construction projects (P-122 - Navy Mole Sewer, and P-131 - Ship Wastewater Collection Ashore, Piers 9, 11, and 15) extended the sewage collection system to include the Navy Mole and adjoining piers (Toups 1976).

On 31 December 1973, and in accordance with provisions of the Water Pollution Control Act, the DON was granted a conditional permit (CA0002356) by the U.S. EPA, authorizing temporary discharge of untreated sewage from 12 individual installations located at the LBNC and the Navy Mole to the waters of the United States at the Long Beach Harbor. Based on the permit conditions, the cessation of all untreated sewage discharge into Long Beach Harbor was required by 30 September 1975. Elimination of discharge from locations associated with the Navy Mole was delayed due to unforeseen site conditions and difficulties in obtaining timely delivery of equipment during the construction of the sewer improvements on the Navy Mole (Toups 1976). According to an EES conducted in 1975 at the LBNSY, LBNC sanitary wastewaters were being discharged to the City of Los Angeles TITP (CDM 1977).

### *Storm Water Discharges*

The LBNSY has been separated into nine major drainage basins and 34 subbasins based on drainage patterns and discharge locations, as indicated in a 1992 Storm Water Management Plan (SWMP). Based on the site topography, storm water runoff generally flows toward the center of the facility and it is collected in the storm water conveyance



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system for discharge to the West Basin. Nine point-source outfalls and their corresponding storm drain systems were identified. Significant materials exposed to storm water at LBNSY were also identified in the SWMP. In-line video surveys of the storm drainage system throughout the LBNSY indicated that parts of the system were clogged with sediments (Brown and Caldwell 1992b).

As part of this RI, in October 1995 BNI obtained from the LBNSY video tapes of the insides of storm drains open to the West Basin waters. The NAVSTA Long Beach video tape had been made in May 1995, and the LBNSY video tape had been made in August 1995. It was observed, upon viewing the recordings on these tapes, that conditions of the storm water drain pipes ranged from containing little or no water or sediments to being flooded or containing gravel and sediments.

According to an EES conducted in 1975 at the LBNSY, a number of composite samples were collected from the storm water system at the LBNSY and analyzed. Results indicated elevated zinc, copper, and iron concentrations, which may be attributed to the crane cleaning operations that were carried out at various locations throughout the LBNSY facilities (CDM 1977).

In 1992, a storm water discharge survey was conducted for the LBNSY to identify illicit connections and discharges to the storm water drainage system. Sixty-two illicit surface and subsurface discharge connections were identified at the LBNSY. The majority of these discharges were aboveground and often involved steam condensate from leaking plumbing, or inappropriate releases to the ground surface. All subsurface discharges were reportedly of a steam/water nature, and did not appear to be potentially significant in terms of introducing pollutants to storm water runoff (Brown and Caldwell 1992a). Some of these illicit discharges were related to Dry Dock No. 1 operations (SWDIV 1992a). The location of Dry Dock No. 1 is illustrated on Figure 1-3.

Other nonstorm water discharges to the storm water drainage system included vehicle washing, direct discharge of bulk water to the storm drain system, cooling water discharges to the ground surface, and equipment washing near a storm drain inlet (SWDIV 1992a). Visually observed nonstorm water discharge data at LBNSY were presented in the LBNSY Storm Water Pollution Prevention Plan (SWPPP) (Brown and Caldwell 1992b).

An investigation of storm water outfalls conducted in 1992-93 at NAVSTA Long Beach detected nonstorm water discharges at six outfalls and the presence of possible illicit connections to the storm drain system and/or nonstorm water in the storm drain system. This Storm Water Discharge Management Plan (SWDMP) included illustrations showing the locations of outfalls into the West Basin and nonstorm water discharge screening results. The size and type of the various outfalls, visual observations (flow rate, presence of standing water, odor), and water quality data such as temperature, pH, and chemical constituents were included as part of the screening results (WWC 1993).

Since 1992, storm water from the LBNSY facility, discharged to the West Basin, has been regulated by the Statewide General Industrial Activities Storm Water Discharge Permit



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(Identification No. 4B19S005526), administered by the SWRCB (1992). A review of three Annual Storm Water Reports indicated that LBNSY storm water discharges were in compliance with all applicable standards except for a pH level below 6.5 in 1994-95 (SWDIV 1993a, 1994b, and 1995).

The 1994-95 Annual Storm Water Report included findings of the field survey conducted on the LBNSY storm drain connections and recommended remedial actions to eliminate illicit connections. The report also stated that the overall effectiveness of the facility's SWPPP was good. A comparative analysis of sample results with previous years' results indicated steady improvement in the area of storm water pollution prevention (SWDIV 1995). According to the LBNSY, the illicit storm water connections were eliminated by 30 September 1995.

### *Industrial Wastewater Discharges*

This section describes industrial wastewater discharges generated by activities conducted at NAVSTA Long Beach and LBNSY. From the early 1940s until the mid-1970s, unregulated drainage from the various industrial areas and from cleaning and process tanks were discharged to the West Basin, directly through the storm water system and from flushing of the dry docks. The storm water outfalls released wastes, such as PCBs, acids, solvents, oil and grease, in unknown quantities from various industrial areas directly into the West Basin. Much of the waste discharged from these storm water system outfalls may have sorbed onto the harbor sediments (SWDIV 1969 and NEESA 1983).

During the early 1970s, after passage and implementation of the Federal Water Pollution Control Act, the DON began connecting some of these industrial discharges to the sanitary sewer system. By 1975, industrial discharge outfalls to the West Basin were connected to sanitary sewer lines, thus reducing or eliminating the discharge of industrial waste to the West Basin. However, a 1976 WESTDIV report estimated that a 15,000 gpd industrial discharge still found its way to the West Basin (NEESA 1983).

Characteristics and locations of industrial wastes discharged into the West Basin from storm drain outlets and rinse areas were described in the August 1983 IAS Report (NEESA 1983). Part of the information presented in the IAS Report was compiled from previous studies: the IWS conducted by Brown and Caldwell, the NAVSTA Long Beach EES conducted by Toups Corporation, and the LBNSY EES conducted by CDM, Inc.

Industrial wastewater sources were identified as part of the IWS (SWDIV 1969). A listing of the industrial wastewater sources, and an illustration showing the locations of these sources are presented in the IWS. An illustration of the sanitary and storm sewer systems and the outfalls to the West Basin is also presented in the IWS. Information pertaining to the characteristics and locations of industrial wastes generated at LBNC was also compiled as part of the LBNSY EES (CDM 1977). Information presented in these studies is summarized in the following paragraphs. Locations of buildings referenced in this section are indicated on Figure 2-8.



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**NAVSTA Long Beach Activities.** Up until the late 1960s, waste oils and greases generated by the marine service station and the harbor craft service shops conducting mechanical repair and maintenance work on mine sweepers and small craft were discharged directly into the West Basin. This infrequent method of disposal involved quantities of less than 200 gallons. These activities were conducted in the area where Buildings 143, 144, and 145 are presently located, and along Pier 9 (NEESA 1983).

In 1964, a wet paper destructor was moved from the Navy's Old Reeves Field property to near where Building 819 presently exists at the shore end of Pier 9. The pulp generated by the wet paper destructor was disposed of by commercial refuse haulers. The ink and carbon-stained effluent from the process was discharged to the West Basin just south of the shore end of Pier 9. Unknown quantities of these wastes were discharged, on the average, every 6 months. This process was discontinued in the late 1960s when the wet paper destructor was replaced by an effluent-free hammermill machine (NEESA 1983).

Various maintenance and cleaning operations were conducted in Building 8, the former Naval Station Public Works Department. Paint buckets were cleaned in a 980-gallon hot caustic cleaning solution tank. This tank was emptied to the storm sewer approximately on a monthly basis (SWDIV 1969). This method of disposal was practiced between the start of operations in the 1940s until the early 1970s.

**LBNSY Activities.** The Public Works Department has been responsible for the operation of the air conditioning system in Building 210 since its construction in 1970. Until around 1980, cooling water blowdown was discharged to the storm drains. This practice reportedly caused the discharge of less than 1 pound of chromium in 10 years (NEESA 1983).

Prior to the early 1970s, wastewaters from boiler and once-through seawater for air compressor operations, and brines from the regeneration cycle of water softener units were reportedly discharged by the Utilities Shop (Shop 3) to the storm sewer system that discharged to the West Basin. In 1969, the monthly volume of seawater used by this process was estimated at 39,420,000 gallons. The discharge was reported to contain the chemical Nalco 201 (NEESA 1983). Currently, this discharge is regulated by a NPDES permit, as described in a subsequent section of this RI Report.

One interviewee reported that in the 1960s until the early 1970s, the Utilities Shop sometimes disposed of transformer fluids in storm drains (SWDIV 1969 and NEESA 1983).

The Maintenance Shop (Shop 7) has been responsible for a wide range of activities, including painting, plumbing, carpentry, machine maintenance, pest control, custodial services, and hazardous waste pick-up. Until the late 1970s, waste paints, solvents and acids generated by this shop were discharged to the storm drains. These discharges were estimated to be less than 50 gallons per month (NEESA 1983). Wastes generated by Shop 7 also included small amounts of pesticide residues. Pesticide container disposal has, for many years, been controlled by regulatory procedures. Pesticide containers have been rinsed and crushed prior to disposal with general refuse to prevent reuse. However,



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the rinseate containing pesticide and herbicide residues has been disposed of by discharging to the ground and sanitary sewers (NEESA 1983). According to the Facilities and Maintenance Department of the Naval Shipyard, no pesticides or herbicides are stored at NAVSTA Long Beach. The Long Beach Installation Pest Management Plan identified specific rodenticides and pesticides that could be used on these properties, but quantities could not be determined (SWDIV 1994a).

Since 1945, the Shipfitter Shop (Shop 11) has been located in Building 128 and was responsible for fabrication, assembly, and installation of all structural parts of the ships. This shop generated small metal chips, pieces, grindings, turnings, and slag which were put into the dry dock waste piles and deposited into the Industrial Waste Disposal Pits (Site 3), located at the eastern bend on the Navy Mole. Up to the mid-1960s, "Red Lead" caulking was used on ships and between 15 and 60 gallons of caulking wastes were disposed of as dry dock waste from this operation. Approximately 15 gallons each of waste rust preventative and waste oils per ship were disposed of as dry dock waste. Previously, at infrequent intervals, this material was flushed to the West Basin (NEESA 1983).

As much as 350,000 gallons annually (from 1963 through 1978) of sodium nitrite, hydrazine, morpholine, solvents, and other chemicals were discharged to the storm water system. These discharges originated from flush pipe operations in Shop 56 (Building 131) and boiler cleaning operations in Shop 41 (Building 128). Until the early 1970s, approximately 800 gallons of rinse water generated by Shop 56 was drained daily into the storm sewer. The rinse water reportedly contained caustic and muriatic acid solutions, and metals (NEESA 1983 and JEG 1992b).

In the 1960s, motor blocks were cleaned with kerosene and then rinsed with steam and water at Shop 31 (Heavy Tools, Building 132). Varying quantities of wastewaters were discharged to the storm sewer. Annually, 2,000 to 3,000 gallons of wastewaters generated from the test boiler facility, which contained sodium nitrite and flushing water, were discharged into the storm sewer (NEESA 1983).

Rinse water from the diesel engine parts cleaning work area and metal parts paint stripping cleaning area at Shop 38 (Machinist, Warehouse A) was drained directly into storm drains (NEESA 1983).

Approximately 9,600 gpd of wastewater generated by Shop 71 (Painting and Abrasive Blasting; Buildings 109, 129, 130, and 132) from the sandblasting facility air cleaning system were drained to the storm sewer. The 1,100-gallon rinse tank of the aluminum cleaning operation was drained to the storm sewer every 3 months. These discharges to the storm sewer probably ended in the mid-1970s when industrial wastes were connected to the sanitary sewer system (NEESA 1983).

In the 1960s, Shop 72 (Equipment Cleaners) provided pump and hose cleaning services in Building 102. Rinse water was drained to the storm sewer (NEESA 1983).

Shop 99 provided ship support services. Water hoses used aboard ship were removed and taken to an open area outside Building 303 where they were filled with highly chlorinated



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(100 parts per million [ppm]) water. After disinfection, the chlorine solution was discharged into a storm sewer. In 1980, this discharge method was abolished (NEESA 1983).

### *Indirect Contamination Sources*

Indirect sources of potential contamination, such as soil and groundwater posing a potential risk of releasing chemicals to the West Basin waters, are discussed in this section. From the late 1940s to the early 1970s, industrial wastes and trash were transported by truck to the Industrial Waste Disposal Pits (Site 3), located at the eastern bend on the Navy Mole (NEESA 1983). The location of Site 3 is indicated on Figure 2-8. The volumes of industrial wastes deposited into Site 3 were estimated to be as follows:

#### *Wastes Disposed of by NAVSTA*

- Small quantities of acid (up to 50 gallons) discharged biweekly;
- Water and oil mixture (1,000 to 2,000 gallons) discharged semiannually; and
- Sludges from storage tanks on piers or shops (100 to 150 gallons) weekly.

#### *Wastes Disposed of by LBNSY*

- Sludges from bilge, fuel, lube, and other tanks on board ships in dry dock and moored at piers (up to 600 gallons) biweekly;
- Industrial process tanks, both liquid and sludge from tanks (800 to 1,500 gallons) biweekly; and
- Nonpetroleum contaminated hydraulic fluid from ships (up to 15,000 gallons) annually.

Analysis of groundwater samples, collected from the monitoring wells installed along the periphery of the West Basin (including at Site 3 on the Navy Mole) as part of the RIs currently being prepared for NAVSTA Long Beach and LBNSY, indicate that groundwater generally does not contain high levels of chemicals. Modeling of groundwater flow within the Navy Mole predicted that chemicals in groundwater would not migrate at levels that may significantly impact the harbor, i.e., exceed California ocean plan criteria (BNI 1995b). In addition, groundwater flow direction at the LBNSY has been preliminarily reported to be in a northeasterly direction, away from the West Basin, inferring that chemicals entering the groundwater regime beneath LBNSY would be expected to move in a direction away from the West Basin.

Surface soils, eroded from unpaved areas or entrained from paved areas around the West Basin, may constitute a potential source of chemicals entering the West Basin waters. Based on the Navy Mole underwater inspection conducted as part of the RI for NAVSTA Long Beach, there is no evidence that sediments, contaminated or otherwise, have been or are being transported through a breach in the Navy Mole riprap since no breaches were identified in this structure (BNI 1995b).



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### 2.2.2.2 SHIP-RELATED DISCHARGES

Ship-related sources are identified herein as resulting from dry dock operations and ship-related activities conducted at the piers, including welding, painting, loading, and other operations. The sources reviewed included long-term and short-term sources, as well as historical and current sources, as discussed in the following paragraphs.

***Discharges from Dry Dock Operations***

Dry-docking operations are conducted at LBNSY in three dry docks as part of routine and emergency operations on Naval vessels. These operations involve the flooding and dewatering of the dry docks to perform maintenance below the water line of ships. To flood the dry dock and allow vessels to enter or leave, the dry dock is opened to the West Basin waters by removing a caisson positioned at the entrance to the dry dock, between the dry dock and the West Basin waters. The caisson forms a sealed gate and prevents the waters of the West Basin from entering the dry dock. After the vessel enters or leaves the dry dock, the caisson is put back into place, and the water in the dry dock is pumped out. (SWDIV 1992b). In addition to the three dry docks at LBNSY, three floating dry docks, placed off the end of Pier 6, were in operation between 1960 and 1980 (JEG 1992b).

Hydrostatic relief well systems operate in conjunction with Dry Dock No. 1 to relieve hydrostatic pressure, thereby protecting the structural integrity and preventing buoyancy and floating of the dry dock (Moffatt and Nichol 1975).

The dry docks at the LBNSY are potentially major long-term sources of chemical discharges. The dry docks are used to repair and paint vessels. Paint chip fragments, as well as chemicals and solvents used in the maintenance and decommissioning of vessels, may have a direct path to West Basin sediments as the water level in the dry dock is lowered and raised during flooding and deflooding operations. Chemical products used at the dry docks, including a wide range of organic compounds and metals, may potentially be evident in the sediments found near these areas. During repair operations, incline tests, rolling tests, and other operations that do not require deflooding of the dry dock, raw sewage is discharged into the dry dock waters (Moffatt and Nichol 1975).

Before 1975, discharges to the West Basin included hydrostatic leakage, cooling tower blowdowns, sanitary wastewater, and industrial waste associated with maintenance of vessels. Hydrostatic leakage is infiltration of water through dry dock walls and floor; this water drains to a sump and it is discharged to the West Basin. Hose-down and general cleanup of the dry dock floor results in significant amounts of wastewater. Analyses conducted in 1975 on the hydrostatic leakage, hose-downs, and cleaning of the dry docks indicated high concentrations of copper and zinc. Concentrations of copper and zinc may be a result of leaching from the copper slag sandblast and zinc-containing paint residue. Samples from various locations on Dry Dock Nos. 1, 2, and 3 taken in 1975 also indicated concentrations of biochemical oxygen demand (BOD), total suspended solids, settleable solids, oil and grease, and fecal coliform, possibly caused by discharge of sanitary wastes onto the dry dock floor (Chan and Saam 1975). Locations of Dry Docks 1, 2, and 3 are shown on Figure 2-8.



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Studies conducted by the Naval environmental support office confirm that significant amounts of zinc and copper leach from the sandblast residue in contact with seawater. Two possible sources for the sandblast residue are the paint chips from sandblasting operation and the sandblast material itself. The volume of water in contact with the sandblast residue appears to have little effect on leaching rate. Heavy metals are more readily leached out in seawater than in freshwater. Relatively high concentrations occur when small amounts of seawater are exposed to residue (Chan and Saam 1975).

**NPDES Permit.** The NPDES program, administered through the LARWQCB, manages the discharge of wastewater related to the industrial activity at the LBNSY. Since 15 March 1974, direct ocean discharges at 14 discharge locations have been regulated under NPDES Permit No. CA0003786. Concentration limits on certain discharge constituents became effective 1 July 1977 (CDM 1977).

In the early 1990s, the LBNSY reduced its discharge from a maximum of 8 million gallons per day (mgd) to a maximum of 6.2 mgd by eliminating some discharges. As a result, a number of outfalls have been eliminated or re-routed. As of July 1993, only seven outfalls into the West Basin remained. The current LBNSY NPDES permit (No. CA0003786), reissued on 19 July 1993, specifies that up to 6.2 mgd of wastes, associated with dry dock operations, can be discharged into the West Basin. The discharged wastes consist of single-pass, noncontact cooling seawater from air compressors, single-pass cooling water from docked ships, groundwater and seawater seepage from hydrostatic pressure relief wells, and caisson seawater leakage from dry docks. The seawater used for cooling is drawn from the shipyard's fire protection system which contains zinc plumbing fixtures for corrosion prevention (LARWQCB 1993).

Individual NPDES outfalls serve the following systems or operations (SWDIV 1989, LARWQCB 1993, and Brown and Caldwell 1980):

- Outfall No. 004: discharges single-pass, noncontact cooling seawater from air compressor heat exchangers at Building 104 via subsurface drains to the slip just east of Pier No. 3.
- Outfall No. 006: discharges single-pass, noncontact cooling seawater from air compressor heat exchangers at Building 196 via subsurface drains to the slip just west of Pier No. 2.
- Outfall No. 009: discharges single-pass, noncontact cooling seawater from air compressor heat exchangers at Building 150, dry dock drainage, and caisson seawater leakage from Dry Dock No. 1 to the adjacent slip, east of Dry Dock No. 1.
- Outfall No. 010: discharges single-pass, noncontact cooling water from docked ships, dry dock drainage, and caisson seawater leakage from Dry Dock No. 2 to the adjacent slip between Piers No. 2 and 3.
- Outfall No. 011: discharges single-pass, noncontact cooling water from docked ships, dry dock drainage, and caisson seawater leakage from Dry Dock No. 3 to the slip just west of Pier No. 3.



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- Outfall No. 015: discharges single-pass, noncontact cooling seawater from air compressor heat exchangers at Building 162, Pier E to the West Basin east of Dry Dock No. 1.
- Outfall No. 016: discharges single-pass, noncontact cooling seawater from a boiler plant steam condenser at Building 132 to the slip just west of Pier No. 1.

Figure 2-8 illustrates the approximate locations of these outfalls.

**NPDES Monitoring and Reporting Program.** In compliance with the RWQCB Order No. 93-045, Monitoring and Reporting Program No. 6431, the DON conducts effluent sampling and analysis to monitor chemical constituents in the wastewater discharged to the West Basin. The receiving waters are also monitored annually through sediment sampling and analysis at five stations, and monthly through visual observations of the receiving waters. The NPDES sediment sampling stations are located as follows:

- R1 - in front of Dry Dock No. 1, east of Pier 1;
- R2 - in front of Building 132, west of Pier 1;
- R3 - in front of Dry Dock No. 2, east of Pier 3;
- R4 - in front of Dry Dock No. 3, west of Pier 3; and
- R5 - on the Navy Mole, in the vicinity of Building 800.

In addition to monitoring the receiving waters, bioaccumulation monitoring in mussel tissue is conducted annually at two stations in the West Basin. The bioaccumulation stations are located at the inland end of Pier 3 and in the vicinity of Building 800 on the Navy Mole. Results of the 1994 annual sampling and analysis were included in the September 1994 monthly NPDES monitoring report. Results indicated elevated levels of PAHs in sediments. Metals, PCBs, oil and grease, extractable fuel hydrocarbons, pesticides, and tributyltin were also detected. Results of the sediment analysis at the five stations are summarized in Table 2-1 (LARWQCB 1993 and SWDIV 1994c).

### *Discharges from Pier Activities*

Historically, maintenance and repair operations were conducted on ships while docked at various piers at the LBNC. According to information provided by representatives of NAVSTA Long Beach, industrial activities conducted onboard U.S. Naval vessels (with exception of repair ships or tenders) reportedly were limited to minor repairs of ship facilities. Industrial activities conducted on ships docked at piers occurred mostly at the industrial piers (Piers 1, 2, and 3) (JEG 1992b).

Typical activities conducted on the ships included chipping and painting, valve maintenance, electrical motor repair, pipe and pump repair, and welding. Wastes generated during the repair activities primarily consisted of bilge water, which was removed from ships by barge or waste oil raft for appropriate treatment or recycling (WESTDIV 1991b).



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The fuel pier (Pier 12) is used to off-load fuel from carriers or for fueling ships and barges at the pier. The main types of fuel currently handled at Pier 12 include jet fuels JP-5 and JP-8, and Navy Distillate (diesel). During its history of operation, jet fuel JP-4 and Diesel Fuel Marine were also handled at Pier 12 (Trani, pers. com. 1995).

Industrial wastewater, generated by maintenance and repair operations conducted on ships at the LBNC, is removed from ships by barge or waste oil raft for appropriate treatment or recycling. Sanitary wastewater is transferred from the ship's holding and collection tanks to the pier through a flexible hose to a pier riser, where it flows into the sanitary sewer collection system. A 1991 industrial wastewater discharge report, prepared by SCS Engineers, found that the wastewater generated from ships contained elevated concentrations of total metals, copper, zinc, and dissolved sulfide. These concentrations, however, fall below the City of Los Angeles Bureau of Sanitation specific limitations for discharges to Publicly Owned Treatment Works (POTWs). It has been suggested that the source of elevated concentrations of copper and zinc in ship wastewater may be from natural deterioration of shipboard piping, or seawater carrying elevated concentrations of copper and zinc which is introduced into the ship's wastewater stream through flushing (toilet) water (WESTDIV 1991b).

**Bilge Water and Oily Wastes.** When a ship arrives in port, the oily waste holding tank, the contaminated oil storage tank, the waste oil tank, and the ship's bilges (tanks used for collecting liquid wastes) typically contain substantial volumes of waste oil and oily waste. Upon berthing, these tanks are off-loaded, usually within the first 24 hours in port. During the period of time the vessel remains docked, oily wastes continue to be produced from daily ship operations. Leaky seals, accidental oil spills, and ship washdown waters all eventually drain to the bilge. The bilges are pumped out daily (WESTDIV 1984).

In the 1950s, bilge water was reportedly discharged both on the Navy Mole and into the West Basin, as there was no set policy guiding when and where bilge waters could be discharged. A 1971 Naval Shipyard report estimated a total of 300,000 gpd of sewage and industrial wastewater was discharged from an average of 20 ships berthed or dry-docked at any one time. Studies have indicated that bilge waters have high concentrations of oil (0.1 percent by volume) and hexavalent chromium (up to 500 ppm) which was used as a corrosion prevention solution (NEESA 1983).

Before July 1991, the oily wastes and the bilge water were pumped directly into a "donut" (oil disposal raft) on a daily basis (WESTDIV 1984). After July 1991, the use of donuts was eliminated, and the oily wastes and bilge water were removed by submersible or diaphragm pump through a piping system which transfers the wastes to a holding facility. The quality of the liquid wastes is tested in this facility prior to disposal.

Two types of donuts, with open and closed bottoms, were used at the LBNSY. The open-bottom donut was a 15-foot deep oval-shaped steel raft that floated, and it was open to the West Basin waters through 18-inch diameter holes in its bottom plate. These rafts always contained liquid and floated at a constant 12-foot draft. As the oily waste was discharged into the open-bottom donut, it mixed with seawater partially filling the donut.



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The oil separated from the wastewater and floated to the top while emulsified and dissolved oily wastes escaped through the bottom of the donut. The donut was considered full when the depth of water below the floating oil was 4 feet. The capacity of the donut above this level was 15,000 gallons (SWDIV 1969 and WESTDIV 1984).

Closed-bottom donuts generally operated on the same principle as open-bottom donuts. However, water was accumulated inside the donut and discharged through a collector pipe extending to the bottom of the donut, whereas oily waste floating on top of the water was discharged through separate piping. Once the donut was filled, it was towed to Pier 6 where an oil barge was permanently moored. The oily waste in the donut was then pumped into an oil/water separator, with the oil being discharged to an oil storage compartment on the barge, and the water separated from the oily waste being discharged to another donut and ultimately to the West Basin. The use of the donuts, whether open- or closed-bottom, may have been a pathway of hydrocarbons and soluble chemicals into the West Basin sediments, via West Basin waters.

**Boiler and Tank Cleaning Wastes.** Another type of waste that is generated by ships and that may have been historically discharged into the harbor is boiler cleaning and tank cleaning waste. When a ship comes into port for servicing, repair, or overhaul, its tanks and boilers are drained, repaired, and cleaned prior to the ship leaving the harbor. This type of waste is normally generated shoreside by an outside contractor who is responsible for the removal of the waste from the LBNSY. When the boilers of the ships become heavily scaled, highly acidic solutions are used to remove the scale and the residues are removed off-site by contractors (WESTDIV 1984).

### 2.2.2.3 ACCIDENTAL SPILLS

The piers at the NAVSTA Long Beach and LBNSY are used primarily for ship moorage and minor repair and fabrication. Based on the various types of activities conducted on the piers, incidental spills, such as fuel spills or oil spillage associated with filling or emptying the donuts, may have occurred over the years. Based on the review of documents listed in the reference section, no reports of major accidental spills in the West Basin were found.

Historically, spills or leaks of toxic or hazardous pollutants may have entered the waters of the West Basin by discharge through the storm water system. Significant spills or leaks of toxic pollutants in areas exposed to storm water at NAVSTA Long Beach since 19 November 1988 were identified in the NAVSTA SWDMP. A listing of significant spills or leaks of toxic pollutants such as various types of fuels, oils, waxes, acids, and miscellaneous fluids is presented in the NAVSTA SWDMP (WWC 1993).

Information on significant releases, spills, or leaks of potentially toxic or hazardous pollutants at LBNSY was compiled for the period between March 1989 and October 1991 by the LBNSY SWMP. A listing of the LBNSY spill history, which includes various types of fuels, oils, waxes, acids, and miscellaneous fluids, is presented in the SWMP (Brown and Caldwell 1992b).



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### 2.2.2.4 SUMMARY OF PAST DISCHARGES TO THE WEST BASIN

Information on potential past discharges into the West Basin waters was obtained through a review of various reports and publications (NEESA 1983, SWDIV 1969, and CDM 1977). For the purposes of this RI Report, the locations of these discharges were grouped as illustrated on Figure 2-8, wherein discharge locations along the LBNSY seawall and the Navy Mole are referred to as Discharge Locations 1 through 8, and direct discharges from the piers or ships to the West Basin are referred to as Discharge Locations 9 through 12. Various discharges with unidentified locations are also listed on Figure 2-8. A description of the types of discharges by discharge location, including approximate dates when the discharge was discontinued, is presented below.

***Discharge Location 1***

- Chlorinated water used in cleaning ship's water hoses (to 1980).
- Wastewater, containing elevated zinc, copper, and iron concentrations, from crane cleaning operations.
- Wastewater, containing elevated copper and zinc concentrations, from dry dock operations: copper slag, sandblasting wastes, zinc-containing paint residue, oil and grease, and raw sewage.
- Noncontact cooling seawater used in air compressor heat exchanger, wastewater from boilers, and brines from the regeneration cycle of water softener units (to early 1970s).
- Wastewater from sandblasting operations (to mid-1970s).
- Wastewater from rinsing motor blocks cleaned in kerosene (1960s).

***Discharge Location 2***

- Wastewater, containing elevated zinc, copper, and iron concentrations, from crane cleaning operations.
- Wastewater from sandblasting and aluminum cleaning operations (to mid-1970s).
- Noncontact cooling seawater used in air compressor heat exchanger, wastewater from boilers, and brines from the regeneration cycle of water softener units (to early 1970s).
- Wastewater from rinsing motor blocks cleaned in kerosene (1960s).
- Sodium nitrite, hydrazine, morpholine, solvents, acids, and metals from flush pipe and boiler cleaning operations (1963 to 1978).

***Discharge Location 3***

- Wastewater, containing elevated zinc, copper, and iron concentrations, from crane cleaning operations.
- Wastewater from sandblasting and aluminum cleaning operations (to mid-1970s).



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- Wastewater, containing elevated copper and zinc concentrations, from dry dock operations: copper slag sandblasting wastes, zinc-containing paint residue, oil and grease, and raw sewage.
- Air conditioning cooling water blowdown, containing chromium (1970 to 1980).
- Noncontact cooling seawater used in air compressor heat exchanger, wastewater from boilers, and brines from the regeneration cycle of water softener units (to early 1970s).
- Sodium nitrite, hydrazine, morpholine, solvents, acids, and metals from flush pipe and boiler cleaning operations (1963 to 1978).

### *Discharge Location 4*

- Sanitary wastewater (to mid-1970s)
- Wastewater, containing elevated zinc, copper, and iron concentrations, from crane cleaning operations.
- Wastewater, containing elevated copper and zinc concentrations, from dry dock operations: copper slag sandblasting wastes, zinc-containing paint residue, and oil and grease.
- Air conditioning cooling water blowdown, containing chromium (1970 to 1980).
- Noncontact cooling seawater used in air compressor heat exchanger, wastewater from boilers, and brines from the regeneration cycle of water softener units (to early 1970s).
- Wastes from diesel engine parts cleaning and metal parts paint stripping.

### *Discharge Location 5*

- Wastewater, containing elevated zinc, copper, and iron concentrations, from crane cleaning operations.

### *Discharge Location 6*

- Sanitary wastewater (to mid-1970s)
- Wastewater from pump and hose cleaning (1960s).
- Waste oils and greases from mechanical repair and maintenance work on mine sweepers and small craft (to late 1960s).
- Wastewater from cleaning of paint buckets in caustic solution (to early 1970s).

### *Discharge Location 7*

- Sanitary wastewater (to mid-1970s)
- Wastewater from cleaning of paint buckets in caustic solution (to early 1970s).
- Wastewater containing ink and carbon from wet paper destructor (to late 1960s).



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- Waste oils and greases from mechanical repair and maintenance work on mine sweepers and small craft (to late 1960s).

***Discharge Location 8***

- Sanitary wastewater (to mid-1970s)

***Discharge Location 9***

- Sanitary wastewater (to mid-1970s)
- Discharges from pier activities: chipping and painting, valve maintenance, electrical motor repair, pipe and pump repair, and welding.
- Oily wastes removed by barge or waste oil raft (donuts).
- Wastewater containing elevated copper and zinc.
- Bilge water containing oil and hexavalent chromium (to 1991).

***Discharge Location 10***

- Sanitary wastewater (to mid-1970s)
- Discharges from pier activities: chipping and painting, valve maintenance, electrical motor repair, pipe and pump repair, and welding.
- Oily wastes removed by barge/waste oil raft.
- Wastewater containing elevated copper and zinc.
- Bilge water containing oil and hexavalent chromium.

***Discharge Location 11***

- Sanitary wastewater (to mid-1970s)
- Wastewater and various discharges from operation of three floating dry docks.

***Discharge Location 12***

- Diesel and jet fuel leaks due to off-loading fuel from carriers, fueling ships and barges (1984 to present).

***Unidentified locations***

- Transformer fluids (1960s to early 1970s).
- Pesticide residues and rust preventative.
- Accidental spills of various chemical substances.



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### 2.2.2.5 NON-LBNC DISCHARGES TO THE WEST BASIN

This section describes discharges of chemicals into the West Basin waters that were not a direct result of LBNC activities. These sources of discharge include oil production activities conducted on Pier E, and use of refined products for dust suppression, as well as placement of fill material on Pier E to elevate subsided areas.

Petroleum-like materials were described in various boring logs from previous investigations conducted on land at the LBNSY, and total recoverable petroleum hydrocarbon (TRPH) concentrations were reported in soil samples analyzed during those investigations (Earth Tech 1989, JEG 1993d, and MTA 1994). Potential sources of the petroleum hydrocarbons include crude oil production and use of refined products such as waste motor oil for dust suppression of parking lots/roadway surfaces. Wastes generated by crude oil production activities may have been accidentally discharged to the surface waters, thereby into the West Basin waters. In addition, surface runoff from the oil production areas may have mobilized soils contaminated with petroleum hydrocarbons; these contaminated soils could have been discharged to the surface waters and possibly the West Basin.

In the early 1950s, subsided areas on the east side of Terminal Island (Pier E) have been elevated with fill material. Most of the fill material (approximately 6.5 million cubic yards) consisted of dredged material obtained from south of the Navy Mole (U.S. ACOE 1953a, 1953b, and 1955). The dredged material is likely to have contained compounds from both crude oil production in the area and refined products from harbor activities. Placement of the fill material on Pier E would have resulted in the liquid phase of the dredged material to drain to the surface waters surrounding Pier E, which would include West Basin. Thus, petroleum hydrocarbon contaminated fines present in the discharged liquid may have settled in the West Basin.

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SECTION 3

# SITE CHARACTERIZATION

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# Section 3
# SITE CHARACTERIZATION

West Basin sediments and fish were the target media for this RI. A comprehensive sampling and analysis program was designed and implemented with the objective of characterizing the toxicity of West Basin sediments and fish. This objective was accomplished by acquiring chemical, physical, and biological measurements of, and assessing the extent of chemicals, their concentrations, and toxicity in the target media.

Significant site characterization activities included:

- conducting a field investigation and obtaining sediment, fish, and benthic infaunal invertebrate samples;
- obtaining laboratory analyses of sediments, fish tissue and bile, clam tissue, and benthic infauna;
- performing statistical calculations and analysis of data;
- evaluating the results of statistical analyses; and
- identifying COPCs and AOPCs.

For the purposes of this RI Report, the discussion of site characterization was divided into two major components: rationale, methods, and design of site characterization, and the results of site characterization.

Section 3 describes the rationale and methods used in designing and implementing the site characterization program. This section begins with a discussion of data quality objectives, and an explanation of the rationale behind the design of the sampling and analysis plan. These discussions are followed by a narrative description of the methods used in conducting the field investigation, laboratory analyses, data management, and data evaluation.

## 3.1 DATA QUALITY OBJECTIVES

Clearly defined objectives for data acquisition are necessary to effectively support data evaluations and assessments that will ultimately lead to conclusions as to whether a site or medium is contaminated, and whether it requires remedial action. These objectives, referred to as Data Quality Objectives (DQOs), are essentially specifications which establish the quality of data to be collected for each specified type of planned data use. DQO development is based on the premise that data users may have different requirements of data quality, and that the quality of data obtained needs to be sufficient to meet all intended uses.

According to the SAP (JEG 1993b), the data collected during the West Basin RI was to be used for site characterization, risk assessment, and evaluation of remedial alternatives. The Final RI/FS Work Plan (JEG 1993a) explains that the general approach used in developing DQOs for West Basin comprises a three-step process: 1) AOPCs at West Basin would be identified, and decisions to be made regarding the need for remediation would be specified (the Work Plan defines an AOPC as having similar means and types of potential contamination, or similar remedial actions), 2) data uses and needs to achieve the



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objective of identifying AOPCs would be identified, and data quality needs specified in terms of COPCs, detection limits, and concentrations of concern; and 3) the methods of acquiring data of acceptable quality and quantity would be specified.

The Final RI/FS Work Plan (JEG 1993a) divides West Basin into two main AOPCs: general harbor area where sediments are subject to disturbance due to factors such as vessel operations and currents, and suspected depositional areas such as under piers. In addition, data uses are identified as characterization of sediment toxicity; human health and ecological risk assessment; and evaluation of remedial alternatives. Human health risk assessment would evaluate health risks to recreational anglers through ingestion of chemicals in fish. Ecological risk assessment would include the potential impacts of chemicals in fish or aquatic predators which consume West Basin fish. For the purposes of these risk assessments, fish samples would be collected from the dry docks at LBNSY. The Work Plan also includes water column analysis, chemical analysis of sediment samples, sediment bioassays, and bioconcentration tests. Screening levels and a matrix listing possible actions resulting from the sediment toxicity evaluation are also provided.

At the onset of this RI, a series of discussions and workshops held with the technical oversight agencies to review the work to be done culminated in significant modifications to the rationale and methods outlined in the Final RI/FS Work Plan (JEG 1993a) and the SAP (JEG 1993b). The technical oversight agencies include Cal-EPA/DTSC, U.S. EPA Region IX, United States Fish and Wildlife Service (U.S. FWS), and NOAA. One of the key developments of these discussions was the agreement that the focus of this RI would be the West Basin sediments and fish, and that the water column in the West Basin need not be evaluated as yet. The oversight agencies agreed to the concept of "triggering" water column investigations based on the findings from the sediment investigation. "Triggering" in this context meant that a certain task, water column investigations in this case, would be deemed to be required and would be conducted only if certain pre-established requisites were found to have been encountered at a pre-determined point in the project schedule. Other significant issues agreed upon included location and number of sediment samples to be collected; selection of reference stations; statistical methods to be used for analysis of data; number, type, and species of fish samples to be collected (tissue, bile, whole body) as well as fish collection methods; and the specific details of the bioassay and bioaccumulation tests. It was also agreed that benthic infaunal samples would be collected at the time of sediment sampling and archived; benthic community analysis would be conducted if found to be "triggered." Human health risk assessment would be expanded to include assessment of risk posed by ingestion of fish to the subsistence as well as the recreational angler. Ecological risk assessment would be focused on the sediments, in addition, risk to the harbor seal posed by ingestion of fish would be assessed. It was agreed that West Basin data would be statistically analyzed using clustering techniques, thereby developing sediment evaluation zones (SEZs). The results of that task would then allow assessing whether any particular SEZ could be identified as an AOPC or an AOC, as well as identifying and evaluating potential remedial action alternatives.



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It was also agreed that the ecological risk assessment would be based on a preponderance-of-evidence approach. For this purpose, an evaluation matrix, significantly more detailed and expanded than the matrix presented in the RI/FS Work Plan (JEG 1993a), was developed. This new evaluation matrix included, as decision-making elements, the individual SEZs, sediment chemistry, sediment bioassay (solid phase and pore water), sediment bioaccumulation, and benthic community analysis. This matrix also contained pre-established, possible interpretations of the numerous combinations of elements to be collectively considered as part of the preponderance-of-evidence approach, and which would allow bringing to a decision-making point the voluminous data acquired, and the extensive statistical analyses conducted on the database. Interpretations of the significance of the various combinations of elements, as obtained from this evaluation matrix, formed the basis for the conclusions presented in this RI Report.

Details of the expanded DQOs, and modifications to the rationale and methods provided in CLEAN I documents, referenced earlier, for site characterization and risk assessments are voluminous and have not been repeated herein. However, these subjects are discussed in three documents: TM No. 4 (BNI 1994c), TM No. 5 (BNI 1994d), and RAWP (BNI 1995a), copies of which are contained in Appendices A, B, and C, respectively, for reference. These documents reflect the most current agreements and understandings with the technical oversight agencies, and essentially formed the basis of this RI.

DQOs for the West Basin RI are summarized in Table 3-1. The sampling and analysis rationale and methods used to achieve these objectives are described in the subsequent parts of Section 3.

## 3.2 SAMPLING DESIGN

The overall sampling program was designed to collect sediment, benthic invertebrate, and fish tissue and bile samples from the West Basin and from the reference stations. The program was designed on the basis of using statistical methods to enhance the usability and effectiveness of data. To accomplish these objectives, three major elements of statistical representativeness were taken into consideration: randomness, adequate representation of reference conditions, and sample replication. The discussion below provides a summary of the rationale for each of these elements which were intended to strengthen the overall statistical basis of the sampling design.

Randomness is a statistical element that enhances the representativeness of conditions encountered in the field and reduces sampling bias. The West Basin sampling program was composed of a stratified random design. Two key examples of this design include the randomly placed point of origin for the sediment sampling grid and the selection of locations of sampling transects used to collect fish within the West Basin. The locations of surface sediment sampling stations beneath the West Basin piers were also selected using a stratified random design.

Adequate representation of reference conditions yields reference data that provide a regional perspective for comparing West Basin data to a local benchmark not impacted by



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the operations of the LBNC. The sampling program was designed for the purposes of performing statistical comparisons between the data acquired from the West Basin sampling stations and the data acquired from the reference stations, providing a site-specific evaluation of potential impact. Accordingly, reference conditions were characterized by collecting samples from three reference stations (seven total sites for chemistry and biological analyses, nine total sites for TOC and grain size analyses) located at various areas within San Pedro Bay. Section 3.2.6 discusses reference stations in greater detail.

Replication in an environmental sampling program provides for a measure of variability inherent in physical and biological systems. Therefore, although West Basin stations were generally sampled only once for chemical and biological measurements, two field measures were implemented to assess variability between West Basin stations and reference stations. These measures included: 1) replicating, in triplicate, all chemical measurements at one of the West Basin stations (Station 1); and 2) replicating, in triplicate, chemical and biological measurements at all three substations of Reference Station 40010 and at one of three substations of Reference Station 40018. The more intensive sampling, conducted at Station 1 and at the reference locations referred to above, provided greater insight into the natural variability of physical and biological conditions in sediments at these sampling stations.

Additional replication of West Basin sediment data was achieved by treating individual West Basin stations as field replicates within each SEZ. The evaluation of data by SEZs implements replication as an element of statistical representativeness. Detailed discussions of SEZs are presented in Section 4.6 of this RI Report.

The following paragraphs describe the procedures used in selecting the number and location of surface sediment, subsurface sediment, and fish samples within West Basin and at reference stations.

### 3.2.1 West Basin Surface Sediment Sampling

The objective of surface sediment sampling was to characterize the toxicity and ecological impact of surface sediments in West Basin. Overall, 44 surface sediment samples were collected from the West Basin to achieve this objective. In addition, data from a West Basin sediment sample (Station 41), collected as part of the Site 3 (Mole Industrial Waste Disposal Pits) RI/FS, were also used for the purposes of this RI Report.

The conceptual model of the West Basin, developed as part of the CLEAN I Work Plan (JEG 1993a), divides the West Basin into two main areas of study for purposes of conducting this RI: the general harbor area of the West Basin (herein referred to as "basin" for the purposes of this RI Report - basin area excludes areas beneath piers) where sediments are subject to the effects of vessel operations, tidal currents, and wind-driven currents; and suspected depositional areas such as under piers of the West Basin (herein referenced to as "piers") where sediments are less affected by vessel operations, tidal currents, or wind-driven currents. The suspected depositional areas were further



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subdivided into areas of like operations which would be expected to have similar types and concentrations of chemicals, as described below:

- sediments beneath the grouping of Piers 1, 2, and 3, which experience less disturbance from ship traffic and are next to the LBNSY, where higher levels of contamination have been observed in previous investigations;
- sediments beneath the grouping of Piers 6, 7, 9, 15, and 16, which experience more disturbance from ship traffic and are away from the LBNSY;
- sediments beneath Pier 12 (Fuel Pier), since it is a newer pier and may have significantly less sediment accumulation;
- the northwest basin, where there is little ship disturbance; and
- the marina area, where the smaller crafts are likely to cause less sediment disturbance.

The CLEAN I conceptual model of West Basin is illustrated on Figure 3-1 (JEG 1993a). The CLEAN I SAP provides surface sediment sampling locations determined on the basis of random selection (JEG 1993b). These sampling stations were, in general, adopted for this RI. In cases where additional sampling stations were desired, the random selection method described in the SAP (JEG 1993b) was used in establishing the additional sampling locations. West Basin surface sediment sampling locations established for this RI are shown on Figure 3-2; the coordinates of these sampling stations are listed in Table 3-2.

The surface sediment sampling design for the piers, the northwest basin and marina areas, and the remaining portions of the basin are discussed in the subsequent sections.

#### 3.2.1.1 PIERS

At least one surface sediment sampling location was selected beneath each pier within each of the three groupings of piers suspected to be depositional areas (Piers 1, 2, 3; Piers 6, 7, 9, 15, 16; and Fuel Pier [12]). Therefore, for the grouping of Piers 1, 2, and 3, one sample was collected beneath each pier for a total of three samples. One sample was collected beneath each pier in the grouping of Piers 6, 7, 9, 15, and 16 for a total of five samples. Three samples were collected beneath the Fuel Pier (Pier 12). Analysis of these number of samples for the individual pier groupings is expected to provide the following level of confidence that the maximum value observed within each defined area is greater than the median concentration within the study area:

- Piers 1, 2, 3: greater than 85 percent.
- Piers 6, 7, 9, 15, 16: greater than 95 percent.
- Fuel Pier (Pier 12): greater than 85 percent.



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#### 3.2.1.2 NORTHWEST BASIN AND MARINA AREAS

The CLEAN I SAP (JEG 1993b) specifies three surface sediment sample locations to be selected for each of the northwest basin and marina areas. Collection and analysis of three samples from each suspected depositional area would provide an 85 percent probability that the highest value from the three samples is greater than the median value from the study area. In addition to the three samples for the northwest basin area, five marina area sample locations were selected to provide a more complete characterization of the sediments within that region of West Basin. The additional two sampling stations were deemed to be of significance due to the greater areal extent from the marina area compared to the northwest basin area (please refer to Figure 3-1) (BNI 1994d).

#### 3.2.1.3 THE BASIN

Sampling points within the basin (excluding the piers, northwest basin, and marina areas, as discussed above) were established by the CLEAN I SAP (JEG 1993b), using a grid of approximately 300 by 300 meters. The x-axis and y-axis coordinates of the point of origin for this sampling grid have been randomly generated, and the overall grid developed using this point of origin. Each sample point along the grid that fell within the basin was then selected as a sampling location. A total of 27 sampling locations were originally selected within the basin using this method. However, because two additional sampling locations had already been selected within the marina area (described in Section 3.2.1.2), 25 samples were actually collected within the basin to maintain the original total of 44 surface sediment samples established by the CLEAN I SAP (JEG 1993b).

### 3.2.2 West Basin Subsurface Sediment Sampling

The objective of West Basin subsurface sediment sampling was to characterize the vertical distribution of chemicals in sediments, and to assess whether adverse effects associated with potential remedial actions, such as dredging, should be expected. Four 3-meter deep subsurface sediment cores and four 5-meter deep subsurface sediment cores were planned to be collected from the West Basin to achieve this objective. Locations of the subsurface samples are shown on Figure 3-2, and their coordinates are listed in Table 3-2.

The methods of determining subsurface sediment sample locations provided in the CLEAN I SAP (JEG 1993b) were adopted for this RI. Planned locations of individual sediment subsamples within each of the subsurface sediment cores were as follows:

- two subsamples (one from 0 to 1 meter and another from 1 to 2 meters) from each of the four 3-meter cores (total of 8 samples), and
- five subsamples (one per 1-meter interval) from each of the four 5-meter cores (total of 18 samples because one of the cores yielded only 3 samples).

### 3.2.3 West Basin Fish Tissue and Bile Sampling

To achieve the purposes of fish tissue and bile sampling (BNI 1994d, 1995a), it was first necessary to identify appropriate fish species that could be collected in the required



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numbers. Several key selection criteria were used to select fish species to be evaluated in order to reduce the chances that some species could contribute to underestimation of risk. Potential fish species to be collected were pre-selected based on the following criteria (U.S. EPA 1993f): (1) are commonly caught within West Basin and consumed by humans or aquatic predators; (2) have recreational or subsistence fishing value; (3) are at least partially bottom feeders in relatively close contact with sediments and, therefore, are more likely to uptake chemical residues directly from bed sediments; (4) have a propensity to bioaccumulate chemicals (i.e., have a relatively high tissue lipid content); and (5) are relatively localized rather than highly mobile or seasonally migratory.

BNI and the DON held a workshop with the U.S. EPA Region IX, DTSC, NOAA, and LARWQCB on July 18, 1994 to obtain concurrence on the fish species to be collected. It was jointly agreed to collect demersal, or bottom-dwelling species, (i.e., species more closely connected to potential sediment contamination) for ecological risk assessment purposes, and pelagic fish for human health risk assessment purposes.

Initially, the Fish SAP (1994b) called for only two species to be collected, which raised the difficulty of being able to collect the requisite number of fish within a reasonable period of time. The July 1994 workshop resulted in a list of target fish species for collection, which provided for flexible decision-making in the field by providing a wide range of species to select from for collection at the time of field sampling. This list, along with the specific rationale for each species selected, is shown in Table 3-3; fish are grouped by data use and listed by relative priority. Once in the field, however, the fish species selection criteria was driven by the actual fish catch, which was dominated by white croaker (*Genyonemus lineatus*) and California halibut (*Paralichthys californicus*).

Eighty-one samples were collected as planned from 30 white croaker and 44 California halibut to support the evaluation of human health and ecological risk assessment. The 81 samples consisted of the following:

- 45 whole body samples, to assess potential contaminant ingestion by subsistence anglers and by aquatic predators;
- 18 muscle filet samples, to assess potential contaminant ingestion by recreational anglers; and
- 18 bile samples (collected from California halibut only), to assess the potential for the effects of chemicals of potential concern to the fish themselves.

An attempt was made to collect both fish species in groups of three so that the fish could be used as field replicates in statistical analysis. Table 3-4 provides a summary of the numbers of fish samples analyzed by species and sample type.

Locations of fish sampling transects within West Basin were selected using a stratified random approach. The West Basin was first subdivided into three areas: NAVSTA Long Beach, LBNSY, and the entrance to West Basin. Each of these subareas represented distinct areas of land-based and ship activities as well as distinct physicochemical characteristics. For example, circulation within the innermost portions of the West Basin has been reported to be limited (JEG 1993a) and, therefore, particle size distributions



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would be expected to be markedly different from other areas of the West Basin, thereby affecting the biological habitat. Sampling transects were selected randomly within these subareas without regard to the chemicals that may be present in bottom sediments. Selection of transects were, however, made in partial consideration of logistics (e.g., where space was available adjacent to piers or other structures). Two transects were selected and sampled in the entrance to West Basin, two at the LBNSY, and three at NAVSTA Long Beach (see Figure 3-2). Table 3-5 provides the latitudes and longitudes of the fish collection transects.

Additional transect locations were selected off the inboard side of the Navy Mole near the entrance to the West Basin. These transects were selected based on the Navy Creel Census (BNI 1994b) and area accessibility to anglers. Recreational and subsistence anglers have been allowed to fish regularly from the riprap along the Navy Mole.

### 3.2.4 Benthic Infauna Sampling

At the onset of the field investigations, and in view of the DQOs established earlier in Section 3, it became apparent that the possibility of "triggering" benthic community analysis (BCA) existed. If triggered, BCA would be one of the major components of the preponderance-of-evidence approach adopted for this RI as part of the ecological risk assessment procedures (BNI 1995a). For this purpose, samples of benthic infaunal invertebrates were collected at the same time and at the same locations as surface sediment samples inside West Basin. The organisms were preserved and archived for use at a later date in case BCA was triggered. Collecting BCA samples along with surface sediment samples provided a large number of BCA samples, allowing for robust statistical analyses and completeness of spatial sampling distribution. This large sample number also provided the opportunity to assess the qualities of the benthic community throughout West Basin, including beneath the piers. Sampling the benthic infauna at each surface sediment sampling location would also provide levels of confidence similar to those expected to be obtained under the rationale for surface sediment sampling, described in a preceding paragraph. Further, taking benthic infaunal samples at surface sediment locations would benefit from the random selection procedure applied to the surface sediment sampling locations.

### 3.2.5 West Basin Sediment Sampling for Laboratory Clam Bioaccumulation Tests

Another component of the preponderance-of-evidence approach for this RI was laboratory clam bioaccumulation testing. It was not deemed to be necessary to conduct bioaccumulation testing using every surface sediment sample, because bioaccumulation integrates contamination across time and area. Sediments for bedded sediment bioaccumulation testing were taken from nine surface sediment sampling stations within West Basin (see Figure 3-2). Specifically, one station from each of the suspected depositional areas was selected (except for the area consisting of Piers 6, 7, 9, 15, 16, within which two stations were chosen) and three surface sediment sampling stations were



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selected from the basin. Specific surface sediment sampling stations, from which additional sediment samples would be obtained for bioaccumulation testing, were selected based on the following criteria:

- frequency and intensity of ship traffic to determine whether constant sediment resuspension could have contributed to bioaccumulation;
- stations located beneath piers, where little or no dredging has occurred;
- stations located near the shore, where contaminated surface water or groundwater, if discharged into West Basin, could have contaminated the sediments;
- nature and extent of chemicals found in the sediments based on existing information (bioaccumulation tests from areas of low and high concentrations of chemicals may help determine whether contaminants are bioavailable);
- flushing potential of West Basin waters due to forces such as tides;
- whether subsurface coring was also conducted at the surface sediment sampling station for the purposes of assessing whether chemicals, if found in the subsurface sediments, could be taken up by epibenthic or other organisms;
- measurement at selected reference areas; and
- whether the area is suspected to be depositional.

### 3.2.6 Reference Stations Sampling

Three reference stations within San Pedro Bay were sampled to assess the effects of regional background. The reference stations were intended to show background conditions and to assist in evaluating whether chemical concentrations in sediments collected from West Basin stations were in excess of those normally found in the San Pedro Bay area. Reference stations for this RI were selected with three primary objectives in mind:

1. Suitability for comparison to West Basin sediments based on physical parameters, such as water depth, TOC, and grain size. These parameters not only determine the nature of the benthic habitat (e.g., through mechanisms of oxidation/reduction, sunlight, currents, and tidal action), but also play a significant role in determining sediment toxicity through mediation of contaminant bioavailability in sediment.
2. Statistical defensibility and consistency with the design for the West Basin RI and risk assessment.
3. Consistency with other existing programs (e.g., the SWRCB's Bay Protection and Toxic Cleanup Program).

BNI and the DON held a series of meetings with the LARWQCB and telephone conversations with the SWRCB and the CDFG to identify reference stations in less urbanized settings within San Pedro Bay. Prior to start of field activities, and in light of



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the meetings and objectives described above, it was jointly agreed to choose Stations 40010 (off Cabrillo Beach in Los Angeles Outer Harbor) and 40018 (Long Beach Outer Harbor) of the BPTCP as reference stations. During the past 2 years, these stations have been sampled by the SWRCB several times, using a sampling and analysis program similar to that implemented as part of this RI. Data from Stations 40010 and 40018 were compared with West Basin data collected during the SI. Sediment was determined to be of representative grain size, TOC content, and benthic habitat to those of West Basin, with acceptable survival rate of bioassay test organisms, and with low levels of sediment contamination present. The fact that synoptic data have been collected from these BPTCP stations lends substantial confidence to their selection as reference locations.

During the course of sediment sampling in West Basin, visual observations showed that sediments from several West Basin sampling stations had higher sand content and coarser grain size than other West Basin stations. To maintain the suitability of reference conditions for comparison with West Basin sediments based on physical characteristics, it became apparent that a reference station having grain size coarser than sediments found at Reference Stations 40010 and 40018 would be needed. Several other BPTCP stations were sampled on a trial basis, and the grain size of sediments from these stations were visually inspected and compared to the coarser grain size sediments sampled in West Basin. Subsequently, and while field sampling was still in progress, a conference call was held between BNI, the DON, and the technical oversight agencies on 23 June 1994. During this call, it was jointly agreed to add BPTCP Station 40032 in Los Angeles Outer Harbor as a third reference station because it was found to have predominantly coarse grain sediments. The three reference stations (40010, 40018, and 40032) together more thoroughly encompass the range of physical characteristics found in sediment samples taken from within West Basin.

Surface sediment samples were collected from three substations at each of the three reference stations, spaced 200 m apart in a triangular formation. The substations were identified with additional notation. Using Station 40010 as an example, its substations were identified as 40010.1, 40010.2, and 40010.3.

Subsurface sediment samples were collected from Reference Stations 40010 and 40018. These two reference stations were designated for subsurface sediment sampling prior to field activities, as set forth in the sampling and analysis plans (JEG 1993b; BNI 1994d).

Two 5-meter core samples were intended to be taken at Reference Stations 40010 and 40018 for subsurface sediment sampling. However, as a result of encountering refusal to penetration of corer because of dense sediment at Station 40010, one 5-meter and one 3-meter core were actually collected.

Surface and subsurface sediment locations at reference stations are illustrated on Figure 3-3. The coordinates of the sampling locations are listed in Table 3-2.

Benthic infaunal invertebrate samples were collected at each reference substation to represent reference conditions at the same locations as the surface sediment samples.



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Surface sediment samples for laboratory clam bioaccumulation testing were collected from five reference substations (Stations 40010.1, 40010.2, 40010.3, 40018.3, and 40032.1).

One fish sampling transect at each of the Reference Stations 40010 and 40018 was selected with the intent of representing reference conditions at the same locations from which sediments were collected. The fish collection transects are illustrated on Figure 3-3. The coordinates of the transects are listed in Table 3-5.

## 3.3 ANALYTICAL DESIGN

The assessment of West Basin and reference sediment toxicity relied on chemical analyses, bioassays, bioaccumulation tests, and benthic community analysis. The results of these tests were then used to assess ecological risk and whether West Basin sediments would require remediation. In addition, fish tissue and bile samples were subjected to laboratory analyses to measure the concentrations of selected analytes in these samples. The analytical data were used in the human health and ecological risk assessments. Table 3-6 summarizes the analyses conducted on specific samples and sample types, along with the numbers and locations of samples collected within the West Basin and at the reference stations. The rationale for selecting specific target analytes is described in Table 3-7. Acquisition of analytical data both from West Basin and reference stations included:

- chemical and physical data obtained from surface sediment samples, intended for use in the interpretation of the bioassay, tissue bioaccumulation, and benthic community tests;
- sediment solid and aqueous (pore water) phase bioassay data obtained to assist in assessment of whether toxicity was associated with sediments;
- chemical residue data obtained from clam tissue analyses to assist in assessment of whether chemicals in sediment samples have a significant bioaccumulation potential (evaluation of long-term effects);
- benthic community analysis performed to provide a direct index of *in situ* effects of chemicals in sediment samples to native benthic biological communities; and
- chemical and physical data obtained from subsurface sediment samples to assess possible effects associated with potential remedial actions involving dredging.

## 3.4 FIELD METHODS

This section describes the field equipment and procedures used to collect sediment and fish samples within the West Basin and at the reference stations. Discussions also include sample documentation procedures, sample storage, processing and shipping procedures, decontamination procedures, and handling of investigation-derived waste (IDW).



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## 3.4.1 Mobilization

Activities conducted to facilitate the commencement of field operations included obtaining site clearance and developing site-specific Health and Safety procedures. These activities are described in subsequent sections.

### 3.4.1.1 SITE CLEARANCE

As part of mobilization for sampling, clearance was obtained from Naval authorities to assure that Naval activities would not conflict with those planned for sampling, and that known physical obstructions which could prevent the collection of sediment and fish samples would be identified. Authorities at LBNC were contacted to obtain clearance to sample both sediment and fish within the West Basin, whether by sampling vessel, land-based drilling rig, or by divers. Clearance was obtained through the SWDIV Remedial Project Manager, the Environmental Coordinators for both NAVSTA Long Beach and LBNSY, the Naval Diving unit at LBNSY, the Operator of the Fuel Pier, and the Shipyard Control Tower which monitors and directs all ship movements within West Basin. The planned sampling activities were cleared with appropriate officials prior to undertaking of any sampling effort.

### 3.4.1.2 HEALTH AND SAFETY

Field activities were conducted in accordance with the site-specific HSP and the BNI CLEAN II Health and Safety Standard Operating Procedures. The Health and Safety Close-Out Summary Report is included as Appendix F to this RI report. Health and Safety coverage was provided continuously during field activities, focusing on areas of greatest potential hazards to safety and health such as working on water, extended time periods away from land, heat stress, and exposure to airborne contaminants. Personnel involved in field operations attended a mandatory Health and Safety briefing at the onset of field work. A Health and Safety representative accompanied the field team in its work.

Air monitoring was conducted to assess potential airborne exposures during subsurface sediment sampling activities. No air monitoring was deemed necessary during fish collection and therefore not conducted. Use of appropriate personal protective equipment was required where personnel were expected to handle potentially contaminated sediments.

## 3.4.2 Navigation and Positioning

The RV Crusader, a 40-foot scientific survey ship provided and operated by MEC Analytical Systems, Inc. (MEC), was used to sample sediments and fish. The vessel was equipped with a Magnavox MX 200 differential global positioning system (GPS) unit, and a six-channel receiver/navigator augmented with the Pinpoint AccuPoint differential GPS FM radio band correction for continual tracking. Accuracy was improved with real-time differential correction signal by AccuPoint, which provided ± 2 meter accuracy. A few sampling station locations were slightly shifted during sampling at the request of the field sampling manager (e.g., when moored ships blocked access to stations along piers). To

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assure a higher degree of accuracy, the antenna receiving the GPS signal was located at the apex of an A-frame mounted on the stern of the survey vessel, directly above the point from which the sediment sampler was suspended during sample collection. GPS readings were recorded at each sampling location. The latitudes and longitudes of the sediment sampling locations are listed in Table 3-2. Readings from the GPS system were recorded at both the beginning and end of each sampling day at the same location (point of departure and arrival at the dock) to serve as a point of calibration for the system.

## 3.4.3 Sample Collection

Both sediment and fish samples were collected from within West Basin and at reference stations during several sampling events. The exact dates of each sampling event, along with the types of samples collected, are listed in Table 3-8. This section describes the equipment used and the procedures followed while collecting surface sediment, subsurface sediment, and fish samples.

### 3.4.3.1 SURFACE SEDIMENT

Surface sediment samples were collected using two different procedures as dictated by site conditions. A box corer, deployed from the RV Crusader, was used in open waters, and divers were used for sampling under piers. The following discussion describes in further detail the equipment and procedures used to sample surface sediment.

#### *Sample Collection Using the Box Corer*

A box corer sampling device, having a surface area of 0.1 $m^2$, was used to collect surface sediment samples from the survey vessel. Box corers are acknowledged to provide an excellent means of yielding undisturbed sediment samples (Murdoch and MacKnight 1991). The box corer was deployed from the A-frame at the stern of the RV Crusader using a hydraulic winch. The box corer operated mechanically and was pre-coated with Teflon® inserts to eliminate potential contamination from the metal sampler surfaces.

Surface sediment samples were collected from the top 10 centimeters (cm) at each of the sampling locations within the West Basin and at reference stations. The upper 10 cm was selected because it is characteristic of the biologically active zone (i.e., the depth zone most likely to be inhabited and mixed by benthic animals). After collection, surface sediment samples were packaged aboard the vessel for future chemical, physical, and biological analysis.

Sampling procedures using the box corer are summarized below:

- The vessel first deployed a marker buoy at the sampling location, using pre-established GPS coordinates for positioning.
- The vessel was then maneuvered as close to the marker buoy as practical, typically within a 3-meter radius of the marker buoy, and the box corer was deployed using an on-board winch and stern-mounted A-frame.



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- The GPS coordinates were recorded upon deployment of the sampler, along with the water depth at the sampling location.
- Deployment procedures included first dropping the box corer through the water column, to the surface of the sediments. Upon reaching the sediment surface, the box corer penetrated into the sediment due to its weight, causing a surface sediment sample to be entrapped within the box corer. As the sampler retrieval mechanism was activated and the box corer began to lift from the bottom, the physical constraint of sediments trapped inside the box corer forced its jaw mechanism to close, thereby extracting the sediment trapped within the sampler from the sediment bed. The box corer was then lifted to the vessel and placed in a frame mounted on the deck to facilitate sample processing.
- Water overlying the sample was siphoned off from the box corer and discarded overboard.
- The first sediment sample obtained with the box corer at each sampling location was always used for collection of benthic infaunal invertebrates. The surface of sediment samples in the box corer was photographed and the field log annotated with the film roll number and frame number. Visual observations concerning the presence of items, such as detritus, larger organisms, and seaweed, were recorded in the field logbook at the time of sampling. A Teflon© corer insert, used to sieve benthic invertebrates and to provide a sample of 0.06 square meters ($m^2$) in surface area and 10 cm in depth, was then pressed into the sediment to assure a standard sample size and depth.
- The sediment sample selected for collection of benthic infaunal invertebrates was placed on a wash table after its removal from the box corer and washed with a hose through both 1 and 0.5 millimeter (mm) mesh stainless steel sieves, using seawater, to extract the organisms. The 1 mm sieve was placed on top of the 0.5 mm sieve and the sediment sample was washed through both sieves, and the benthic infaunal invertebrates retained on the sieves were processed as described further below. A review of the sieving procedures soon after the start of field activities showed that sieving performed during the first 2 days of sampling (21 and 22 June 1994) was faulty. It was discovered during this review that the 0.5 mm sieve, while being placed into position beneath the 1 mm sieve, had been secured, inadvertently, with a slight offset, leaving a minute gap between the two sieves. Since a portion of the sediment sample, along with the benthic infauna, being washed through the 1 mm sieve could very likely bypass the 0.5 mm sieve beneath because of this offset, the 0.5 mm sieve samples obtained during these 2 days, on which the offset of sieves occurred, were voided. The sampling stations impacted were resampled and resieved on 23 and 24 June 1994.
- Once the sediments were thoroughly washed through both sieves, the benthic organisms retained on each sieve were collected with forceps and placed in separate jars with 7 percent magnesium chloride solution for approximately 30 minutes to promote relaxation of the organisms. A 10 percent formalin solution was then added to the sample jars to preserve the organisms. The jars were double labeled, inside the jar and on the lid (e.g., station location, time of



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sampling, date, sampler, and sieve mesh size), and placed in storage until transferred to the benthic laboratory. The benthic organism samples retained on the 1 mm sieve were later analyzed in the laboratory, as it is typically the current practice in the industry to analyze the 1 mm sieve samples; the samples retained on the 0.5 mm sieve were preserved for archival purposes.

- Both the box corer and the insert were then rinsed clean with seawater prior to redeployment; the rinse water was discarded overboard.
- The box corer was then dropped as many times as needed to achieve the specific sample volumes of sediment samples required for physical, chemical, and bioassay analyses. The Teflon® insert was used to measure the amount of sediment sample collected (top 10 cm, 0.06 $m^2$ surface area) at each sampling location. A sediment volume of 1,250 milliliter (mL) was collected at each station for chemistry, 1,000 mL for TOC and grain size, and 21 liter (L) for bioassay testing. Sediment collected for the solid phase bioassay (approximately 19 L) was placed in a clean plastic sample bag inside a calibrated bucket on the deck. Upon measuring the requisite volume, the plastic bag with the sediment sample was removed from the bucket, sealed, labeled, and placed in a sample cooler. Sediments collected for the pore water bioassay (approximately 2 L) were sealed in an airtight plastic bucket following nitrogen purging to assure that samples were maintained in an oxygen-free environment.
- An additional 19 L of sediment was collected in the same manner as above from stations selected for bioaccumulation testing.
- At the completion of sampling at each station, personnel washed their boots and gloves with seawater. Sampling implements were decontaminated following the procedures described in Section 3.4.6.

### *Sample Collection Using Divers*

Surface sediments located under the piers (eleven stations from beneath nine piers, shown on Figure 3-2) were sampled manually by divers, as outlined below. These sampling stations were located visually using shore-based landmarks. Hand-held rectangular plastic scoops, 10 cm deep with a surface area of 0.06 $m^2$, were used by the divers for surface sediment collection. The hand-held samplers were designed to collect sediment samples with minimal disturbance and were fitted with lids to reduce disturbance of sediment samples as the divers ascended to the water surface after collecting a sample.

The sediment samples were collected by pressing the scoop into the sediment bed to a pre-measured 10 cm mark on the scoop, gently removing the full scoop from the sediment bed and covering it with a fitted cap. The diver then brought the filled and capped scoop to the surface. Each sample was inspected at the surface by field personnel to assure that an undisturbed sample was retrieved and that adequate volume had been collected. As with sediment samples collected from the survey vessel, sediment samples to be used for collecting benthic infauna were taken first. All samples were processed in the same manner as described above for samples collected from the survey vessel to minimize or

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eliminate differences that can be caused if different sediment sample collection methods were employed instead.

### 3.4.3.2 SUBSURFACE SEDIMENT

Subsurface sediment cores were collected in the basin and at reference stations using a vibratory coring system deployed from the RV Crusader. A similar vibratory coring system operating from a land-based drilling rig was used to sample sediments underneath piers selected for subsurface sediment sampling (Piers 2, 12, 15) because the sampling points located beneath the piers were inaccessible to the survey vessel. The following discussion describes in further detail the equipment and procedures used to sample subsurface sediments.

***Sample Collection from the Survey Vessel***

The vibratory coring system deployed from the survey vessel for subsurface sediment sampling was a hydraulically operated sediment sampling system with a uniquely designed hammer to drive an aluminum core tube assembly into the sediment bed. The core tube assembly was driven incrementally into the sediment bed with high instantaneous velocity. During the coring operation, the penetration of the core tube was continuously monitored and recorded. The percentage of material recovered for each penetration interval was also directly available from the acquired data.

The impact-generating hammer was mounted on a lightweight guide/support assembly. An integral, hydraulically operated core-extraction winch was mounted in the base of the guide/support assembly. This winch generated up to 15,000 pounds of pull-out force after the core tube assembly was driven to the desired depth within the sediment bed. The integral core-extraction winch allowed extraction of the core tube without bending, prior to lifting the coring system off the sediment bed with the vessel-mounted winch. The sampler was equipped with a core-retention device at its leading edge to aid in sample recovery.

Procedures for collecting subsurface sediment samples using the survey vessel are summarized below:

- A marker buoy was deployed at the sampling location and the vessel positioned at the buoy in a manner similar to that used for surface sediment sampling described in the previous section.
- The GPS coordinates were recorded.
- The hydraulic system on the vessel was connected to the corer with hydraulic hose and safety rope, and the corer was driven into the sediment bed to the appropriate depth (either 3 meters or 5 meters as planned for that particular sampling point).
- When the appropriate depth of penetration into the sediment bed was reached, coring was stopped, and the core sleeve assembly, made of disposable aluminum, was extracted using the guide-assembly-mounted extraction winch.



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- After the core tube was retrieved, the sediment inside the core tube was extruded into pre-prepared troughs on board the vessel, the length of the core carefully measured using a tape measure to assist in discerning the depth intervals from which each subsample was to be taken, and cut into the individual horizons. The core was cut using decontaminated equipment to avoid cross-contamination. Boring logs were continuously maintained, wherein visual observations of the core by depth were recorded.
- Each horizon sample was placed in a clean 19 L plastic bag and homogenized by hand, using sterile gloves. The homogenized samples were then placed into appropriate sample containers for shipment to the analytical laboratory. No subsample was combined or composited with each other

Initially, it was planned to homogenize cores on the basis of five 1-meter intervals (for the 5-meter cores), or the upper two 1-meter intervals (for the 3-meter cores) (JEG 1993a). However, upon reviewing the cores as they were actually recovered during the subsurface sediment sampling activities, it was observed that multiple horizons with varying thickness existed in the sediment subsurface, and it became apparent that a global 1-meter interval was not suitable. Homogenizing 1-meter intervals, as initially planned, would have caused different horizons with different characterizations to have been mixed and composited (such as mixing and homogenizing shell hash with underlying silt or sand). The issue was resolved in the field by homogenizing discrete subsurface sediment horizons, using the entire sample from each horizon as a discrete subsample.

Homogenized sediment samples were used for physical and chemical analyses only; no biological analyses were conducted on them because of the naturally occurring toxicity associated with anaerobic conditions in deep sediments. Observations of sediment physical properties, such as texture, color, and odor, were recorded during sampling. Measurements and descriptions of each sediment horizon depth interval used in homogenizing and preparing core samples for laboratory analysis were also recorded in the field log books.

### *Sample Collection from the Piers*

The coring system used for sampling sediments located beneath piers consisted of a vibratory coring system operated from a Mobile B-61 drill rig. At each pier designated for subsurface sediment sampling, access through the pier deck was cleared with proper Naval authorities and the drill rig positioned over the opening. The access openings at the piers included a stillwell for a former tide gauge, a manhole, and an expansion joint. The use of these existing deck openings eliminated coring through the pier decks.

Stainless steel casing was passed through the deck opening and advanced into the sediments below by a vibrating hammer operating at 80 to 150 Hertz. The hammer and the deployment of the casing were hydraulically operated from the drill rig. Upon completion of the desired depth of penetration into the sediment bed, the casing containing the sediment sample was retrieved.



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Sediment samples were then uniformly homogenized for each sample horizon in the manner described above for vessel-based coring operations. These samples were retained for physical and chemical analyses only; no biological analyses were conducted. Observations of sediment physical properties, such as texture, color, and odor, were recorded and logs of the cores were maintained during sampling.

Procedures for sampling of subsurface sediments using the land-based drilling rig were, in general, similar to the procedures used for subsurface sediment sampling in open waters from a survey vessel, except that the drill rig replaced the survey vessel, and the GPS or other navigational system was not used. Initially, sample locations at the three piers requiring subsurface sediment sampling had been intended to be the same locations at which the divers had previously collected surface samples from beneath the same piers. However, using the available openings for access through the pier decks resulted in subsurface sediment sample locations not coinciding with the surface sediment sample locations as initially planned. Figure 3-2 shows the surface and subsurface sediment sampling locations.

Prior to commencement of drilling activities, piers were inspected from both above and below for discernible evidence of piping, structural supports, or other obstructions potentially impeding sampling or which could result in unsafe conditions. None were found.

Upon completion of inserting the corer into the sediment bed, the casing containing the sediment sample was retrieved and placed on a Visqueen*-covered surface on the pier deck. The sediment inside the casing was extruded, using compressed nitrogen at a pressure of 10 pounds per square inch (psi), directly into an aluminum foil-covered trough. The trough had an inside diameter of approximately 4 inches and was slightly longer than the core was expected to be inside the casing. The use of a trough allowed observation of the complete sediment core for purposes such as photography, measurements, and visual description. Following these tasks, sediment samples were extracted from the core and prepared in the same manner as described aboye for vessel-based operation.

Core sections were scooped into a 19 L bucket lined with a disposable plastic bag. The sediment sample was homogenized using disposable trowels and by hand using sterile gloves. The homogenized sample was then placed into the appropriate sample container for shipment to the analytical laboratory.

Some difficulty was encountered in sample collection at Stations 43 (Pier 15) and 51 (Pier 2) on 26 and 27 July 1994. Insufficient recovery of core samples were initially experienced, apparently due to the presence of a high density of mussel shell hash overlying the unconsolidated sediments beneath the piers. The sediment samples in the tip of the core barrel were consistently intact upon retrieval, suggesting that the corer had, in fact, penetrated to depths below the soft sediments and into the underlying harder stratum. However, mussel shells covering the surface of the sediments were apparently large enough to obstruct the opening at the tip of the small diameter core barrel (2.5 inches OD) initially used for the sampling event and acted as a plug, pushing aside the soft sediments



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until firmer material was encountered. Stations 43 and 51 were successfully resampled within a distance of several feet of the initial sampling location on 03 August 1994 using a larger diameter (4 inches OD) core barrel.

### 3.4.3.3 FISH TISSUE AND BILE

All fish samples were collected using an otter trawl deployed from the RV Crusader via hydraulic winch. The otter trawl used was a 4.9-meter headrope trawl net with a 2.5 cm body mesh and a 1.3 cm mesh cod-end liner.

Pre-established transects within the West Basin were trawled for 5 minutes of bottom time (timed from the end of cable payout to start of retrieval) at a speed of approximately 2 knots. Wire scope was set according to water depth and the guidelines of Mearns and Allen (1978). Bottom distances trawled were approximately 300 to 380 meters in length, plus the distance covered to let out winch wire and retrieve the net. Thus, an overall distance of about 500 to 700 meters was needed for each trawl, which, within the West Basin, required extensive maneuvering of the survey vessel. Planning of trawl paths included considerations of the desired sampling area, bathymetry, and the total distance required to deploy, trawl, and recover the net. GPS coordinates and times were recorded for initial net deployment, where the net began to "fish" along the bottom, and where the net recovery was started. In several cases, significant debris was collected by the net, but slight variations in the subsequent trawl tracks permitted valid sampling.

The trawl sample was emptied into a large tray placed on the deck of the vessel upon retrieval of the net and individual fish were identified and enumerated. After the fish were identified by species (a listing of species caught is presented in Section 4), California halibut and white croaker, which were in abundance compared to other species caught, larger than 19 cm and 14 cm standard length, respectively, were retained and targeted for analysis. The larger (i.e., older) fish were targeted for analysis because such fish are more likely to be retained by anglers for consumption and more likely to have potentially bioaccumulated detectable levels of chemicals than younger (i.e., smaller) fish. Fish ultimately selected for analysis were then weighed, and their length was measured as standard length. In addition, the selected fish were visually inspected by an on-board specialist for the presence of lesions, parasites, or deformities. These visual observations were recorded in the field logbook.

Whole body fish samples were taken by sacrificing the animal using impact to the head to avoid blood loss, and muscle fillet samples were taken using sterile, disposable scalpels. Both types of samples were wrapped in clean aluminum foil, bagged in Ziplock® baggies, appropriately labeled, and immediately cooled on blue ice in coolers. One California halibut filet sample collected from Reference Station 40010 was inadvertently lost some time between being packaged in the field on 30 August 1994 and arrival at the laboratory. Another California halibut was successfully collected on 16 September 1994 to replace the lost sample.

Nine of the 18 California halibut used to obtain samples of bile were used to obtain samples of fish fillet as well (Table 3-4). This reduced the numbers of fish sacrificed and



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improved the database by providing additional information (muscle tissue body burden and bile concentrations) from the same nine fish. Prior to collection of bile sample, fish were carefully resected in the field using a sterile, disposable scalpel and a visual determination made by inspection of the gall bladder to determine whether a minimum of 50 microliters (μL) of bile appeared to reside within the gall bladder. If so, the bile was extracted from the gall bladder of the live fish using a sterile, disposable syringe and transferred into 3 mL amber vials for chemical analysis of PAH metabolites. Sample vials were immediately labeled and frozen in preparation for immediate shipment to the analytical laboratory.

In addition to using the otter trawl, two additional fish collection methods were unsuccessfully attempted for purposes of the human health risk assessment. The first method involved the use of set lines placed on the inboard side of the Navy Mole and near Cabrillo Pier (adjacent to reference Station 40010). The lines, baited with fish and squid, were left out for approximately 3 hours. Although the bait was taken from the hooks, no fish were caught. An attempt was also made to purchase fish from anglers on Cabrillo Pier. However, only two fish listed on the target species list (Table 3-3) were found (two small white croaker). The majority of the fish catch by anglers on the pier was made up of mackerel (about 300 fish) along with some lizard fish and bonito (three fish each). However, sufficient number of white croaker and California halibut were collected at West Basin and reference stations using the otter trawl method to satisfy the objectives of both the human health and ecological risk assessments.

## 3.4.4 Sample Documentation

This section describes the field logs and chain-of-custody (COC).forms used to document sample collection, description, and shipment.

### 3.4.4.1 FIELD LOGS

Relevant sampling information was documented in the field logbooks, including detailed visual observations. Field logs included:

- date and time of sampling;
- sampling conditions;
- visual observations of the sediment collected (both surface and subsurface), including the presence of detritus, detectable odors, and physical characteristics such as texture, color, cohesiveness, and presence and nature of obvious strata;
- obstructions, such as logs, ships, or buoys, affecting sampling equipment placement or retrieval;
- detailed boring logs for the sediment cores collected, including core number, sample interval, vertical distribution of visible contamination (if discernible), description of layering, description of sediment (following American Society for Testing and Materials [ASTM] Method D2488-84), lithology, sorting, structure,



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relative density or consistency, relative moisture content, remarks, and the name of the observer;

- activities at or adjacent to the piers where sampling was conducted;
- water depth, turbidity, the presence of sheens or other characteristics;
- Naval or other ship traffic;
- the number of fish trawl attempts;
- types and numbers of fish collected per trawl;
- the distance the trawl traveled on the harbor bottom; and
- physical characteristics of fish retained.

#### 3.4.4.2 CHAIN-OF-CUSTODY FORMS

COC forms were filled out at the time of sampling for every sample taken. These forms accompanied the samples from the sampling location to the analytical laboratory. BNI retained a copy of the COC forms for completeness of records. Separately, the analytical laboratory maintained its internal Chain of Custody. Therefore, two sets of COC forms exist for many of the samples: 1) the COC forms completed and relinquished by BNI, and received by the laboratory representative in the field, and 2) the analytical laboratory COC forms relinquished by the laboratory representative and received by the subcontract laboratory that actually conducted the analysis requested for the sample. Appendix G contains copies of the COC forms used in this RI.

#### 3.4.4.3 CORRECTIONS TO SAMPLE DOCUMENTATION

Any errors made on sample documentation forms, such as field logbooks or COC forms, were corrected by crossing a line through the error, entering the correct information, initializing, and dating the change. The erroneous information was not obliterated. In cases where errors were discovered on COC forms, corrections were made either on an attached copy of the COC form or to the second page of the original COC itself. The corrections to COC forms were recorded via memoranda addressed to the project files.

### 3.4.5 Sample Storage, Processing, and Shipping

Table 3-9 presents the sample preservation, packaging, and shipping methods by analysis type for sediment and fish samples. Preservation of samples was conducted in the field. Samples were packaged for shipping in the following manner:

1. Glass sample containers were individually wrapped with bubble wrap prior to being placed in coolers.
2. Sample containers were placed on end inside coolers. Blue ice packages were placed in the coolers with the containers; voids were filled with packing material.
3. COC forms were sealed inside Ziplock® plastic bags and placed inside coolers that were shipped to the laboratory via overnight carrier (e.g., Federal Express).



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Once the COC forms were placed inside the coolers, the lids were closed and secured by wrapping strapping tape around the cooler at both ends. The COC forms indicate the time and date the cooler was relinquished to the shipping agent. A shipping bill was attached to the cooler.

4. Step 3 was not necessary for those coolers delivered to the laboratory by courier. The COC form in these cases was relinquished to the courier for review and signing.
5. A mailing label with the laboratory address was placed on the coolers and covered with wide clear plastic tape.
6. The temperature of sample coolers was measured and recorded upon arrival at the laboratory to ensure that 4 degrees Centigrade (°C) was maintained.

### 3.4.6 Sampling Equipment Decontamination

Disposable equipment was used whenever possible because this practice precluded the need for decontamination and because the chances for cross-contamination were significantly reduced. Disposable equipment was used for vessel-deployed subsurface sediment sampling (disposable core barrel) and for fish sampling (disposable scalpels and syringes). The remainder of the surface and subsurface sampling required decontamination of implements used for handling and packaging samples designed for chemical analyses. Minimal decontamination was required for biological samples; it was necessary only to remove visible sediment particles from the implements that could affect the results of biological testing.

Decontamination was conducted on the survey vessel while out at sea. The typical decontamination sequence for surface and subsurface sediment sampling equipment (for samples intended for chemical analysis only) was as follows:

1. Seawater rinse of all visible residual sediment (rinse discarded overboard).
2. Wash with nonphosphate detergent (i.e., Liquinox, discarded overboard).
3. Tap water rinse of all exposed surfaces (rinse discarded overboard).
4. Deionized/distilled water rinse (rinse discarded overboard).
5. Pesticide grade methanol rinse of all surfaces for organic chemical scans only, rinseate retained onboard in carboy and delivered to the project IDW storage area by the field activities manager at the conclusion of the sampling activities.
6. Organic-free water (high performance liquid chromatography [HPLC] grade) deionized/distilled water rinse (twice, rinse discarded overboard).

After decontamination, implements were wrapped with oil-free aluminum foil to prevent contamination prior to their further use. Two project decontamination pads, one established at the NAVSTA Long Beach and another at the LBNSY in support of the CLEAN II field activities being conducted at the LBNC, were used to decontaminate coring sleeves used by the land-based drilling/sampling system.



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## 3.4.7 Collection, Storage, and Disposal of IDW

IDW obtained during sampling activities consisted of methanol-based rinseate from decontamination of sediment sampling equipment, and sediment cuttings obtained during drilling and sampling operations performed from Piers 2, 12, and 15. Because the latter was classified as a hazardous waste activity in the site-specific Health and Safety Plan, gloves, Tyvek® outerwear, Visqueen® tarpaulins, and miscellaneous sampling detritus were also discarded as IDW. The fish sampling effort exclusively utilized disposable equipment and, therefore, no decontamination was required. IDW from West Basin sampling operations was stored in 50-gallon capacity steel drums, and disposed of after analysis of contents. Appendix H contains copies of the IDW Management Plan and Removal Report.

## 3.5 LABORATORY METHODS

Laboratory analyses included physical, chemical, and biological tests performed on sediment, fish tissue, and fish bile samples. Laboratory bioaccumulation tests were conducted using clams. The laboratory program also included benthic community analysis.

Tests for sediment physical and general chemistry properties included grain size, TOC, total sulfide, and acid volatile sulfides/simultaneously extracted metals (AVS/SEM) determinations. Concentrations of semivolatile organic compounds (SVOCs), pesticides and PCBs, butyltin compounds, U.S. EPA priority pollutant metals, and percent moisture were also measured in sediment samples. Fish tissue samples (whole body homogenate and muscle fillet) were analyzed for lipid content, PAHs, pesticides and PCBs, butyltin compounds, and U.S. EPA priority pollutant metals. Fish bile samples were analyzed for equivalent concentrations of selected PAH compounds. Clams that were exposed to sediment samples in the laboratory during bioaccumulation tests were analyzed for lipid content, PAHs, pesticides and PCBs, butyltin compounds, and U.S. EPA priority pollutant metals.

In addition, biological tests were conducted on surface sediment samples, which included acute and chronic bioassays using pore water and solid phase sediment samples, and invertebrate organisms. Benthic community analysis was performed using benthic infaunal invertebrates sieved from sediment samples at the time of surface sediment sample collection.

This section summarizes the procedures used to conduct laboratory analyses. Analytical methods described in Test Methods for Evaluating Solid Wastes (SW-846; U.S. EPA 1990) were used where applicable. Other test methods not described in SW-846 were also used for specialized analyses. Types of laboratory analyses and laboratory methods used are summarized in this section and listed in Tables 3-10 and 3-11 for sediment and fish tissue testing, respectively. Analytes and analytical methods used for surface and subsurface sediments, as well as fish tissue and bile, are listed in Table 3-12. Appendix I contains copies of the laboratory procedures for test methods not included in SW-846.



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## 3.5.1 Surface Sediment Sample Analyses

Sediment grain size, TOC, and benthic community analyses were performed by MEC located in Carlsbad, California, under subcontract to BNI. Sediment bioassay and bioaccumulation testing was conducted by MEC at its Tiburon, California, laboratory. Sediment total sulfide, AVS/SEM, and chemical analyses were performed by Pace Environmental Laboratories, Inc. (Pace), located in Camarillo, California, under subcontract to MEC. Both MEC and Pace are environmental testing laboratories that are state-certified by the California Department of Health Services.

### 3.5.1.1 PHYSICAL ANALYSES

Following are summaries of analytical protocols used to measure physical parameter distributions in surface sediment samples from West Basin and reference stations.

#### *Grain Size*

Methods developed by Plumb (1981) were used for grain size analysis. A 30 to 40 grams (g) wet weight (ww) subsample was transferred to a 240 mL bottle, mixed with 150 mL of deflocculent (sodium hexametaphosphate), and allowed to stand overnight. The deflocculated sediment sample was passed through a 62.5 micron (µm) sieve (U.S.A. Standard Testing Sieve No. 230) to separate the sand size fraction from the silt/clay size fraction. The sand size fraction was dried and shaken through a series of eleven U.S.A. Standard Testing Sieves, which ranged from 2,000 to 62.5 µm. The fraction of the sample retained on each sieve was weighed on a digital electronic balance. The silt/clay size fraction, particles smaller than 62.5 µm, was measured for various intervals by standard pipette timed-withdrawal methods, and weights for each grain size interval were calculated. These two methods provided fractional weights for each interval measured.

#### *Total Organic Carbon*

Sediment samples were analyzed for TOC following the method described by Menzel and Vaccaro (1964). Homogenized sediment samples (0.018 to 0.020 g) were digested in concentrated phosphoric acid at room temperature and diluted with distilled water followed by potassium persulfate. Samples were then heated to 259°F at 17 to 19 psi for 6 hours after purging with purified oxygen and cooled overnight in a sealed ampoule. Ampoules were then broken, releasing carbon dioxide. The remaining organic carbon was measured with an infrared detector.

### 3.5.1.2 CHEMICAL ANALYSES

Following are brief summaries of the analytical protocols used to measure concentrations of analytes in surface sediment samples from West Basin and reference stations.

#### *SVOCs, Pesticides, and PCBs*

Sediment samples were prepared for SVOC analyses (U.S. EPA Method 8270) and pesticide and PCB analysis (U.S. EPA Method 8080) by ultrasonic extraction using U.S.

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EPA Method 3550. Forty to 100 g of sample sediment were extracted with methylene chloride. The extracts were concentrated in a Kuderna-Danish apparatus. The pesticides/PCBs extract was then solvent-exchanged into hexane.

Sediment samples were analyzed for 19 chlorinated pesticides and seven PCB Aroclors using a gas chromatograph (GC) equipped with an electron capture detector (ECD), following U.S. EPA Method 8080. Compound confirmation was performed using second column GC/ECD. U.S. EPA priority pollutant SVOCs (59 analytes) were analyzed by gas chromatography/mass spectrometry (GC/MS) following U.S. EPA Method 8270. Tentatively identified compounds (TICs) were not reported with the SVOC results.

### *Priority Pollutant Trace Metals*

Sediments were analyzed for the standard U.S. EPA suite of 13 priority pollutant metals. Approximately 40 g of sediment were acid-digested prior to analysis using U.S. EPA Method 3050A. Beryllium, cadmium, chromium, copper, lead, nickel, and zinc were analyzed using inductively coupled plasma (ICP) emission spectrometry following U.S. EPA Method 6010. Antimony, arsenic, selenium, and thallium were analyzed using atomic absorption spectrophotometry with a graphite furnace (AA/GF). Mercury was analyzed using the cold-vapor extraction technique following U.S. EPA Method 7470. Silver was analyzed using U.S. EPA Methods 6010 and 7760.

### *Total Sulfide and Acid Volatile Sulfides/Simultaneously Extracted Metals*

Total sulfide extracts were prepared following U.S. EPA Method 9030. The impingate collected using this method was quantitated following U.S. EPA Method 376.2 on a Lachat Flow Injection Analyzer Model 80.

AVSs were analyzed following a U.S. EPA draft method (Allen et al. 1993) to determine their presence in sediment. The AVS in sediment was first converted to hydrogen sulfide ($H_2S$) by acidification with concentrated hydrochloric acid at room temperature. The $H_2S$ was purged from the sample and trapped in an aqueous sodium hydroxide solution. Once in solution, the sulfide reacted with n-n-dimethyl-p-phenylenediamine to form methylene blue. Quantification of AVS was performed by measuring the spectrophotometric determination of methylene blue.

Sediment samples were analyzed for five divalent priority pollutant trace metals (cadmium, copper, lead, mercury, and zinc) following simultaneous extraction via the AVS procedure. Metal analysis was performed on the acid digest from the AVS procedure, referred to as the SEM fraction. After release of the $H_2S$, the acidified sediment sample was membrane-filtered. The sample digest was then analyzed for the trace metals using the same method as summarized in the preceding paragraph for the analysis of total metals.

### *Butyltins*

Sediment extraction procedures followed a modification of U.S. EPA Method 3550. After extraction by sonication in hexane-tropolone chelation, the sample was filtered and



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the filtrate concentrated in a Kuderna-Danish apparatus. The concentrate was then spiked with the surrogate, tripentyltin chloride, and derivatized with a Grignard reagent. The Grignard reaction was quenched after 15 to 20 minutes using acidified water. The organic layer containing the derivatized organotins was collected in a 30 mL screw-topped vial and concentrated using a nitrogen blow-down apparatus. The sample was then subjected to gel permeation chromatography (GPC) or florisil column chromatography cleanup using hexane as the extraction solvent. The sample was concentrated to 0.20 mL prior to analysis. Butyltins were analyzed using a GC equipped with a flame photometric detector (FPD) following the method of Uhler and Durell (1989).

### 3.5.1.3 BIOASSAYS AND BIOACCUMULATION TESTS

Following is a brief summary of the bioassay test protocols used to measure toxicity caused by both solid phase and pore water components of surface sediment samples. Four different organisms were used in conducting the laboratory bioassays and bioaccumulation test. The echinoderms, amphipods, and clams, as well as the control sediments were provided by Brezina & Associates. The polychaetes were provided by Dr. Donald Reish.

#### *Pore Water Acute Test*

The purpose of this test was to determine the percent of abnormally developed echinoderms, in this case sand dollar larvae (*Dendraster excentricus*), over a 72-hour test period. Pore water was extracted from collected sediment within 24 hours of collection using centrifugation, and prepared in five test concentrations (6.25, 12.5, 25, 50, and 100 percent) of 5 mL aliquots each. Three replicates of each dilution were analyzed. Seawater was used for sample dilutions. The passing performance criterion for each test was greater than or equal to 70 percent normal development in the laboratory control sample. Survival and development data were used to estimate $LC_{50}$ values (lethal concentration for 50 percent of test organisms), $IC_{50}$ (inhibitory concentration for 50 percent of test organisms), and NOEC (no observable effects concentration) for each level of dilution.

#### *Solid Phase Acute Test*

The purpose of this test was to determine the percent mortality in marine amphipods (a shrimp-like organism) over a 10-day test period, using the standard sediment test amphipod, *Rhepoxynius abronius*, as the test organism. The solid phase sediment was used as collected, with five laboratory replicates run per sample, using 2 cm of test sediment per container. The passing performance criterion for each test was greater than or equal to 90 percent survival in the laboratory negative control sample. The percentage of organisms surviving was averaged over the five laboratory replicates. As an additional endpoint, the percentage of surviving organisms that were capable of reburying in the sediment was also reported as a measure of the vigor of the surviving organisms. Reburial is often considered to be a viable toxicological endpoint for assessing sediment toxicity to benthic infaunal organisms.



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*Solid Phase Chronic Test*

The purpose of this test was to determine the percent mortality in polychaete worms and their growth rates over a chronic (28-day) exposure period. This test was conducted using the standard sediment test polychaete worm, *Neanthes arenaceodentata*, as the test organism. The solid phase sediment was used as collected, with five laboratory replicates run per sample. The passing performance criterion for each test was greater than or equal to 90 percent survival in the laboratory negative control sample. The percentage of organisms surviving was averaged for the five laboratory replicates. As an additional endpoint, somatic growth rates were also reported by averaging the weights of dried organisms at the conclusion of the 28-day exposure period. Growth is considered to be a viable toxicological endpoint for assessing the health and viability of sediment infaunal organisms.

*Clam Bioaccumulation Test*

The purpose of this test was to determine the tissue residues of select chemical analytes in clams that have been exposed to West Basin sediments for a 28-day exposure period. This test was conducted using the standard sediment test clam, *Macoma nasuta*, as the test organism. The solid phase sediment was used as collected, with three laboratory replicates run per sample. Although the primary purpose of the test was to conduct chemical analyses, the test was a bioassay and included a measurement of the toxicological response of the clams as well. The passing performance criterion for each test was greater than or equal to 90 percent survival in the laboratory negative control sample. The percentage of organisms surviving was averaged over the five laboratory replicates. At the end of the exposure period, the clams were allowed to depurate (purged) then sacrificed, the tissue extracted, and subjected to chemical residue analysis (chemical methods described in Section 3.5.3).

### 3.5.1.4 BENTHIC INFAUNA ANALYSES

MEC analyzed 60 benthic infaunal samples, consisting of 15 samples obtained from reference stations, and an additional 45 samples which were collected within the West Basin. Organisms retained on the 1 mm sieve were counted and identified to the lowest possible taxon.

Data analysis by station and station groupings for the infaunal data included the following community parameters: number of species, abundance, diversity indices (Margalef's Species Richness, Shannon Wiener diversity, Dominance index, and Pielou's J or Evenness), and biomass.

These parameters are defined as follows.

| | |
|---|---|
| Margalef's Species Richness | (Number of Species - 1)/ln (Total Abundance) |
| Shannon-Wiener Diversity | $-1 * \Sigma p_i * \ln(p_i)$ where $p_i$ = abundance of species $i$ / Total Abundance |



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| | |
|---|---|
| Evenness | (-1 * Shannon-Wiener)/ln(Number of Species) |
| Dominance | Number of species accounting for 75% of the Total Abundance (species abundances are added together starting with the most abundant species). |

## 3.5.2 Subsurface Sediment Analyses

In general, the procedures followed for surface sediment chemical analyses, described in Section 3.5.1.2, were also followed for the subsurface sediment samples. However, biological tests, total sulfides, and AVS/SEM analyses were not conducted on subsurface sediments because of the naturally occurring toxicity associated with anaerobic conditions.

## 3.5.3 Fish and Clam Analyses

Fish tissue (whole body and fillet) and clam tissue samples were analyzed for bioaccumulation of chlorinated pesticides, PCB Aroclors, PAHs, butyltins, priority pollutant trace metals, and lipid content. Analyses were also performed on fish bile for parent PAH metabolite compounds. The procedures followed in performing these analyses are described in subsequent sections.

### 3.5.3.1 FISH TISSUE ANALYSES

Chemical analyses were performed on fish tissue by Pace. Analyses consisted of the following suite of organic and inorganic analytes: chlorinated pesticides, PCB Aroclors, PAHs, butyltins, priority pollutant trace metals and percent lipids. Extraction and analytical methodologies followed the methods criteria specified in SW-846 (U.S. EPA 1990) with appropriate modifications for tissue, as mentioned in the following subsections. While these modifications successfully allowed for the lowering of method detection limits, they did prevent the identification of TICs.

#### *Lipid Analysis*

Lipid analysis in fish was conducted using a Soxhlet extractor with freon to digest the tissue, following U.S. EPA Method 9071. This method specifies 20 g of tissue, but this amount was not always available. A gravimetric determination was used to calculate percent lipids for fish.

#### *SVOCs, Pesticides, and PCBs*

The methods for tissue extraction and analysis generally followed those used for sediment, except that additional cleanup methods and changes in instrumentation were made to minimize interferences from salts and nonpolar fatty acids. Tissue samples were prepared for SVOC, pesticide, and PCB analyses by Soxhlet extraction using U.S. EPA Method 3540. Ten to 100 g of tissue mixed with anhydrous sodium sulfate were extracted with a 1:1 mixture of methylene chloride and acetone. The extracts were then passed through a large anhydrous sodium sulfate column and concentrated in a Kuderna-Danish apparatus.



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The sample extracts were then subjected to alumina column using U.S. EPA Method 3610 and GPC cleanup using U.S. EPA Method 3640.

Chlorinated pesticides and seven PCB Aroclors were analyzed in tissue samples, using the same U.S. EPA method for sediment samples (U.S. EPA Method 8080). Analysis of PAHs was performed using GC/MS (U.S. EPA Method 8270), modified by operating the GC/MS in the selective ion monitoring mode. The SW-846 methods were modified to include use of the Soxhlet extraction, alumina cleanup, and GPC cleanup with the tissue sample matrix (Tetra Tech 1986).

***Priority Pollutant Trace Metals***

Tissue samples were analyzed for the same 13 priority pollutant metals quantified in sediment samples. The U.S. EPA methods described in Section 3.5.1.2 for surface sediments were utilized for tissue except for lead. Lead was analyzed using AA/GF following U.S. EPA Method 7421. A 5 to 10 g tissue subsample was homogenized and digested with concentrated nitric and perchloric acids prior to analysis by ICP or AA/GF (Tetra Tech 1986).

***Butyltins***

Tissue samples were analyzed for organotins using the GC/FPD method described in Section 3.5.1.2. In addition, a GPC or florisil cleanup was performed to achieve the practical quantitation limit of 1 µg/kg and reduce viscosity of the extract for injection into the GC.

### 3.5.3.2 FISH BILE ANALYSES

Fish bile analysis was performed by Battelle Ocean Sciences (Batelle) located in Duxbury, Massachusetts. All PAH metabolite analyses were performed in accordance with Battelle Standard Operating Procedure (SOP) 5-199 (Polynuclear Aromatic Hydrocarbon Metabolite Analysis of Bile and Tissue Samples using an HPLC). This method is based on Krahn et al. (1986), and has been applied in a series of PAH metabolite investigations over the past several years.

Following extraction from halibut gall bladders in the field, bile samples were placed in 2 mL amber glass sample vials. Once the samples arrived at Battelle, they were logged into the laboratory according to standard protocols (Battelle SOP 5-199). Samples were stored in a freezer at approximately -20°C until the day they were removed for analysis. Residual samples are currently stored at -20°C at Battelle.

The bile samples required minimal preparation prior to instrumental analysis. The samples were simply vortexed and a subsample transferred to a 200 microliters (µL) autosampler vial. An average density of the bile was determined, which was used to convert the data to a weight basis by accurately weighing a 50 or 100 µL subsample from four separate bile samples.



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The PAH metabolite analysis was performed using an HPLC. The method employs a gradient HPLC separation on a 25-cm long, 4.6-mm inner diameter, octadecylsilane (i.e., C-18), reverse-phase column with acetic acid/water and methanol as the mobile phases (Battelle SOP 5-199, Krahn et al. 1986a, 1986b, 1987). A Hewlett-Packard 1050 series quaternary gradient HPLC system, coupled with a Hewlett-Packard 1046A fluorescence detector, was used for the analysis. A sample injection volume of 5 µL was used. The instrument was calibrated with multilevel calibration. Two-, three-, four-, and five-ring metabolites, represented by naphthalene, phenanthrene, pyrene, and benzo(a)pyrene, were determined using detector wavelength settings applicable to the four target PAHs.

Detector excitation and emission wavelengths were pre-selected to levels of high sensitivity and specificity on the fluorescence detector, each optimized specifically for the four parent PAH homologues. The analysis of primarily two-ring metabolites, expressed as naphthalene equivalents, was performed with a detector wavelength pair setting of 286/328 nanometer (nm; excitation/emission). The analysis of primarily three-, four-, and five-ring metabolites, as phenanthrene, pyrene, and benzo(a)pyrene equivalents was accomplished with detector wavelength pair settings of 258/359 nm, 318/378 nm, and 364/430 nm, respectively.

PAH metabolites were quantified by an external standard method, using the response of the parent PAH for quantification. The detection limit was approximately 0.01 to 0.05 micrograms per milliliter (µg/mL) for the unresolved PAH metabolite component. The total PAH metabolite concentrations determined and reported in this study are based on the total resolved and unresolved area in the applicable chromatographic region.

#### 3.5.3.3 CLAM TISSUE ANALYSES

The procedures followed for fish tissue chemistry analyses, described previously in Section 3.5.3.1, were also followed for the clam tissue samples.

## 3.6 QUALITY ASSURANCE / QUALITY CONTROL

QA/QC were consistently emphasized throughout every phase of this RI, including data collection in the field, transmittal of samples to laboratories, and verification of procedures and findings. Physical and chemical data were subjected to validation using the NEESA procedures. An overview of the QA/QC procedures employed as part of this RI are presented in this section.

### 3.6.1 Field Sampling

Field QA/QC procedures followed those specified in the SAP (JEG 1993b) and the QAPP (JEG 1993b). These procedures included taking field replicates for surface and subsurface sediment samples, and rinseate and field blanks for subsurface sediment samples. Field replicates were collected at a rate of 1 in 10 samples collected per matrix; the matrices included surface sediment, subsurface sediment, and bioassay samples. The following field QA/QC samples were collected:



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- Surface sediment triplicate samples were collected at West Basin Station 1 and at Reference Stations 40010.1, 40010.2, 40010.3, and 40018.3 for TOC and grain size analyses. Each of the field triplicates was acquired by separate collection efforts in order to obtain sufficient sample volumes.
- Surface sediment triplicate samples were collected at West Basin Station 1 and at Reference Station 40010.3 for chemical analyses. Each of the field triplicates was acquired by separate collection efforts in order to obtain sufficient sample volumes.
- Surface sediment triplicate samples were collected at Reference Stations 40010.1, 40010.2, 40010.3, and 40018.3 for purposes of bioassay and benthic community analyses. Each of the field triplicates was acquired by separate collection efforts in order to obtain sufficient sample volumes.
- One subsurface field duplicate was collected during the sampling of subsurface sediments beneath piers using a drill rig.
- One equipment rinseate blank was collected daily during the sampling of subsurface sediments beneath piers; two days of sampling resulted in two rinseate blanks collected. The SAP did not require collection of rinseate blanks for surface sediment or tissue sampling.
- One field blank was collected per source of deionized water during sampling of subsurface sediments beneath piers, resulting in two field blanks actually collected. The SAP did not require collection of field blanks for surface sediment or tissue sampling.
- One matrix spike/matrix spike duplicate (MS/MSD) sample was collected daily during the sampling of subsurface sediments beneath piers; two days of sampling resulted in two MS/MSD samples actually collected. MS/MSD samples were not collected in the field during surface sediment sampling because Pace generated these samples in the laboratory by splitting original field samples.

Other field QA/QC procedures included appropriate decontamination of sampling equipment and following proper COC procedures. All samples were assigned a unique identifying number, and containers were labeled with information identifying sample location, date and time of sample collection, and preservative. Field notebooks were maintained by the sampling team leader to provide a daily record of significant events, observations, and measurements taken during the field investigation. Field quality control procedures specific to fish sampling included: 1) visual examination of the net and the samples, in particular, checking for invertebrates in the net (i.e., benthic invertebrates which could only be collected by appropriate trawling practices); and 2) ensuring that proper scope of trawl line to depth ratio (5:1) was used.

## 3.6.2 Laboratory Analyses

Laboratory QA was performed as specified in the QAPP (JEG 1993b). In addition to internal laboratory-specific QA procedures for physical, chemical, and biological tests, each of the laboratories (MEC, Pace, and Battelle) reported that they implemented and



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followed standard protocols which specified laboratory QA procedures to improve precision and accuracy from these analyses. These procedures addressed:

- detection and quantification limits,
- instrument calibration,
- internal quality control checks and corrective actions,
- data calculations and reporting units, and
- documentation and deliverables.

The chemical analyses of surface and subsurface sediment and tissue were performed using protocols and quality control criteria specified in SW-846 (U.S. EPA 1990). Procedural blanks, MS/MSDs, and standard reference materials were also analyzed in the laboratory at a frequency of 1 per 20 samples. Deuterated surrogates and internal standards were analyzed for every sample as well.

QA requirements specified in Battelle's SOP 5-199 were followed throughout the fish bile testing procedure. The initial instrument calibration was established and the correlation coefficient of the calibration was determined by analyzing a continuing calibration check standard approximately every 12 samples. Pure methanol was analyzed as method blanks to monitor background signal. The methanol blank was considered acceptable if no resolved analytes, or unresolved components, were detected at greater than three times the detection limit in the chromatographic region of interest. A set of MS/MSD samples were also analyzed along with the field samples.

### 3.6.3 Physical and Chemical Data Verification / Validation

Verification of physical and chemical data was conducted by both MEC and BNI. The verification procedure included checking hard copies of the data as reported by the laboratories against the electronic database for accurate transcription or other errors which could affect data quality. MEC, who prepared an electronic database for this project, verified 100 percent of the physical and chemical data during preparation of the electronic database; BNI conducted a 10 percent acceptance review of such data and did not find errors. In addition, verification of calibration curves, where appropriate, and evaluation of matrix spikes (surrogate recoveries) were conducted by the individual contract laboratories to assess that data met project DQOs, as specified in the Data Management Plan (BNI 1994e).

Physical and chemical test results were also subjected to formal data validation following NEESA guidelines. This validation procedure was conducted by an independent contractor (Laboratory Data Consultants [LDC] in Carlsbad, California) to assure objectivity in evaluating laboratory-generated data.

The project QAPP (JEG 1993b) notes that both NEESA Level C and Level D (U.S. EPA Level III and Level IV, respectively) data support packages would be prepared for harbor sediments, although it is not possible to report both levels for the same data. Because it



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was inappropriate to report Level D for sediments, due in part to the use of certain non-standard analytical methods, Level C was used as a reporting level for all sediment chemistry data This is consistent with U.S. EPA guidelines (1992b), which state that Level C is adequate to support baseline risk assessment and define remedial action objectives. Nevertheless, 10 percent of the data were subjected to Level D validation and the remaining 90 percent were subjected to Level C validation. This level of validation provided an additional rigorous check for laboratory data. Validation included a check of the adequacy of sensitivity for individual testing sequences (i.e., whether analytical detection limits were acceptable).

Analyses of AVS metals, total sulfide, and butyltin in sediment were also reviewed by LDC using NEESA Level C and Level D guidelines, as appropriate. The results were validated following generally accepted methodology for conducting data validation, as documented in NEESA (1988), U.S. EPA (1988b; 1991), and Allen et al. (1993).

After the data were validated by LDC, BNI compared the concentrations of analytes in laboratory and field blanks to the concentrations of the same analytes detected in West Basin and reference station samples. This comparison served the purpose of excluding nonsite-related chemicals from the data evaluation process (i.e., chemicals that might have entered the samples after the samples have been collected and packaged were removed from the list of chemicals to be evaluated). According to the U.S. EPA (1989a), a chemical is treated as having been introduced into a sample after the sample has been collected if the concentration of the chemical in the sample is less than 10 times (for common laboratory contaminants only) or 5 times (for other chemicals) the concentration in the associated field or laboratory blank sample. Acetone, 2-butanone (methyl ethyl ketone), methylene chloride, toluene, and phthalate esters are considered by the U.S. EPA to be common laboratory contaminants. Accordingly, samples with less than 10 times the concentration of common laboratory contaminants or 5 times the concentration of other chemicals in any blank were treated as "non-detects" and the chemical concentration measured in the blank was considered to be the quantitation limit value for the chemical in that sample (U.S. EPA 1989a).

### 3.6.4 Bioassay Data Verification

Bioassay test data were verified using a project-specific, multi-step approach designed to identify potential data inaccuracies or inconsistencies. The verification approach included:

- a 10 percent check to verify that raw electronic data were accurately transferred to the electronic data summaries (mean of laboratory replicate results per sampling station);
- a 10 percent check of raw hard copy data against raw electronic data;
- a check of test water quality data (e.g., DO levels, temperature, salinity, ammonia, sulfides);
- a check of exposure conditions, including acclimation of the organisms, length of exposure, feeding protocols, and



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- a check of the survival data for test organisms, using both negative and positive control tests, to assure the viability of each test.

All appropriate data qualifiers were assigned by MEC to laboratory sample replicates (e.g., replicates that were contaminated, double inoculated, not inoculated). Minor deviations were observed in test protocols such as variation in temperature and salinity, although recorded values were within the industry standard. However, two pore water samples (representing 1 percent of the data set) experienced reduced DO levels during testing, DO levels fell to less than 60 percent of saturation. The depressed DO levels for these samples (Stations 24 and 51) were taken into consideration during the interpretation of the pore water toxicity tests.

### 3.6.5 Benthic Community Data Verification

MEC provided standard internal verification of benthic indices counts after transferring the data from hard copy to an electronic database, which was used in subsequent statistical analyses.

### 3.6.6 Data Usability

Guidance for overall data usability in risk assessment was based on U.S. EPA's Final Guidance for Data Usability in Risk Assessment (1992a). This guidance document, designed to address analytical data, identifies several data quality issues which are frequently encountered and need to be addressed in risk assessments. Five criteria, defined by the U.S. EPA and used to evaluate data usability for risk assessment, include:

- data sources,
- documentation,
- analytical methods and adequate detection limits,
- data review, and
- reports to the risk assessor.

The manual provides guidance on interpreting the impact of sample collection, analytical techniques, and data review procedures on the usability of analytical data in risk assessment.

These data usability criteria were applied during the RI planning process to guide the design of sampling plans and select analytical methods for the data collection effort. This included guidance concerning how to determine the degree of confidence in the risk assessment based on the level of uncertainty of the analytical data. For the data generated and validated for West Basin, data usability criteria extended to:

- whether measured parameters were within method-specified QC limits,
- accuracy and reliability of the data estimates,
- adherence to detection limits during analysis, and



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- whether data precision goals were met (e.g., a relative percent difference [RPD] between matrix spike and matrix spike duplicates of less than or equal to 35 percent).

Specifically, biological performance criteria were established for bioassays, and closely scrutinized for purposes of data usability determination as described below. Data usability criteria, described in TM No. 4 (BNI 1994c), included negative controls to determine whether individual laboratory tests were valid, positive controls (reference toxicants) to establish the sensitivity of test animals, and reference sediment performance criteria to determine whether reference locations used were appropriate for statistical comparisons with test stations.

**Negative Control Performance Criterion.** Table 3-13 shows that mean survival in control amphipod and polychaete organisms less than 90 percent or mean normal echinoderm development less than 70 percent constitutes a bioassay test failure. In addition, individual laboratory replicate survival in control polychaete organisms must be greater than 80 percent.

**Positive Control Performance Criterion.** Control organisms were exposed to a standard reference toxicant for 96 hours and concentration-response data ($LC_{50}$ for amphipod and polychaete and $EC_{50}$ for echinoderm) evaluated and compared to the overall laboratory mean for that particular species. The reference toxicants used for the purposes of this project were cadmium chloride ($CdCl_2$) for amphipod and polychaete bioassays and $Cu^{2+}$ for pore water bioassays. The $LC_{50}/EC_{50}$ results for each control batch must fall within two standard deviations of the overall laboratory mean in order for the bioassay test to be considered valid.

**Reference Sediment Performance Criterion.** Table 3-13 shows that the relative difference between mean survival and normal development (echinoderm) in reference station and laboratory controls must be less than or equal to 20 percent; the RPD between mean individual weight (polychaete) in reference station and laboratory controls must be less than or equal to 30 percent. Relative percent differences greater than 20 percent or 30 percent, as appropriate, constitute a reference failure. Data that did not pass this criterion were considered outliers and, therefore, were excluded from the reference data set.

## 3.6.7 Database Management

Following verification and validation, the data generated during the course of this RI were entered, stored, organized, and secured into a centralized database, Bechtel Environmental Integrated Data Management System (BEIDMS), maintained by BNI. This database houses physical, chemical, and biological data in an ORACLE® relational database.

The BEIDMS database system is designed to protect against unauthorized data access and corruption of data. User access is controlled by the use of passwords, and users are provided "read-only" access to verified and validated data. Preliminary data are available for limited specific modifications, such as the entry of data quality codes. However, once



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the data are declared to be validated and verified by authorized personnel, they are placed in production database tables. Modifications to production tables are performed only by data management staff and only when required database change request forms have been approved by appropriate project managers and technical specialists. Modifications to validated data are tracked electronically as separate fields within all environmental database tables. Tracking fields include the user identification of the person making the change to the database, the date of the change, and the program number of the database change request. Completed field review/correction forms accompany transmittal of all raw data files, reports, and field logs to the data management staff for inclusion in the BEIDMS database.

## 3.7 DATA ANALYSIS METHODS

Data collected from the analyses of the West Basin sediment and tissue samples were evaluated for descriptive statistics, significant differences from the reference data, spatial patterns, and data correlation patterns as described below:

- The descriptive statistics provide conventional measures of the data set such as mean and standard deviation.
- West Basin station data were compared to the 95 percent predictive interval of the reference station data. The data from groups of stations (sediment evaluation zones [SEZs]) were tested for significant differences from reference data using analysis of variance (ANOVA) with Tukey's multiple comparison test.
- Sediment quality spatial patterns were examined by plotting contour intervals of data values on site maps.
- Sediment data correlation patterns were examined using correlation coefficients, cluster analysis, and principal component analyses with multiple regression.
  - The correlation coefficients reflected the patterns that existed among all the data parameters (i.e., grain size, TOC, chemical analytes, toxicity, and benthic infauna indices).
  - The cluster analysis procedure grouped stations together according to similar physical and chemical characteristics; such groups were treated as SEZs.
  - The principal component and multiple regression analyses evaluated the relationships between the toxicity and benthic infauna data and variables developed by grouping similarly distributed sediment chemistry data.

### 3.7.1 West Basin Descriptive Statistics

General descriptive statistics were calculated for each basin and pier station for physical, chemical, and toxicity parameters for each individual data set. These data sets included clam tissue (bioaccumulation test), fish bile (California halibut), fish tissue (California halibut fillet, white croaker fillet, California halibut whole body, white croaker whole body), and surface and subsurface sediment. Data used for this analysis included the



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reported concentrations of detected compounds, and one-half the practical quantitation limit (PQL) if the concentration of the compound was reported as below its detectable concentration. The following descriptive statistics were calculated, as applicable:

- Number of available data values. A data value was defined as the concentration at which a compound was detected; when the compound was not found at detectable levels, one-half of the PQL was the data value. The number of data values may differ from the total number of actual analyses due to the results of data validation (i.e., some data values were rejected).
- Number of detectable values. Number of data values reported at a detectable concentration.
- Percent frequency of detection. Calculated as number of detectable values divided by the number of available data values.
- Minimum value. Minimum concentration in the data set. In many cases, this value was one-half the PQL.
- Minimum detectable value. Minimum concentration in the data set where a compound was found at a detectable level.
- Maximum value. Maximum concentration in the data set. When a compound was not detected, this value was one-half of the PQL.
- Mean value. Arithmetic average of available data values for each compound.
- Standard deviation. Standard deviation of the mean of available data values for each compound.
- 95% upper confidence limit (UCL). Upper 95 percent confidence limit of available data values for each compound using a 2-tail $t$ statistic ($t_{(0.05, n-1)}$).

## 3.7.2 Reference Stations Descriptive Statistics

General descriptive statistics for physical, chemical, and toxicity parameters were calculated for each individual reference station data set including clam tissue (bioaccumulation test), fish bile (California halibut), fish tissue (California halibut fillet, white croaker fillet, California halibut whole body, white croaker whole body), and surface and subsurface sediment. Data were included for this analysis as the detectable concentration for detectable compounds, and as one-half the PQL when the compound was not found at detectable levels. The descriptive statistics calculated using the reference station data were the same statistical analyses used for the West Basin data, except for several additional analyses. These additional analyses included testing for normality of data to asses the suitability of using 95% upper predictive limit (UPL) interval; and calculation of the 95 % UPL. The 95% lower predictive limit (LPL) was used to compare the toxicity and benthic infaunal data. Brief descriptions of the additional analyses are provided below:

- Shapiro-Wilks Statistic. Shapiro-Wilks test for normality (performed for sediment and fish tissue only). The Shapiro-Wilks $W$ statistic was calculated both for untransformed and log-transformed ($\log_{10}$ (value+1)) data values for



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each analyte. The value was not calculated when the standard deviation of the mean was not greater than 0. When the probability was less than 0.05, then the null hypothesis of a normal distribution of the reference data was rejected.

- 95% UPL of available data values for each compound using a 1-tail $t$ statistic ($t_{(0.05*2,\ n-1)}$) for reference stations (Hahn 1970). This statistic was not calculated when the number of values was less than n=2. The following formula was used to calculate the 1-tail statistic:

$$95\%\ \text{Predictive Limit} = \text{mean} \pm t * \sigma(1+1/n)^{(1/2)}.$$

### 3.7.3 Comparison of West Basin Data to Reference Data

Results of single analyses at each of the West Basin stations were compared to the reference stations' results for sediment physical, chemical, benthic infaunal, and toxicity data using the 95% predictive limit (see Section 3.7.2). Mean values of pooled analytical data from the West Basin were compared to the reference station mean values using analysis of variance (ANOVA). Results of the fish tissue, halibut bile, and clam bioaccumulation data from the West Basin were pooled and treated as replicates for comparing to the reference data. In addition, results of sediment analyses from the stations within each SEZ were pooled to represent replicate samples of the SEZ.

The data were prepared for the ANOVA by using one half PQL values when the analytical results indicated that analyte concentrations were less than the reporting limit. Each data set was tested for the ANOVA assumption of homogeneity of variances (equal variances among the groups) using Levene's test ($\alpha = 0.05$). Levene's test is also sensitive to non-normally distributed data; therefore, a separate test for normality was omitted. If the raw (untransformed) data passed Levene's test, the ANOVA was applied. If the raw data did not pass Levene's test, the data were log-transformed (arcsine-transformed for percentage data) and tested again. If the transformed data passed Levene's test, the ANOVA was applied. If the transformed data did not pass Levene's test, the data were rank-transformed and the ANOVA applied. The ANOVA with rank-transformed data is equivalent to the non-parametric Kruskal-Wallis test.

ANOVA results were considered significant when the probability associated with the calculated $F$ statistic was less than an alpha of 0.05. Tukey's multiple range test was performed to evaluate differences between the ANOVA cases. ANOVA were performed on each data set using the SAS® statistical program (version 6.07).

ANOVA represents a standard, highly accepted procedure to determine whether any observed differences among groups are statistically significant. If the test is not statistically significant ($P > 0.05$), it can be concluded that the test groups are the same as the reference. If the F-test is significant, all groups are compared with the reference data by using a multiple comparison test (e.g., Tukey's multiple range test), which is specifically designed to compare several experimental samples to the reference, and accounts for several simultaneous comparisons (Sokal and Rohlf 1969).



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### 3.7.3.1 FISH TISSUE AND BILE

An individual one-way unbalanced ANOVA was performed for each analyte for each analysis matrix (whole body, fillet, and bile) for both species of fish (California halibut and white croaker) collected from the West Basin and the reference stations. Individual fish were treated as separate samples and the mean and variance of all fish samples of a similar type were combined for the West Basin and reference stations.

### 3.7.3.2 BIOACCUMULATION - CLAM TISSUE

Individual one-way unbalanced ANOVA was performed for each analyte for the clams grown in West Basin and reference station sediment samples. Clams were grouped according to sediment type: pier stations, basin stations, and reference stations.

### 3.7.3.3 SURFACE SEDIMENT CHEMISTRY AND PHYSICAL PARAMETERS

Two methods of comparison of West Basin data to reference station data were performed for the surface sediments. The first method compared every individual station chemical parameter value with the 95% UPL value for the pooled reference station data. A simple examination of the data indicated which West Basin station values exceeded reference station values. Any analyte which was found in the West Basin but not in the reference station samples was assumed to exceed the reference station value. The second method consisted of performing individual ANOVAs for each chemical analyte and physical parameter for the West Basin stations after they were grouped into SEZs, and the reference station data.

### 3.7.3.4 SEDIMENT TOXICITY - BIOASSAY

Specific performance criteria for comparing West Basin bioassay data to reference station bioassay data for the purposes of assessing whether West Basin data were statistically different from reference data, included:

- a relative mean numerical difference between West Basin and reference station bioassay results of less than or equal to 20 percent for survival, 20 percent for normal development (echinoderm only), and 30 percent for growth (polychaete only) endpoints; and
- a statistically significant difference in a measured biological endpoint between West Basin and reference station organisms based on a comparison of biological response at West Basin stations to biological response at reference stations.

Table 3-13 shows specific biological performance criteria for each test organism. These criteria are valid assuming a laboratory control organism survival rate greater than 90 percent. Exceeding both of the above performance criteria constitutes a definitive "hit" for bioassay tests, implying that natural variability is screened out as a potential "cause" or indicator of toxicity. Table 3-14 is designed to show specific biological performance criteria for an example organism and how results would be evaluated as a series of yes and no questions to ultimately lead to a "hit" or "no hit" result.



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Table 3-13 shows that evaluation of the West Basin sediment data involves two interpretation performance criteria for each bioassay endpoint. First, the RPD must be less than or equal to 20 percent for survival and normal development (echinoderm) and less than or equal to 30 percent for mean individual weight (polychaete) in order for the West Basin sediment to have "passed" the bioassay, i.e., relatively little difference between West Basin and reference station toxicity. Second, West Basin and reference station results were statistically compared at the $\alpha = 0.05$ level. The results of these two analyses (RPD and statistical comparisons) were then evaluated for each West Basin station or SEZ to determine the ultimate bioassay test result, i.e., either "hit" or "no hit."

West Basin bioassay data were compared to reference station values both on a station-by-station and on a SEZ basis. Station-by-station statistical analyses were conducted by comparing the biological response observed at each individual West Basin station with the pooled reference 95% lower predictive limit (LPL) for same biological response using SAS®. This technique is normally applied for the analysis of a single test observation as compared to a reference mean. Statistical analyses of bioassay data grouped into SEZs proceeded with ANOVAs and Tukey's multiple comparison test.

#### 3.7.3.5 BENTHIC INFAUNA

Several unique statistics were calculated for the benthic infauna community results at each station, including the number of species, abundance, diversity indices (Margalef's Species Richness, Shannon-Wiener diversity, Dominance Index, and Pielou's J or Evenness), and biomass. Data were also classified by cluster analysis using the Bray-Curtis dissimilarity index. Individual ANOVA for each benthic infauna community result was performed for the West Basin SEZs and the pooled reference stations.

### 3.7.4 Data Patterns

Three approaches - cluster analysis, data mapping (spatial plots), and correlation and regression analysis - were used to investigate patterns among the extensive sediment quality data, which consisted of 45 West Basin stations and nearly 140 sample analysis determinations. These data analyses and presentation methods are briefly described below.

Cluster analysis is a statistical technique that evaluates patterns among the station data by summarizing the results of many tests. The analytical results are summarized onto a matrix table that describes theoretical similarity between sampling stations. The matrix is then used to construct a diagram illustrating which stations are similar to each other.

Spatial plots are contour lines of equal data values presented on a site plan of the sampling stations. Contour lines are plotted for selected test results. The illustrations generated in this manner aid in the identification of areas containing low or high values for a certain parameter.

Relationships between the sediment chemistry data and the biological data (benthic infauna and toxicity) were investigated using correlation and regression analysis. Results of the



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correlation analysis described the association between results of one test and results of another test. High correlation values between two tests may indicate similar distributions or potential cause and effect relationships. The regression analysis evaluated the dependence of one test's results on another test's results. A strong dependence between two sets of test results can potentially indicate a cause and effect relationship.

The following sections provide more detailed descriptions of these data pattern analysis methods. The descriptions provide a thorough technical discussion of the mathematical and statistical procedures, with references to computer programs used for this RI.

### 3.7.4.1 CLUSTER ANALYSIS

Cluster analysis, a classification type of multivariate statistical test, was used to identify groups of data with similar characteristics (i.e., stations with similar chemical analytes). Cluster analysis involves a hierarchical classification of entities (or groups) according to a resemblance measure (sometimes called a dissimilarity index). A normal (Q-mode) agglomerative hierarchical clustering technique was used from the SAS® statistical analyses software. The clustering method (grouping strategy) used was the flexible sorting strategy with the clustering intensity coefficient, Beta, set at the standard -0.25.

Stations were evaluated as a group of all 52 together (basin, pier, and reference), and as a group of the 45 West Basin stations (basin and pier). Both of these groups of stations were evaluated with three variable groups: 1) chemical and physical data combined, 2) physical data, and 3) chemical data. For the purposes of this evaluation, chemicals included all compounds that were analyzed (except TOC) that were found at least at 50 percent of the stations. Variations in detection limits (due to complex sample matrices) for compounds that were detected at a frequency less than 50 percent caused interference in pattern recognition and, therefore, were not included in this process. The physical data group for this analysis included grain size as percent fines (sum of clay and silt) and TOC.

The clustering algorithm used a Bray-Curtis dissimilarity matrix (the inverse is similarity), from which distance measures between units (stations) were computed. This index takes a matrix of 'r' rows and 'c' columns (matrix D), and produces a square matrix of 'r' rows and columns (matrix BC). The value of $BC_{ij}$ is the dissimilarity between the ith and jth rows of matrix D with each row containing data for one station, and each column containing data for one analyte (chemical/physical). The resulting matrix BC shows all possible pair-wise stations, as calculated from the relative concentration of each analyte at those stations.

The formula for each element is:

$$BC_{ik} = \Sigma \mid D_{kj}-D_{ij} \mid / \Sigma (D_{kj}+D_{ij})$$

where i = 1 to maximum number of rows, k = 1 to maximum number of rows, and j = 1 to maximum number of columns.



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The matrix is symmetrical around the diagonal, so only one-half of the matrix was calculated. Analyte concentrations were transformed to the mean value (i.e., $D_{ij}$ = (concentration of analyte j at station i) / (mean concentration per station of analyte j). See Bray and Curtis, 1957 for a complete explanation of the technique.

Results of the cluster analysis are displayed as a two-dimensional hierarchical structure called a dendrogram (tree diagram). The dendrogram shows the level at which entities or groups of entities are grouped along the hierarchical agglomerative process, according to a dissimilarity index (e.g., Bray-Curtis) scale. The dendrogram of stations illustrates which stations show similarity, while the dendrogram of physical and chemical data show which parameters are similarly associated. The associations among the stations as well as among the parameters are illustrated in two-way tables that display the relative distribution of parameters among the stations in a matrix format.

Clusters of stations were then used to construct SEZs, discussed in the following Section 4.

### 3.7.4.2 SPATIAL PLOTS

Chemical data were grouped according to logical sets (PAHs, metals, etc.) and spatial plots were produced to illustrate possible variations in chemical concentration gradients using SURFER® for Windows Version 6.0 software. SURFER® interpolated data from irregularly spaced stations and produced contour maps of possible distribution and concentration of analytes according to the specific interpolation technique used by the software.

### 3.7.4.3 CORRELATION ANALYSIS AND MULTIVARIATE TECHNIQUES

All of the following analyses were performed using the SAS® statistical program (Version 6.07) on a VAX computer.

Pearson correlation analyses were performed using all physical, chemical, and bioassay sediment values. The following benthic community variables also were included: number of individuals (to lowest possible taxon), abundance, biomass, Shannon-Wiener diversity, and Margalef diversity. Correlation coefficients (r) ≥ 0.04 and number of observations (n) were recorded for all pairwise comparisons. Correlations were not performed for fish tissue data or clam bioaccumulation data. X - Y plots were prepared for all biological-chemical correlation pairs that met the r ≥ 0.04 criterion.

Principal component analyses (PCA) were performed using sediment physical/chemical data for all stations for values ≥ 50% for the entire data set. The SAS® procedure FACTOR was used with the following settings: method = principal simple; n = 30 (allows maximum of 30 eigenvectors); rotate = varimax. Output included data used in the PCA, eigenvalues for each analyte (for a total of 10 eigenvectors), total and cumulative variance explained for each eigenvector, and eigenvector scores for each station. Output was generated for both rotated and nonrotated eigenvectors



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Step-wise multiple regressions were performed using the five dominant eigenvectors produced in the PCA. The regression analysis was run using SAS® procedure REG, selection = stepwise, and stay level = 0.15 (correlation criterion for inclusion into the model). Output included degrees of freedom, sum of squares (SS), mean square, correlation coefficient squared ($r^2$), F value, probability > F, mean standard error, and type II SS. Regression plots were prepared for each biological variable (bioassay and select benthic community measures) versus each eigenvector included in the model.

### 3.7.5 Sediment Quality Guidelines

Sediment chemical data were screened against quality guidelines by comparing individual analytes for each West Basin station to the reference stations (see Section 3.7.3). Chemical data were also compared to ER-L or ER-M values reported in Long, et al. 1995 and shown in Table 3-15. The effects on aquatic organisms of several trace metals and PAHs, total PCBs, and two pesticides were evaluated by Long et al. by examining the results of numerous modeling, laboratory, and field studies performed in marine and estuarine sediments. The incidence of adverse effects has been quantified and the ER-L and ER-M values have been determined to provide reliable guidelines for use in sediment quality assessments. ER-L levels generally correspond to chemical concentrations in sediments that do not demonstrate any adverse effects on aquatic organisms and ER-M levels correspond to chemical concentrations in sediments that demonstrate a moderate amount of adverse effects on aquatic organisms.

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SECTION 4

# RESULTS OF SITE CHARACTERIZATION

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## Section 4
# RESULTS OF SITE CHARACTERIZATION

This section presents the results of the site characterization efforts and includes a discussion of the distribution and spatial patterns of the physical, chemical, and biological data found at West Basin. The results presented herein are based on final verified and validated laboratory data. All results of sediment analyses are presented in this RI Report as dw units, and all results of tissue analyses are presented as ww units.

The physical, chemical, and toxicological parameters of surface sediments obtained in this RI were used to describe the nature and extent of chemicals measured in the sediments. Physical measurements (i.e., TOC and grain size), which are known to influence both sediment toxicity and chemical distribution in sediments, provided an understanding of the general character of the sediments at West Basin and the reference stations. While chemical analytes provided direct measures of chemical distribution, bioassay toxicity tests were used to assess the potential toxicological effect of chemicals in sediments. Benthic community analysis assessed the infaunal invertebrates found in sediments, which are sensitive to and useful indicators of various disturbances to the benthic environment. Tissue bioaccumulation tests of fish and laboratory clams were useful in evaluating the potential for chemical uptake in the tissues of marine organisms from the sediments.

West Basin surface sediments were analyzed for areas of similar physical and chemical nature to establish SEZs. The data for each SEZ were compared to reference station values and to sediment quality guidelines (ER-Ls). COPCs were identified as those analytes exceeding the reference station values, and AOPCs were identified as those SEZs containing at least one COPC. Fish tissue data were also compared to the reference station values. COPCs detected in fish tissue were evaluated using human health risk assessment (Section 5) and ecological risk assessment (Section 6). AOPCs and COPCs for sediments were evaluated using ecological risk assessment methods described in Section 6.

Throughout this RI Report, four major groups of sediment sampling stations are discussed: 1) Reference Stations - those stations located in the outer LA/LB Harbor used to describe background levels of sediment characteristics, 2) West Basin Stations - all stations located within the West Basin, 3) Basin Stations - those stations located within the West Basin but not beneath piers, and 4) Pier Stations - those stations located beneath piers within the West Basin.

Complete data reports from the analytical laboratories are provided as appendices to this RI Report for sediment particle size distribution (Appendix J); sediment TOC (Appendix K); sediment, tissue, and fish bile chemical analyses (Appendix L); sediment and pore water toxicity bioassay (Appendix M); and benthic community analysis (Appendix N). The data validation reports are included as Appendix O. A complete listing of the West Basin electronic database is provided in Appendix P. This database is the culmination of data verification and validation efforts, and provides the complete set of data used for this RI.

The borehole logs for subsurface sediment samples are included in Appendix Q. Appendix R contains the results of grain size distribution tests, and presents the data in graphical form as grain size distribution curves.



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## 4.1 GENERAL DESCRIPTION OF PROJECT DATA QUALITY AND USABILITY

Chemical data, bioassay performance criteria assessment, and benthic infauna assessment for each sample were reviewed under a data validation program. The results of data validation are presented in this section. The methods used for data validation were identified in planning documents referenced earlier (BNI 1994c, BNI 1994d, BNI 1995a) and summarized in Section 3.

### 4.1.1 Chemistry Data

The analytical chemistry data were compared to U.S. EPA data validation guidelines (U.S. EPA 1988b, 1991). Table 4-1 lists the number of analytical data values reported by the laboratory, and the percentage of these data values retained after data validation. Some of the chemical data values were assigned a "J" data validation code indicating the value is considered an estimate. The "J" code was assigned because of various conditions, including sample holding times that were exceeded, inconsistencies with initial and subsequent calibrations, and spiked sample recoveries. A few of the data values were assigned an "R" validation code indicating rejected data. Upon completion of data validation, none of the data that the analytical laboratory reported as detectable concentrations were found to require the classification of "rejected."

Evaluation of laboratory and field blank data revealed no detectable levels of common laboratory contaminants. Other chemicals (e.g., zinc, tributylin, and dibutyltin), however, were detected in some of the blank samples. Zinc was found in the field and rinseate blanks associated with the subsurface sediment core taken at Station 46. Concentrations of zinc in the Station 46 samples were greater than 5 times the blank contamination level; therefore, the levels of zinc detected in the Station 46 samples were considered positive results. Zinc was also found in laboratory blanks associated with 14 fish tissue samples. Zinc concentrations in these fish samples did not exceed 5 times the zinc concentrations detected in the blanks and were thus considered false positive results.

Likewise, tributyltin was found in laboratory blanks and 70 associated surface and subsurface sediment samples; dibutyltin was found in both a laboratory blank and one associated surface sediment sample. Tributyltin and dibutyltin concentrations in these sediment samples did not exceed 5 times the associated blank concentrations and therefore were considered false positive results.

False positive results were treated as "non-detects," and 5 times the blank chemical concentration (i.e., zinc, tributyltin, or dibutyltin) was considered the quantitation limit for such a chemical in the affected sample. Comparison of concentrations of chemicals detected in blanks to the associated West Basin and reference samples are contained in Appendix O.



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## 4.1.2 Toxicity Data

Bioassay test results were compared to project-specific performance criteria (BNI 1994c). These criteria assessed the acceptability of bioassay tests and the suitability of project reference station data for comparison with West Basin data.

### 4.1.2.1 NEGATIVE CONTROL PERFORMANCE CRITERION

Individual laboratory replicates of percent normal development data in echinoderm bioassay test controls were averaged to determine mean percent normal development. Individual laboratory replicates of percent survival data in amphipod and polychaete bioassay test controls were averaged to determine mean percent survival. These mean percent responses for the test controls were compared to the appropriate performance criteria, specified in Table 3-13. In addition, individual laboratory replicate percent survival in the control polychaete bioassay tests were compared against the 20 percent performance criterion previously specified in Section 3.

All laboratory control samples passed this performance criterion when mean survival and normal development were evaluated. However, two of the six polychaete method control samples did not meet the negative control performance criterion in its entirety. The negative control performance criterion for the polychaete bioassay included both a replicate criterion and a mean replicate criterion. Although the mean replicate criterion was met, one replicate each from polychaete control samples mentioned above failed the 20 percent replicate specification: mortality was 40 percent and 60 percent for the two replicates, respectively. Because the mean replicate criterion is a better estimate of test performance than the replicate criterion, and because only one of the ten replicates from each of these two control samples did not meet the replicate criterion, the data were ultimately considered acceptable for further analyses.

### 4.1.2.2 POSITIVE CONTROL PERFORMANCE CRITERION

The reference toxicant $LC_{50}$ (amphipod and polychaete) and $EC_{50}$ (echinoderm) results were evaluated for each control batch for the three bioassay tests to assess whether the results fell within two standard deviations of the overall laboratory mean. All bioassay tests passed this performance criterion.

## 4.1.3 Benthic Infauna Data

Benthic infaunal analysis was performed on samples collected from all of the 45 stations in the West Basin and from seven reference stations. Single samples were collected at each of the West Basin Stations, and at Reference Stations 40018.1, 40018.2, and 40032.1. Three field replicates were collected at Reference Stations 40010.1, 40010.2, 40010.3, and 40018.3. The community index values calculated from the benthic infauna results for each field replicate were averaged for subsequent data analysis. Analysis of Reference Station 40010.3 Replicate 1 was terminated as an invalid sample after it was found that only two animals were present in the sample. All other benthic infaunal results were considered valid.



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## 4.2 ESTABLISHING THE PROJECT REFERENCE

This section describes and compares general sediment characteristics, including visual observations, grain size distribution, and TOC of West Basin and reference station surface sediments for the purposes of providing the basis for the reference station values established for this RI. The rationale and methods of selecting the reference stations are provided in Section 3.

Seven locations in the outer LA/LB Harbor were selected as project reference stations. For the purposes of this RI report, the project reference stations were considered to represent sediment conditions of the LA/LB Harbor which have not been influenced by activities associated with the LBNC.

Three reference stations, 40010.1, 40010.2, and 40010.3, were located near Cabrillo Beach in outer Los Angeles Harbor, collectively referred to herein as Station 40010. Three other reference stations, 40018.1, 40018.2, and 40018.3, collectively referred to herein as Station 40018, were located near the eastern boundary of outer Long Beach Harbor. One additional reference station, 40032.1, was located in outer Long Beach Harbor near the Angel's Gate opening in the breakwater, referred to as Station 40032.

### 4.2.1 Visual Observations

Detailed visual observations of surface sediments were documented in field logbooks during the sampling event. These observations, shown in Table 4-2, included detectable odors and physical characteristics such as texture, color, and cohesiveness. Sediments collected from basin stations in the West Basin were generally similar in texture, color, and cohesiveness, and differed considerably from sediments collected from beneath the piers. Reference station sediments represented a relatively wide range in texture and color, and appeared to be favorably comparable with West Basin sediments.

Basin surface sediments generally had fine texture, high cohesiveness, and no odor, except for Stations 1, 4, 12, and 41 which had detectable odors. The basin sediments were composed of mostly a silt/clay mixture and dark brown to black in color, with Stations 27, 28, and 41 exhibiting a greenish tint in color. In addition, benthic organisms were visible at most of the sampling stations. The characteristics of sediments from Station 24 differed from the rest of West Basin in that the sediments at Station 24 were composed primarily of sand, coarse in texture, and gray in color.

Surface sediments underneath the piers were mostly composed of silt with a significant amount of shell hash, especially beneath Piers 3, 7, and 12, and ranged from dark brown to black in color. The pier sediments were generally fine in texture with low cohesiveness, indicating a high moisture content. Odors were detectable from samples collected underneath each pier. In addition, crabs were present in most samples and an oily sheen was ubiquitous in sediment samples collected from underneath Piers 1, 9, and 15.

Surface sediments from the three reference stations were generally fine in texture (except for Station 40032, which was coarse in texture), high in cohesiveness, and ranged from light brown to brown in color (except for Station 40010, which was dark brown to black



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in color). Odors were not detected at any reference station and benthic organisms were observed in most samples. The reference stations differed between each other in texture, with Station 40010 being composed primarily of clay, Station 40018 having a silty-clay texture, and Station 40032 being primarily composed of sand.

### 4.2.2 Grain Size

West Basin surface sediment particle size (used interchangeably with "grain size" herein) ranged widely from fine-grained sediments (94 percent fines) to coarse-grained sediments (79 percent sand). Figures 4-1 and 4-2 show the range of particle size distribution curves for the basin stations and for the pier stations, respectively. Individual particle size distribution curves by station are presented in Appendix R.

For the purposes of this RI Report, "fine-grained sediment" as well as "clay" and "silt" are used herein to mean sediment particles smaller than 62.5 µm. Particles greater than 62.5 µm in size are referred to herein as "coarse-grained sediments" or "sand." Grain size data for surface sediments are presented in Table 4-3, including mean and median grain size as microns, and percent clay, silt, sand, and gravel size, as well as fines (the sum of percent clay and silt sizes). The percent gravel value represents all sediment particles larger than sand size particles.

Grain size data were evaluated to identify areas of similar sediment physical characteristics. Because events such as historical dredging activities have likely altered the distribution of sediment grain size, median and mean grain size values are not assumed to be consistently representative of West Basin sediments.

Sediments from sampling stations along the seawall of the LBNSY and the eastern section of the Navy Mole (Figure 4-3) showed higher levels of percent fines, ranging from 80 to 93 percent. The coarsest sediment grain size within the West Basin was found near the entrance to the West Basin (Stations 24, 25, and 32). In general, clay content was highest, greater than 40 percent, in sediment samples from stations along the LBNSY seawall (Figure 4-4). Silt content was generally highest, greater than 50 percent, in sediment samples from stations in the southeast area of the West Basin (Figure 4-5).

The measured sediment grain size of samples collected from sampling stations beneath the piers is expected to have been influenced by the amount of debris and shell hash present in the sample. The grain size of sediments beneath the piers was generally fine, exceeding 70 percent fines. However, sediments at Piers 3, 9, and 12 (Stations 44, 47, and 50) showed fine grain size values ranging from 38 to 54 percent. The grain size data at Stations 44 and 50 appear to have been influenced by the content of debris and shell hash, having a gravel size fraction content of greater than 29 percent. Sediment grain size at Station 47 was different than the other pier stations by having a large sand content (47 percent).

Grain size characteristics of the reference stations ranged from sediments dominated by fines (silt and clay size) to sediments dominated by sand size materials (see Table 4-3). Figure 4-6 shows the range of grain size distribution curves for the reference stations. Sediments at Stations 40010.1, 40010.2, and 40010.3 were predominantly silt size particles. Sediments at Stations 40018.1, 40018.2, and 40018.3 were almost evenly



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composed of clay, silt, and sand size particles. Sand was the predominant grain size at Station 40032.1.

### 4.2.3 Total Organic Carbon

Surface sediments from 34 basin stations and 11 pier stations within the West Basin, as well as from seven reference stations, were analyzed for TOC (Table 4-3).

Results of analyses for TOC in surface sediments from the basin stations ranged from 0.070 to 1.8 percent. Concentrations of TOC in sediments from beneath the piers ranged from 1.3 to 2.3 percent. The highest concentrations of TOC were detected at stations beneath piers and at stations near the LBNSY seawall (Stations 10, 17, and 27) and along the eastern Navy Mole (Station 21). The lowest concentration of TOC was reported from Station 24, near the mouth of the West Basin. The spatial distribution of TOC among the basin stations is shown on Figure 4-7.

### 4.2.4 Evaluation of Project Reference Suitability

The grain size distribution data for the surface sediments of West Basin and reference stations represented a wide range of values. Figure 4-8 shows the confidence interval for grain size distribution curves from the reference stations. Stations 40010 and 40018 appear to have overlapping confidence intervals, indicating some similarity in sediment grain size. When these confidence intervals are compared to the range of particle size curves shown on Figures 4-1 and 4-2 for basin and pier stations, it is apparent that while sediments at many West Basin stations consist of a grain size distribution similar to Reference Stations 40010 and 40018, a few West Basin stations do not. It is also apparent that the range of grain size distributions is continuous (i.e., there is no appreciable separation between distinct groups of grain size distribution curves). Therefore, the grain size data from Reference Station 40032 on Figure 4-8 was included with the reference station data from Stations 40010 and 40018. Comparison of the grain size distribution curves from the basin and pier stations (Figures 4-1 and 4-2) with the range of grain size distribution confidence intervals for the reference stations (Figure 4-8) shows a large amount of overlap.

Similar to the grain size distribution within the West Basin, the TOC distribution among the West Basin stations showed a wide range. Reference Stations 40010 and 40018 had TOC values similar to many of the West Basin stations, but not to all of the stations. Figure 4-9 shows the distribution of sediment fines and TOC for the West Basin and for the reference stations. Data presented in Figure 4-9 indicate that the West Basin stations show a continuous range of grain size and TOC values, and that no apparent separation is discernible between distinct groups of stations. The wide range of grain size and TOC distributions among the West Basin stations is well represented by the range of grain size and TOC at Reference Stations 40010, 40018, and 40032.

Because of the continuous range and lack of distinct patterns in the West Basin sediment grain size and TOC data, and similar grain size and TOC ranges in the three reference stations, data from the reference stations were pooled to develop a mean reference station



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value. As described in Section 3, Stations 40010 and 40018 included three substations each (40010.1, 40010.2, 40010.3, 40018.1, 40018.2, and 40018.3). When pooled, data from these stations, along with Station 40032.1, provided seven data values (n=7) for mean, standard deviation, and other statistical estimates provided in Section 4.

### 4.2.5 Subsurface Grain Size and TOC Data

Laboratory tests for grain size and TOC determinations of subsurface sediments were also performed, separately from surface sediment data, as discussed below. Subsurface sediment data were not a part of the criteria established in selecting reference stations; the data are provided and discussed below for purposes of clarity and completeness.

Subsurface sediment samples were collected at Basin Stations 6, 8, 14, 24, and 29, Pier Stations 43 (Pier 15), 46 (Pier 12), and 51 (Pier 2); and Reference Stations 40010 and 40018. The recovered sediments were visually inspected and, based on identified sediment horizons and field judgment, separated into the various sediment samples. Sample 1 indicates the sample sequence beginning at the harbor bottom. Deeper samples are sequentially numbered as Samples 2 through 5 with increasing depth. This sample identification method was used particularly for pier sediment samples where sediment recovery was less than 100 percent of the maximum depth of penetration. These pier station core samples are identified in Table 4-4. The subsurface sediment samples collected at non-pier stations generally had 100 percent recovery. The borehole logs for subsurface sediment samples are included in Appendix Q.

Basin subsurface sediment samples collected at Stations 6, 8, 14, 24, and 29 generally had fine texture, high cohesiveness, and no odor, except for Station 6 at which a strong odor was detected in the Sample 2. The sediment in each core was mostly composed of a silt/clay mixture in Sample 1, becoming sandy in Samples 2 and 3. Clay and sand layers were observed in Samples 3 to 5 at Station 6. Sediment samples were generally dark gray to black in color. Shell hash was observed in Sample 4 at Station 6, all three samples at Station 14, and Samples 2 and 3 at Station 24.

Subsurface sediment samples collected from underneath the piers (Stations 43, 46, and 51) predominantly consisted of mud with abundant shell hash of up to 2 inches in size, especially in Sample 1. A slight oily sheen was observed in Sample 1 at Station 43, whereas oily sludge was observed in Samples 1 through 4 at Station 51. Strong hydrogen sulfide odor was detected in most of the sediment samples from beneath piers. The sediments were generally composed of a silt/clay mixture with varying degrees of sand. Mica flakes were observed in Sample 5 at Stations 43 and 51. The sediments were fine in texture and very soft, grading to denser material at greater depths. Samples varied in color between dark gray and black.

Subsurface sediments collected from Reference Station 40010 consisted of dark brown, cohesive clay, where sampling device refusal was encountered at 2 meters below sea bottom. Subsurface sediments collected from Reference Station 40018 consisted of interbedded sand and clay, varying in color between light gray and black. Shell hash was



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encountered in Sample 2. Sample 5 consisted of very dense, partially cemented sand. Odors were not detected in the reference station samples.

Subsurface sediment core samples were also analyzed for grain size distribution (Table 4-5). Subsurface sediments in Sample 1 ranged from 8 percent fines at Station 8 to 66 percent fines at Station 24 in West Basin. In Sample 2, sediment fines ranged from 6 percent at Station 8 to 70 percent at Station 14. Sediments at Station 8 had higher sand size particle content in the upper two samples than the other West Basin stations. Station 6, which was sampled to a depth of five horizons, showed a high percentage of sand size particles in Sample 2 and a low percentage of sand size particles in Sample 3. Subsurface sediment grain size data did not show a consistent pattern of change with increasing sample depth.

Subsurface sediments beneath the piers in West Basin had a higher percent of fine grain size than sediments from other West Basin areas. Percent fines ranged from 29 to 62 percent at Station 43 (Pier 16), 32 to 34 percent at Station 46 (Pier 12), and 62 to 87 percent at Station 51 (Pier 2). Sediment core samples taken from Station 46 generally had higher percentages of sand size particles than did the core samples from Stations 43 and 51. Subsurface sediments from beneath the piers had a higher content of gravel size particles than did the subsurface sediments taken from the other West Basin areas, probably due to debris and shell hash present in the samples. Gravel size particle content was higher in Sample 3 than in the upper two or the lower two samples. Gravel size particle content in Sample 3 was 25 percent at Station 43 and 21 percent at Station 51.

Subsurface sediment grain size in West Basin samples showed more variation with increasing sample depth than those from the reference stations. Sediment fines content in core samples ranged from 83 to 99 percent at Reference Station 40010, and from 50 to 65 percent at Reference Station 40018. Grain size distribution at the project reference stations appears to change little with increasing depth of the sample.

Appendix R contains the results of grain size distribution tests, and presents the data in graphical form, as grain size distribution curves.

Subsurface sediment samples were analyzed for TOC (Table 4-5). Results of subsurface sediment TOC analysis in West Basin samples ranged from 0.060 percent for Sample 2 at Station 29 to 0.43 percent for Sample 1 at Station 24. TOC was higher in Sample 1 than Sample 2 at all stations. TOC levels in the top two core samples were lowest at Station 29. At Station 6, TOC percentage decreased with depth of sample, except that Sample 3 had a higher TOC percentage than the other core samples at this station.

Subsurface sediments from beneath the piers showed TOC levels ranging from 0.20 percent for Sample 5 at Station 46 (Pier 12) to 2.4 percent for Sample 3 at Station 51 (Pier 2). Sediment core samples at stations beneath the piers showed a general trend of decreasing TOC with increasing depth of the sample.

TOC levels in surface sediments at the reference stations were 2 percent at Stations 40010.1, 40010.2, and 40010.3; 1 percent at Stations 40018.1, 40018.2, and 40018.3; and 0.4 percent at Station 40032.1. Subsurface sediment levels of TOC ranged from 0.050 percent in Sample 5 at Station 40018 to 3.6 percent in Sample 1 at Station 40010



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## 4.3 PROJECT REFERENCE VALUES

The project reference values were calculated from the data collected from the reference stations as presented in this section. Generally, the upper 95 percent predictive limit was used as the project reference value for chemical analytes, while the lower 95 percent predictive limit was used as the project reference value for the toxicity and benthic community data.

### 4.3.1 Chemical Characteristics

Metals, butyltins, PAHs, pesticides, phthalates, and total sulfide were detected in surface sediment samples collected from the reference stations (Table 4-6). A summary of descriptive statistics for the project reference data is presented in Table 4-7 for chemical analytes that were detected in reference station surface sediment samples. The mean values and 95 percent predictive limits of the chemical analyte concentrations for the reference stations are also listed in Table 4-7.

Maximum levels of arsenic, cadmium, copper, lead, mercury, nickel, silver, and zinc in surface sediment samples from the reference stations exceeded the ER-L values but not the ER-M values. Concentrations of DDE and total DDTs exceeded both the ER-L and the ER-M values. Levels of butyltin, PAH, phthalates, and total sulfide were less than both the ER-L and ER-M values.

Subsurface sediments at Reference Stations 40010.1 and 40018.3 were sampled and analyzed for the chemical compounds listed in Table 3-12. Station 40010.1 had samples from two core horizons, and Station 40018.3 had samples from five core horizons. Concentrations of metals were found in most of these samples (Table 4-8). Higher concentrations of metals generally occurred in Sample 1 compared to the deeper core samples. PAH compounds detected at Station 40010.1 were at higher concentrations in Sample 2 than in Sample 1. No PAH compounds were detected in the Station 40018 core samples. Di-n-octylphthalate and DDE were detected in core samples from Station 40018.3, with highest concentrations in Sample 5. Concentrations of DDE were detected at Station 40010.1 with the highest level in Sample 1.

### 4.3.2 Toxicity Characteristics

Surface sediments from reference stations were compared to a project-specific reference sediment performance criterion (BNI 1994c, 1995a). This section presents the results of this performance evaluation and then describes the toxicity found at the reference stations.

#### 4.3.2.1 REFERENCE SEDIMENT PERFORMANCE CRITERION

Tables 4-9 through 4-11 present the results of the reference sediment performance criterion evaluation for each of the three bioassays performed for this RI (using echinoderm, amphipod, and polychaete, respectively). Four of the reference stations (40018.1, two field replicates from 40018.3, and 40032.1) equaled or exceeded the 20 percent RPD performance criterion for echinoderm normal development as compared to laboratory control sediment (see Table 4-9). Data from these four samples were excluded



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from calculating both the mean and 95 percent lower predictive limit of echinoderm normal development in reference samples. All other reference station data were accepted for the echinoderm test.

Two reference station samples (one field replicate from 40010.2 and 40018.1) failed the amphipod bioassay test by exceeding the 20 percent RPD performance criterion for survival as compared to the laboratory control sediment (see Table 4-10). Survival data from these two samples were excluded from further mathematical and statistical evaluation of amphipod bioassay data. All other reference station data were accepted for the amphipod test.

None of the results from the reference station polychaete growth tests met the project-specific RPD performance criterion for reference stations (see Table 4-11). Growth measurements were uniformly greater for polychaetes exposed to the laboratory control sediment than those polychaetes exposed to project reference sediment.

The purpose of comparing the reference station toxicity data to the laboratory control results was to detect "outlier" values within the reference data set. It was expected that such an evaluation would result in the identification of possibly two or three extreme values (outliers). However, it is unusual that the performance at every reference station for a particular bioassay would be greater than 20 percent different from the laboratory control performance. Therefore, the reference sediment performance check for the polychaete growth bioassay clearly did not meet the objectives of the performance criterion. However, the results of the polychaete growth test met other quality control objectives specified in the laboratory SOP. Therefore, the data were retained for evaluation of sediment quality and comparison to West Basin data.

#### 4.3.2.2 TOXICITY DATA

Results of the reference station surface sediment sample bioassay tests are shown in Table 4-12. Mean echinoderm survival ranged from 70.5 percent (Station 40018.3) to 97.7 percent (Station 40018.1). Percent normal development ranged from 80.3 percent (Station 40018.2) to 86.2 percent (Station 40010.3).

Mean survival for the amphipod bioassay ranged from 79.7 percent (Station 40010.1) to 88.5 percent (Station 40010.2). Of those amphipods which survived, percentages of test animals able to rebury in sediment ranged from 93.1 percent (Station 40018.1) to 98.9 percent (Station 40032.1).

Mean polychaete survival ranged from 92 percent (Station 40018.2) to 100 percent (Station 40018.3). Mean growth ranged from 0.056 mg/d (Station 40018.2) to 0.108 mg/d (Station 40010.3). Growth was measured at less than 0.08 mg/d in samples taken from Stations 40018.1, 40018.2, and 40032.1.

### 4.3.3 Benthic Infaunal Characteristics

The abundance of benthic infaunal organisms was greater at Station 40010 than at the other reference stations (Table 4-13). Numbers of infaunal species were similar at Stations 40010 and 40018, but less than the number of species at Station 40032. Biomass



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estimates were higher at Stations 40010 and 40032 than at Station 40018. The four diversity indices, Evenness, Dominance, Margalef's Species Richness, and Shannon-Wiener, showed similar patterns where diversity values were lower at Station 40010 and higher at Station 40032.

The predominant species of the benthic infaunal community at Station 40010 were composed primarily of two polychaete worms, *Cossura* sp. A and *Pseudopolydora paucibranchiata*, and two crustaceans, *Euphilomedes carcharodonta* and *Amphideutopus oculatus* (Table 4-14). *Cossura* sp. A and *P. paucibranchiata* are considered indicators of healthy and semi-healthy benthic environments, respectively (Reish et al. 1980). The highest ranking species at Station 40018 were *Cossura* sp. A and *Phoronida*, both indicators of healthy conditions (Reish et al. 1980, Word 1978). Predominant species at Station 40032 included *Metamysidopsis elongata, A. oculatus, Paraprionospio pinnata*, and *Monticellina tesselata*.

The benthic infaunal community indices representing the reference conditions were generally similar to values reported by other studies conducted in the outer LA/LB Harbor (MEC 1995). A summary of benthic infauna community indices for the reference stations is presented in Table 4-15.

## 4.4 WEST BASIN CHEMISTRY DATA

This section reviews the chemical data collected from within the West Basin during this RI, and provides an assessment of the magnitude and distribution (nature and extent) of chemicals in West Basin sediments. This evaluation was conducted both by general location in the West Basin and also by matrix type (surface sediment, subsurface sediment, fish tissue, clam tissue), and it was intended to provide direct support for the risk assessment process.

The distribution of chemical characteristics of sediments in the West Basin generally appeared to follow a predictable pattern, based on factors such as particle size, as well as possible sediment deposition patterns and proximity to specific shore-based features such as piers, seawalls, ship moorings, and storm water outfalls. Sediments beneath the piers, which were generally composed of fine-grained particles (consisting of higher percent silt and clay), contained greater levels of sulfides, and were higher in organic content than sediments from remaining areas of the West Basin.

### 4.4.1 Sediment Chemistry

Surface and subsurface sediment samples were analyzed for metals, butyltins, PAHs, PCBs, pesticides, and SVOCs. Surface sediment samples were also analyzed for total sulfide and acid volatile sulfides with simultaneously extracted metals. This section presents the general distribution of chemicals in surface and subsurface sediments of the West Basin by location (individual station) and analyte.

The analytical results indicate the presence of 38 chemicals in West Basin surface sediments, including ten high molecular weight PAHs (HPAH), six low molecular weight

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PAHs (LPAH), eleven priority pollutant trace metals, two butyltin isomers, one PCB Aroclor, five chlorinated pesticides, phenol, and two phthalate esters.

Detailed results of detected chemical analytes are presented in Table 4-16 for all West Basin stations. Tentatively identified compounds (TICs) reported in surface sediment samples are summarized in Table 4-17. A summary of descriptive statistics for detected chemical analytes from surface sediments in West Basin is presented in Table 4-18 for the basin stations and in Table 4-19 for pier stations.

Concentrations of chemicals in surface sediments from underneath the piers were generally higher than those of the basin stations. Chemicals may have accumulated in sediments beneath the piers because these areas are typically regarded as low energy locations and, therefore, considered to be favorable for deposition. These sediments appear to have remained relatively undisturbed after the piers have been constructed, and numerous activities which occur on or near piers (fueling, loading, painting, and ship repair) likely contributed to discharge of chemicals into the sediments beneath the piers as well as into the overall West Basin.

The surface sediments in areas along the seawall of NAVSTA Long Beach, the LBNSY, and the Navy Mole contained concentrations of chemicals generally higher than those of the central areas of the West Basin. Higher levels of chemicals in surface sediments near the seawall may be related to local storm water drains or discharges associated with activities conducted near the seawall and piers.

Subsurface sediment samples collected in the West Basin were analyzed for metals, butyltins, PAHs, PCBs, pesticides, and SVOCs. Subsurface sediment samples were collected at Stations 6, 8, 14, 24, 29, 43 (Pier 15), 46 (Pier 12), and 51 (Pier 2). The analytical results indicated the presence of 24 chemicals in the West Basin subsurface sediments: eight HPAH compounds, ten metals, two butyltin compounds, two PCB compounds, one chlorinated pesticide, and one phthalate compound. Subsurface sediments beneath the piers contained 37 chemical compounds: ten HPAH compounds, five LPAH compounds, eleven metals, two PCB compounds, five chlorinated pesticides, one phthalate ester, trichlorobenzene, and three dichlorobenzenes. Results of the subsurface sediment analyses are summarized in Table 4-20.

The following sections present the results of sediment chemistry analyses. Surface sediment results are compared to ER-L and ER-M values (Long et al. 1995) and reference station values (upper 95% predictive limit).

#### 4.4.1.1 METALS

Surface and subsurface sediment samples were analyzed for the 13 metals that are listed on the U.S. EPA Priority Pollutant List. Antimony and thallium were not detected in any of the West Basin sediment samples. The sediment samples were also analyzed for three butyltin compounds, including tributyltin which was not detected in West Basin sediments



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### Arsenic

Arsenic was detected in all of the surface sediment samples from the West Basin. Concentrations of arsenic ranged from 7.7 to 15 milligrams per kilogram (mg/kg) in sediments from beneath the piers and from 1.6 to 19 mg/kg in sediments from the basin stations. Higher concentrations were detected in samples from beneath Pier 7, from stations near the seawall along the northern portions of the West Basin, and along the north side of the Navy Mole. The lowest concentrations were reported in sediment samples from Stations 5, 6, and 8 in the northwest area of the West Basin, and from Stations 24, 25, 29, 31, and 32 near the opening to the West Basin (Figure 4-10). Many of the arsenic concentrations exceeded the ER-L value; however, none of the concentrations exceeded the ER-M value, and only three concentrations exceeded the reference station value for arsenic.

Arsenic concentrations in the subsurface Sample 1 sediment ranged from 2.2 mg/kg at Station 29 to 9.1 mg/kg at Station 43 (Pier 15). Concentrations were generally higher in subsurface sediments beneath Piers 15, 12, and 2 (Stations 43, 46, and 51, respectively) than the other subsurface West Basin stations (6, 8, 14, 24, and 29). Arsenic levels were higher in Sample 1 than in the other core samples at most stations. At Station 6, arsenic concentrations were highest in Sample 4. Arsenic levels in subsurface sediments beneath the piers were generally higher in Sample 1 and decreased with depth of the core sample. Subsurface sediment samples taken at reference stations showed arsenic concentrations ranging from 2.2 to 13 mg/kg, with higher concentrations in Sample 1.

### Beryllium

Beryllium was detected at all sampling stations in West Basin ranging in concentration from 0.27 to 0.88 mg/kg in surface sediments from beneath the piers and from 0.13 to 1.0 mg/kg in sediments from the basin stations. Beryllium was detected at higher concentrations in samples from beneath some piers and from stations near the seawall and the Navy Mole. However, higher concentrations of beryllium were also detected at Stations 20 and 33 (Figure 4-11). No ER-L or ER-M values are available for beryllium. Three of the beryllium concentrations (Stations 22, 44, and 52) exceeded the reference station value for beryllium.

Beryllium was detected in all subsurface sediment samples and ranged in concentration from 0.12 mg/kg in Sample 2 at Stations 6 and 24 to 1 mg/kg in Sample 1 at Station 43 and Sample 2 at Station 51. Beryllium concentrations at most stations decreased with depth of the core sample. However, at Station 6, Sample 3 had a higher concentration of beryllium than the other core samples. Highest beryllium concentrations in subsurface sediments occurred in the top two samples at Stations 43 and 51, at 1.0 mg/kg. Beryllium was detected in subsurface sediment samples taken at reference stations ranging from 0.24 to 0.77 mg/kg, with concentrations varying with depth of core sample.

### Cadmium

Cadmium concentrations were detected in surface sediments at all stations in the West Basin, ranging from 0.078 to 1.0 mg/kg at stations in the basin, and from 0.49 to



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1.5 mg/kg at stations beneath piers. A spatial distribution of cadmium is illustrated on Figure 4-12 for the basin stations. The higher concentrations of cadmium were reported at stations located along the seawall and Navy Mole and beneath piers. Cadmium concentrations at Stations 50 and 51 exceeded the ER-L value, while none of the concentrations exceeded the ER-M or reference station values for cadmium.

Cadmium levels in subsurface sediments ranged from 0.070 to 0.73 mg/kg in the basin stations (6, 8, 14, 24, and 29). In subsurface sediments beneath the piers (Stations 43, 46, and 51), cadmium concentrations ranged from 0.13 to 2.8 mg/kg. Cadmium concentrations at Station 6 were higher in Sample 3 than in the other core samples. Higher cadmium concentrations at Station 43 were found in Sample 2 and at Station 51 in Sample 3. Subsurface sediment samples collected at reference stations showed cadmium levels ranging from 0.11 mg/kg to 1.8 mg/kg.

### *Chromium*

Chromium was detected in surface sediment samples from all the stations in the West Basin. Levels of chromium ranged from 34 to 330 mg/kg in sediments beneath the piers, and from 9.8 to 88 mg/kg in sediments from the basin stations. Higher concentrations of chromium were detected in samples from beneath the piers, from stations near the seawall along the northern portions of the West Basin, and along the north side of the Navy Mole (Figure 4-13). Concentrations of chromium for two samples (Stations 17 and 48) exceeded the ER-L value, while none of the concentrations exceeded the ER-M value. Chromium concentrations at Stations 17, 21, 22, and 48 exceeded the reference station value for chromium.

Chromium concentrations in subsurface sediment samples ranged from 9.6 mg/kg in Sample 2 at Station 8 to 70 mg/kg in Sample 1 at Station 43 (Pier 15). Chromium was detected in all subsurface sediment samples. Samples taken at stations beneath the piers had higher levels of chromium than in samples from the basin stations. Chromium showed a general trend of decreasing concentration with depth of core sample. However, higher levels of chromium were found in Sample 3 than in the other core samples at Stations 6 and 51 (Pier 2). Chromium was found in subsurface sediment samples from reference stations with concentrations ranging from 16 to 65 mg/kg.

### *Copper*

Copper was detected in surface sediments at all stations in West Basin, ranging in concentrations from 120 to 330 mg/kg in sediments from beneath the piers, and from 13 to 530 mg/kg in sediments from the basin stations. Copper was detected at higher concentrations in samples from beneath the piers, from stations near the seawall along the northern portions of the West Basin, and along the north side of the Navy Mole. The highest copper concentration (530 mg/kg) was reported from Station 17 along the seawall near Piers 2 and 3 (Figure 4-14). Almost all of the copper concentrations reported from the West Basin stations exceeded the ER-L value, while only two concentrations (Stations 17 and 48) exceeded the ER-M value. Copper concentrations at Stations 10, 17, 21, 22,



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and 27 exceeded the reference station value. Pier stations (43, 48, 49, 51, and 52) showed copper concentrations in excess of reference station values.

Copper was detected in all of the subsurface sediment samples from West Basin stations. Concentrations ranged from 7.3 mg/kg in Sample 2 at Station 24 to 50 mg/kg in Sample 3 at Station 6. Copper concentrations in Sample 1 were highest at Station 24 (45 mg/kg). Subsurface sediment copper concentration at Station 6 was highest in Sample 3 and lowest in Samples 2 and 4. Copper concentration in subsurface sediments at Station 43 (Pier 15) ranged from 35 to 260 mg/kg, decreasing with depth of core sample. Copper levels ranged from 1.7 to 64 mg/kg at Station 46 (Pier 12). The copper concentrations at Station 51 (Pier 2) ranged from 84 to 200 mg/kg, with highest concentrations occurring in Samples 3 and 4. Reference stations showed concentrations of copper in the subsurface sediments ranging up to 98 mg/kg.

### *Lead*

Concentrations of lead were detected at all stations in the West Basin ranging from 54 to 94 mg/kg in sediments from beneath the piers, and from 5.2 to 180 mg/kg in sediments from the basin stations. The higher concentrations of lead were detected in samples from beneath the piers, from stations near the seawall along the northern portions of the West Basin, and along the north side of the Navy Mole. The highest lead concentration (180 mg/kg) was reported from Station 17 along the seawall near Piers 2 and 3 (Figure 4-15). Many of the lead levels exceeded the ER-L value, while none exceeded the ER-M value. Stations along the eastern seawall, the Navy Mole, and beneath most piers showed lead concentrations that exceeded the reference station value for lead.

Subsurface sediments at basin stations were also analyzed for lead, which ranged up to 33 mg/kg in Sample 1 at Station 24. Highest lead levels in Sample 1 were detected at Station 24. Lead levels in Sample 2 ranged up to 7.5 mg/kg. Samples 3 and 4 at Station 6 showed higher levels of lead than the other Station 6 core samples. Subsurface sediment lead concentrations detected in samples taken beneath Piers 15, 12, and 2 (Stations 43, 46, and 51, respectively) ranged from 9.2 mg/kg in Sample 5 at Station 46, to 170 mg/kg in Sample 4 at Station 51. Highest concentrations of lead at Stations 43 and 46 were found in Sample 2, while the highest lead levels at Station 51 were found in Sample 4. Lead concentrations in the subsurface sediment samples were found at the reference stations ranging from 6 to 65 mg/kg.

### *Mercury*

Mercury was detected at all stations in the West Basin, except Station 24 located near the center of the West Basin. Concentrations of mercury ranged from 0.27 to 0.88 mg/kg in sediments from beneath the piers, and from 0.11 to 1.8 mg/kg in sediments from the basin stations. Mercury was detected at higher concentrations in samples from beneath the piers, from stations near the seawall along the northern portions of the West Basin, and along the north side of the Navy Mole. The highest mercury concentration (1.8 mg/kg) was reported from Station 17 along the seawall near Piers 2 and 3 (Figure 4-16). Mercury concentrations at Stations 3, 4, 17, 21, 27, 41, and pier station 47 exceeded the ER-M and



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reference station values. Almost all of the mercury concentrations exceeded the ER-L value for mercury.

Most of the subsurface sediment samples taken in the West Basin showed no detectable levels of mercury. Mercury was not reported in Sample 2 sediments. Mercury concentrations in Sample 1 ranged up to 0.21 mg/kg at Station 24. Subsurface sediments at Station 6 showed detectable mercury only in Samples 1 and 3. Mercury was detected in all the subsurface sediment samples taken beneath the piers. Concentrations of mercury were highest in Sample 2 at Stations 43 (Pier 15), and decreased with depth of core sample. Mercury concentrations at Stations 46 and 51 (Piers 12 and 2, respectively) increased with depth of core sample until Sample 4. Reference stations showed mercury levels in the subsurface sediments ranging up to 0.86 mg/kg.

### *Nickel*

Concentrations of nickel were detected at all stations in the West Basin ranging from 19 to 35 mg/kg in sediments from beneath the piers, and from 7.8 to 41 mg/kg in sediments from the basin stations. Nickel was detected at higher concentrations in samples from beneath the piers, from stations near the seawall along the northern portion of the West Basin, and along the north side of the Navy Mole. The highest concentration of nickel (41 mg/kg) was reported from Station 22 along the seawall near Piers 1 and 2 (Figure 4-17). None of the nickel concentrations in the West Basin exceeded the ER-M or reference station values. Most of the nickel levels in the basin exceeded the ER-L value for nickel.

Nickel concentrations in the subsurface sediment samples taken in the West Basin ranged from 7.6 mg/kg in Sample 2 at Station 8, to 33 mg/kg in Sample 3 at Station 6. Nickel levels were higher in Sample 1 than in Sample 2 for all West Basin stations. However, Sample 3 at Station 6 contained higher nickel levels (33 mg/kg) than the other core samples at that station. The highest level of nickel in Sample 1 was found at Station 24. Concentrations of nickel at Stations 43, 46, and 51 were slightly higher in Sample 2 than in Sample 1, and decreased with depth of core sample. Nickel was detected in subsurface sediments collected at the reference stations in concentrations ranging from 12 to 63 mg/kg.

### *Selenium*

Selenium was detected in only one surface sediment sample from West Basin stations. Selenium concentration of 1.6 mg/kg was reported at Station 21, located along the northern side of the Navy Mole between Piers 15 and 16. There are no ER-L or ER-M values available for selenium. None of the selenium concentrations exceeded the reference station value for selenium.

Selenium was not detected in any of the subsurface sediment samples taken at basin stations (6, 8, 14, 24, and 29). Selenium was only detected in Sample 3 at Station 43 (Pier 15) and Station 51 (Pier 2). Selenium was not detected in any subsurface sediment sample taken at Station 46 (Pier 12). Selenium was detected in Samples 1 and 2 at the reference stations, ranging from 1.5 to 2.8 mg/kg



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### Silver

Concentrations of silver were detected at all stations in the West Basin, except at Station 24 near the center of the West Basin. Silver concentrations ranged from 1.5 to 4.1 mg/kg in sediments from beneath the piers, and from 1.3 to 19 mg/kg in sediments from the basin stations. Concentrations of silver were higher in samples from beneath Pier 3, from stations near the eastern portions of the seawall, and along the eastern end of the Navy Mole. The highest concentration of silver (19 mg/kg) was reported from Station 26 near both Pier 16 and the Navy Mole (Figure 4-18). All of the silver concentrations exceeded the ER-L value and silver concentrations at four stations exceeded the ER-M value (Stations 17, 26, 28, and 50). Seven basin stations and one pier station showed silver concentrations that exceeded the reference station value for silver.

Silver concentrations in subsurface Sample 1 were higher (2.3 mg/kg) at Station 24 than at Stations 6, 8, 14, or 29. Silver levels were higher in Sample 1 than in Sample 2 for the West Basin stations. The highest level of silver in subsurface sediments at Station 6 was found in Sample 3. Silver concentrations in subsurface sediments at Stations 43, 46, and 51 decreased with increasing depth of core sample. Highest silver levels for Stations 43, 46, and 51 were found in Sample 1 for Station 43 (0.60 mg/kg) and Station 46 (0.40 mg/kg). Silver was found in the subsurface sediment samples collected at the reference stations in concentrations ranging from 0.8 to 2.8 mg/kg.

### Zinc

Zinc was detected in surface sediments from all stations in the West Basin ranging from 190 to 620 mg/kg in sediments from beneath the piers, and from 33 to 480 mg/kg in sediments from the basin stations. Zinc was detected at higher concentrations in samples beneath the piers, from stations near the seawall along the northern portions of the West Basin, and along the north side of the Navy Mole (Figure 4-19). The highest concentration of zinc (620 mg/kg) was reported from Station 50 beneath Pier 3. Most of the zinc concentrations exceeded the ER-L value, while two exceeded the ER-M value (Stations 17 and 50) and four exceeded the reference station value for zinc (Stations 17, 48, 50, and 52).

Zinc was detected in all subsurface sediment samples taken from basin stations. Zinc concentrations in Sample 1 ranged from 42 mg/kg at Station 8 to 170 mg/kg at Station 24. Zinc levels were generally greater in Sample 1 than in Sample 2. Station 6 showed a greater zinc level in Sample 3 than in the other core samples at the station.

All the subsurface sediment samples taken beneath the piers showed detectable levels of zinc. Concentrations of zinc were highest in Sample 2 at Stations 43 (Pier 15) and 46 (Pier 12), and decreased with depth of core sample. Zinc concentrations at Station 51 (Pier 2) increased with depth of core sample to Sample 4 which had a peak value of 540 mg/kg. Sample 5 had a zinc concentration less than the upper horizons at Station 51. Subsurface sediment samples taken at the reference stations contained zinc concentrations ranging from 36 to 200 mg/kg. Concentrations of zinc in the reference station samples were higher in Sample 1 sediments than in the other core samples.



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***Butyltin***

Monobutyltin (3.6 µg/kg at Station 43) and dibutyltin (2.5 µg/kg at Station 47) were each only detected in one surface sediment sample from the West Basin. Tributyltin was not detected in surface sediments of the West Basin. Dibutyltin was detected at 2.5 µg/kg at one of the seven reference stations, while monobutyltin and tributyltin were not detected at reference stations.

Dibutyltin was detected in only two of the subsurface sediment samples from the West Basin, 3.4 µg/kg in Sample 1 at Station 8 and 4.1 µg/kg in Sample 2 at Station 29. Dibutyltin was not detected in any of the subsurface sediment samples taken beneath the piers. Monobutyltin and tributyltin were not detected in any of the subsurface sediment samples. No dibutyltin was detected in subsurface sediment samples from the reference stations. Tributyltin concentrations were detected in the subsurface sediment samples from the reference stations ranging up to 7.1 µg/kg.

***SEM/AVS***

Surface sediment samples were analyzed for SEM and AVS. Five divalent cationic metals were measured: cadmium, copper, lead, mercury, and zinc. These data are presented herein as molar concentrations (µmol/g) and evaluated as the molar SEM/AVS ratio. AVS concentrations ranged from 0.13 to 18 µmol/g in sediments from basin stations (Figure 4-20), and ranged from 9.7 to 125 µmol/g in sediments from beneath the piers.

Most of the total SEM/AVS ratios (sum of all SEM metals/AVS) were less than 1 for West Basin stations, but many exceeded a ratio of 1. The highest total SEM/AVS ratios for West Basin surface sediments were at Stations 4, 13, and 17 (Figure 4-21). The lowest ratios of total SEM/AVS were for sediments beneath piers.

SEM copper, lead, and zinc were detected at all West Basin sampling stations, while SEM cadmium and mercury were detected at 53 and 62 percent of the West Basin stations, respectively. SEM cadmium levels were detected in most of the sediment samples from beneath piers ranging from 0.0068 to 0.015 µmol/g, with SEM/AVS ratios less than one. In sediments from the basin stations, SEM cadmium levels were detected at 41 percent of the stations ranging from 0.003 to 0.012 µmol/g, with SEM/AVS ratios less than 1. SEM copper concentrations in sediments from beneath piers ranged from 1.4 to 4.7 µmol/g with SEM/AVS ratios of less than 1. Sediments from basin stations showed SEM copper concentrations ranging from 0.22 to 5.2 µmol/g. SEM copper/AVS ratios at Stations 4, 13, 17, and 24 ranged from 1.0 to 11.

Levels of SEM lead ranged from 0.24 to 0.58 µmol/g in sediments from beneath the piers with SEM/AVS ratios of less than 1. The SEM lead levels in sediments from the basin stations ranged from 0.013 to 0.92 µmol/g, with the SEM/AVS ratio exceeding 1 only at Station 4. SEM mercury levels were detected at 73 percent of the stations beneath piers ranging from 0.00023 to 0.0007 µmol/g, and at 59 percent of the sediment samples from basin stations ranging from 0.0001 to 0.0005 µmol/g. All SEM mercury/AVS ratios were less than 1. SEM zinc concentrations in sediments from beneath piers ranged from 2.3 to 6.3 µmol/g with SEM/AVS ratios of less than 1. Sediments from the basin stations



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showed SEM zinc concentrations ranging from 0.31 to 8.9 µmol/g. SEM zinc/AVS ratios at Stations 2, 4, 5, 7, 13, 17, 24, and 31 ranged from 1.0 to 15.

SEM/AVS ratios for copper, lead, mercury, and zinc exceeded the reference station values only at Station 4. None of the SEM cadmium/AVS ratios exceeded the reference station value.

#### 4.4.1.2 TOTAL SULFIDE

Total sulfide concentrations of surface sediments from the West Basin ranged from 1.1 to 5,400 mg/kg (Table 4-16). Concentrations of total sulfide were greatest at stations beneath piers (except Station 47), ranging from 3,000 to 5,400 mg/kg. Total sulfide at Station 47 (Pier 9) was similar to other basin stations with a concentration of 360 mg/kg. Concentrations of total sulfide in sediments from the basin stations ranged from 1.1 to 400 mg/kg (Figure 4-22). Subsurface sediments were not analyzed for sulfides. All sulfide concentrations from pier stations exceeded the reference value, except Pier 9 (Station 47).

#### 4.4.1.3 POLYNUCLEAR AROMATIC HYDROCARBONS

Surface sediments from the West Basin were analyzed for 16 PAHs, including ten HPAH and six LPAH compounds. Summary results are presented in Table 4-18 and Table 4-19.

Total PAH concentrations ranged up to 3,940 µg/kg in surface sediments from the basin stations, and up to 23,213 µg/kg in surface sediments from beneath the piers. While most of the surface sediment samples from beneath the piers had concentrations of total PAH greater than 1,000 µg/kg, the surface sediment samples from Stations 42 (Pier 16) and 46 (Pier 12) had no detectable levels. The lowest levels of total PAH were found in samples from the center of the West Basin and near its entrance. Stations near the seawall along the northern portions of the West Basin and along the north side of the Navy Mole had concentrations of total PAH greater than those in sediments from the central area of the West Basin (Figure 4-23). Total PAH concentrations in sediment samples from five stations beneath piers exceeded the ER-L value, while none of the total PAH concentrations exceeded the ER-M value. PAH concentrations from stations along the eastern seawall, the Navy Mole, and beneath piers exceeded the reference station value.

Total HPAH concentrations showed a pattern similar to the total PAH concentrations. The higher levels of total HPAH were found in surface sediment samples from beneath the piers, except that none were found in surface sediments beneath the ends of Piers 12 and 16. Total HPAH levels were not detected at most of the stations near the mouth of the West Basin. Concentrations of HPAH ranged up to 17,620 µg/kg beneath the piers, and up to 3,600 µg/kg in sediments from the basin stations. Stations near the seawall along the northern portions of the West Basin and along the north side of the Navy Mole had concentrations of total HPAH greater than the concentrations in sediments from the central area of the West Basin (Figure 4-24). Concentrations of HPAH in sediments were greater than the ER-L value at most of the stations near piers and beneath piers. HPAH levels in sediments from Stations 43 (Pier 15) and 48 (Pier 7) exceeded ER-M values. Sediment samples from beneath the fuel pier (Pier 12, Stations 44, 45, and 46) showed HPAH concentrations similar to or less than the ER-L value. HPAH concentrations from



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stations along the eastern seawall, the Navy Mole, and beneath piers exceeded the reference station value.

The HPAH compounds, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene were detected at most (45 to 82 percent) of the West Basin stations. Dibenzo(a,h)anthracene was detected at 15 percent of the stations. Highest concentrations of most of these HPAH compounds were found at Stations 43, 48, 49, and 50 (Piers 15, 7, 6, and 3, respectively). Concentrations of the HPAH compounds were also higher at Stations 10, 17, 21, 41, 51, and 52 than at most of the other basin stations (Figure 4-24). While sediment near piers and beneath piers generally showed higher concentrations of HPAH compounds, sediments from beneath Piers 12 and 16 (Stations 44, 45, 46, and 42) showed low or non-detectable levels of HPAH compounds (less than 1,000 to 1,940 µg/kg).

Total LPAH concentrations did not show a pattern similar to the total PAH and total HPAH concentrations (Figure 4-25). The higher levels of total LPAH were found in sediment samples from beneath the piers. Total LPAH levels were not detected at most of the stations in the central area of the West Basin. Concentrations of LPAH ranged up to 5,593 µg/kg beneath the piers, and up to 340 µg/kg in sediments from the basin stations. Total LPAH levels in sediments from Stations 43, 49, 50, and 51 exceeded the ER-L value, while LPAH in sediments from Station 48 exceeded the ER-M value. The LPAH concentrations at Stations 10, 21, 43, 48, 49, 50, and 51 exceeded the reference station value.

Acenaphthylene, anthracene, and phenanthrene were detected in many of the West Basin sediment samples (33 to 50 percent), while acenaphthene, fluorene, and methylnaphthalenes were only detected in a few of the samples (3 to 11 percent).

Results of subsurface sediment core sample analyses showed that PAHs were detected at three of the five basin stations (Stations 6, 8, and 14). No PAHs were detected in subsurface sediment samples from Stations 24 or 29. PAH compounds were detected in almost all subsurface core samples collected at three stations beneath piers.

Eight HPAHs were detected in Sample 1 at Station 6 ranging from 14 to 68 µg/kg. These HPAHs were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, chrysene, indeno(1,2,3-cd)pyrene, and pyrene. Sample 2 at Station 6 contained three PAHs at concentrations of 12 µg/kg: benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene. Three PAHs were detected in Sample 1 from Stations 8 and 14 ranging in concentration from 13 to 27 µg/kg.

PAH compounds were analyzed in core samples taken from stations beneath the piers, Stations 43, 46, and 51 (Piers 15, 12, and 2, respectively). PAHs were found in more subsurface sediment samples and at higher concentrations at stations beneath the piers than at other stations in the West Basin. Ten HPAHs and two LPAHs were detected in the subsurface sediments at Station 43, seven HPAHs and one LPAH were detected at Station 46, and ten HPAHs and five LPAHs were detected at Station 51.



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Concentrations of detected PAHs in subsurface sediments at Station 43 ranged from 73 µg/kg of anthracene for Sample 1 to 1,200 µg/kg of pyrene for Sample 2. The highest concentrations of seven PAHs at Station 43 were found in Sample 2. These seven PAHs were benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene, pyrene, and anthracene. Highest concentrations of four PAH compounds (benzo(a)anthracene, chrysene, fluoranthene, and phenanthrene) were found at Station 43 in Sample 4. Sample 5 at Station 43 showed no detectable PAHs.

PAHs were only detected in Samples 2 and 4 at Station 46. Concentrations of PAHs in Station 46 subsurface sediments ranged from 34 µg/kg of anthracene in Sample 2 to 210 µg/kg of benzo(k)fluoranthene in Sample 4.

Subsurface sediments at Station 51 had higher concentrations of 12 PAHs in Sample 3 than in the other core samples, ranging from 1,400 µg/kg of fluorene to 17,000 µg/kg of methylnaphthalenes. Benzo(b)fluoranthene and fluoranthene had higher concentrations in Sample 4 than in the other cores, 1,500 and 13,000 µg/kg, respectively. Dibenzo(a,h)anthracene was only detected in Sample 5 at a concentration of 110 µg/kg.

Seven HPAHs (benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[ghi]perylene, chrysene, dibenzo[a,h]anthracene, indeno[1,2,3-cd]pyrene) were detected in subsurface sediment samples at the reference stations. Concentrations of the HPAHs at the reference stations ranged from 19 to 130 µg/kg, and were only detected in Samples 1 and 2.

#### 4.4.1.4 POLYCHLORINATED BIPHENYLS

Surface sediment samples were analyzed for concentrations of seven PCB compounds. The only PCB compound detected in any of the surface sediment samples was Aroclor 1260, which was detected in most of the sediment samples, including samples from beneath two piers (Piers 6 and 9). However, it was not detected in sediment samples from five stations near the entrance to the West Basin. Concentrations of Aroclor 1260 ranged up to 390 µg/kg in sediments from beneath the piers and up to 880 µg/kg in sediments from the basin stations. Aroclor 1260 was detected at higher concentrations in samples from stations near the seawall along the northern portions of the West Basin (Figure 4-26). Most stations showed levels of Aroclor 1260 that were above the reference station value and the ER-L value. Fourteen stations showed Aroclor 1260 levels that exceeded the ER-M value. PCB compounds were not detected at reference stations.

Three PCBs (Aroclor 1248, Aroclor 1254, and Aroclor 1260) were detected in subsurface sediment samples. Aroclor 1248 was detected only in Sample 3 at Station 51 (Pier 2). Aroclor 1254 was only detected in Sample 1 at Station 24.

Aroclor 1260 was detected only in Sample 1 at Station 6 for the West Basin stations. In subsurface sediments taken beneath the piers, Aroclor 1260 was detected in Samples 1, 2, and 3 at Station 43 (Pier 15), and in Sample 4 at Station 46 (Pier 12). No PCB compounds were detected at the reference stations.



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### 4.4.1.5 PESTICIDES

The analysis of West Basin surface sediments for chlorinated pesticides showed that aldrin, lindane, and DDT were present in a few (2 to 7 percent) of the samples, while DDD and DDE were detected in many of the samples (70 and 100 percent, respectively). Aldrin was only detected in sediments from Station 28 (2.3 µg/kg). Lindane (gamma-BHC) was only detected in sediments from Station 1 (0.63 µg/kg), Station 10 (6.8 µg/kg), and Station 26 (2.5 µg/kg). Aldrin and dieldrin were not detected at the reference stations.

DDE was the only DDT-related compound that was detected in sediments from every station in the West Basin. Concentrations of DDD ranged from 13 to 36 µg/kg in sediments from beneath the piers, and from 1.9 to 42 µg/kg in sediments from the basin stations. DDD concentrations at Stations 16, 17, and 48 exceeded the reference station value. Concentrations of DDE ranged up to 110 µg/kg in sediments from beneath the piers, and up to 180 µg/kg in sediments from the basin stations. DDT was only detected in sediments from Station 16 (34 µg/kg) along the north side of the Navy Mole, at a level that exceeded the reference station value. The highest concentrations of total DDT were detected from stations near the seawall along the northern portions of the West Basin, and along the north side of the Navy Mole (Figure 4-27). While none of the DDE or total DDT concentrations exceeded the reference station values, most of the DDE and total DDT reported from the West Basin exceeded the ER-L and ER-M values.

Four chlorinated pesticides were detected in subsurface sediment samples. These pesticides were delta-benzene hexachloride, endosulfan II, DDD, and DDE. Delta-benzene hexachloride was only detected in Sample 5 at Station 46 (7.0 µg/kg). Endosulfan II was only detected in Sample 2 at Station 43 (37 µg/kg). Delta-benzene hexachloride and endosulfan II were not detected in subsurface sediments at the reference stations.

The DDT derivative, DDD, was detected at subsurface sediment samples taken beneath the piers (3.5 to 44 µg/kg), but not detected in samples taken from the basin stations. Another DDT derivative, DDE, was detected in two Sample 1 sediments at West Basin stations (7.1 to 17 µg/kg), and in all of the samples taken beneath the piers (4.2 to 1,100 µg/kg). At the stations beneath the piers, the DDE concentrations were higher in Sample 3 than in the other core samples. The subsurface sediments at the reference stations showed no DDD, and concentrations of DDE ranging up to 30 µg/kg.

### 4.4.1.6 SEMIVOLATILE COMPOUNDS

Analysis of surface sediment samples for SVOCs detected phenol, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate. Phenol was detected in two sediment samples from the West Basin, but not at reference stations. Bis(2-ethylhexyl)phthalate was detected in one surface sediment sample. Di-n-octylphthalate was found at 17 of the 45 West Basin stations. Highest concentrations of phenol and di-n-octylphthalate were found in sediments collected beneath the piers. Bis(2-ethylhexyl)phthalate and di-n-



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octylphthalate concentrations at West Basin stations did not exceed the reference station values.

Bis(2-ethylhexyl)phthalate was detected in two core samples at Station 43 (180 and 740 µg/kg) and one core sample at Station 51 (580 µg/kg). Di-n-octylphthalate was only detected in Sample 5 at Station 6 (37 µg/kg). Subsurface sediments at the reference stations showed no bis(2-ethylhexyl)phthalate, and di-n-octylphthalate concentrations ranging up to 84 µg/kg.

Four chlorobenzenes, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene, were detected only at Station 51 (Pier 2). Concentrations of all four chlorobenzenes were higher in Sample 3 (8,000 to 60,000 µg/kg) than in the other core samples. None of the chlorobenzene compounds were found in subsurface sediments at reference stations.

#### 4.4.1.7 TENTATIVELY IDENTIFIED COMPOUNDS

TICs from the semivolatile organics analyses were reported for surface sediment samples collected at the West Basin and Reference Stations. Results are summarized in Table 4-17. TICs generally consisted of various PAH isomers commonly generated from the combustion or degradation of fossil fuels. The most prevalent PAH compounds identified in the sample results were benzo(e)pyrene and perylene. The distribution of TICs in the West Basin was similar to distribution of PAHs discussed earlier. Concentrations of TIC analytes were less than the concentrations of PAHs.

### 4.4.2 Bioaccumulation Data

This section discusses the bioaccumulation data obtained from analyses of tissue samples taken from fish caught in trawl samples, and from laboratory bioaccumulation clam tissue analyses.

#### 4.4.2.1 FISH TISSUE ANALYSES

California halibut and white croaker whole body and fillet samples were analyzed for lipid content, metals, butyltins, PAHs, PCBs, and pesticides. Bile samples collected from California halibut gall bladders were analyzed for parent PAH homologues. Visual observations of each fish retained for analysis are presented in Table 4-21. Overall fish assemblages captured in West Basin and at reference stations are listed in Table 4-22.

Because the two fish species collected are mobile and likely to move about within the West Basin, the analytical results of samples taken from the seven West Basin fish collection transects were "pooled" for data analyses for each of the fish species. Similarly, the analytical results of samples taken from the two reference station fish collection transects were pooled.

***California Halibut***

The results of tissue chemistry analyses for chemicals which were detected in at least one sample for California halibut fillets and whole body samples are shown in Table 4-23 and



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Table 4-24, respectively, for both the West Basin and the reference stations. In general, chemical concentrations in whole body samples were higher than in fillet samples and a greater number of analytes were detected. Two analytes, dibutyltin and tributyltin, were detected in West Basin fillets but not in reference station fillets. Both locations showed only one detection of each of these two analytes at a very low level (both at 1.4 µg/kg). Likewise, selenium was only detected in a single West Basin whole body sample (0.9 mg/kg) and not in reference station whole body samples. Selenium was detected in one reference station fillet sample (0.7 mg/kg), and nickel was detected in two reference station whole body samples (mean = 2.5 mg/kg), but neither analyte was found in West Basin fillet samples.

There were no consistent pattern of analyte concentrations between the West Basin and reference station samples (i.e., the West Basin had greater concentrations for some analytes and the reference stations had greater concentrations for other analytes). An ANOVA statistical comparison of the West Basin California halibut whole body samples with reference station whole body samples, and of the West Basin fillet samples with reference station fillet samples, did not detect any statistically significant difference for any analyte.

***White Croaker***

The results of tissue chemistry analyses for analytes which were detected in at least one white croaker fillet sample and whole body sample are shown in Tables 4-25 and 4-26, respectively, for both the West Basin and the reference stations. There was no consistent pattern of analyte concentrations between the fillet and whole body samples. Several analytes were found in West Basin samples of fillet (endosulfan II, endrin, copper, lead, selenium, and zinc) and whole body (alpha-BHC, endrin, dibutyltin, beryllium, and chromium), but not in corresponding reference station samples. All of the analytes found in the reference station samples were also found in West Basin samples.

An ANOVA statistical comparison of the West Basin whole body samples with reference station whole body samples, and of the West Basin fillet samples with reference station fillet samples, detected a few statistically significant differences. Mercury concentrations in West Basin white croaker fillet statistically exceeded the reference station concentrations. West Basin whole body concentrations exceeded reference station samples for tributyltin, arsenic, and copper. The reference station samples statistically exceeded West Basin samples for fillet tributyltin and whole body zinc concentrations.

### 4.4.2.2 FISH BILE ANALYSES

The results of gall bladder bile analyses for the twelve California halibut samples collected from the West Basin and the six California halibut samples collected from the reference station trawls are presented in Table 4-27. Bile contains metabolites of chemicals the fish may have been exposed to, and the analytical technique provides chemical-equivalents for these PAH compounds (i.e., two-, three-, four-, and five-ring metabolites, represented by naphthalene, phenanthrene, pyrene, and benzo(a)pyrene). The metabolite concentrations decreased with increasing PAH ring size. The lowest concentrations in the bile samples



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were measured for benzo(a)pyrene equivalent metabolites, with a range of 1.9 to 58.8 µg/mL.

The PAH metabolite chromatographs were reviewed for major resolved peaks to attempt some identification of individual metabolite compounds. A set of six commonly occurring peaks were identified by retention time for each analysis; however, the results were qualitative. These peaks may be metabolites of the PAH for which the analyses were performed, but could also be other endogenous aromatic compounds responding in the analysis. Analyte identification and additional information on the identity of the compounds producing the major components of the chromatograph is beyond the scope of this RI report.

An analysis of the PAH metabolite ratios showed some sample-to-sample variability, suggesting that some samples came from fish that may have been proportionately more exposed to petrogenic sources of PAH than others. The naphthalene/phenanthrene ratio was fairly constant from sample to sample, suggesting that the sources of PAH may have similar relative compositions of these two PAHs for all 18 samples; they both likely originated in various petroleum products. Similarly, the pyrene/benzo(a)pyrene ratio was quite constant throughout, indicating that the source of the pyrogenic product likely had a fairly similar relative composition of these two PAHs.

An ANOVA performed on the West Basin and reference station results showed no statistically significant difference between the two sample groups for any of the four PAH metabolite levels.

#### 4.4.2.3 CLAM BIOACCUMULATION RESULTS

After exposure to sediment samples collected from the West Basin and reference stations for the purposes of laboratory clam bioaccumulation tests, clam (*Macoma nasuta*) tissue was analyzed for lipids, metals, butyltins, PAHs, PCBs, and pesticides. Chemicals detected in the clam tissue analyses are summarized in Table 4-28.

All of the chemicals detected in West Basin clam bioassay tissue samples were also detected in reference station samples with the exception of pyrene. Thallium and pyrene were not detected in clam bioassay tissue samples for the basin stations, and chromium and thallium were not detected in clams exposed to pier station samples.

Statistical comparisons (ANOVA) were performed for the three groups of clam bioassay results: reference station, basin stations, and pier stations. There were no statistical differences among the three test areas for any analyte. Pyrene, which was not found in the clams exposed to reference station sediment samples, did not demonstrate a statistically significant difference at the reference stations compared to the basin and pier stations.

## 4.5 BIOLOGICAL CHARACTERISTICS

West Basin surface sediment samples were characterized for biological response estimates of sediment quality using three toxicity bioassays and a benthic infauna study.



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## 4.5.1 Sediment Toxicity

This section describes the results of the laboratory toxicity testing and also summarizes the statistical analysis of bioassay test results. An assessment of the distribution of sediment toxicity within the West Basin, and the results of bioassay data evaluation, conducted on a station-by-station basis, are provided below.

### 4.5.1.1 DISTRIBUTION OF SEDIMENT TOXICITY

Results of the surface sediment bioassay tests are summarized in Table 4-29: percent survival and percent normal development for the echinoderm larva, percent survival and percent reburial for the amphipod, and percent survival and rate of growth for the polychaete.

#### *Basin Stations*

Survival and normal development of echinoderm larvae were repressed when exposed to pore water from most of the basin stations, especially pore water from stations located at the western area of and the entrance to the West Basin. Overall, there were no basin stations at which 100 percent normal development occurred, while samples from numerous basin stations exhibited 0 percent normal development (Stations 2, 4, 6, 7, 14, 17, 24, 25, and 31). In addition, normal development of echinoderm larval organisms occurred at a frequency of less than 80 percent when exposed to pore water collected from the following basin stations: 1, 5, 8, 9, 12, 13, 15, 16, 32, 33, and 41. Echinoderm survival ranged from 32 percent (Station 5) to 100 percent.

Amphipod survival ranged from 57 percent (Station 41) to 98.8 percent (Station 11). Amphipod reburial ranged from 77.9 percent (Station 41) to 100 percent (Stations 9, 19, and 24).

Polychaete survival ranged from 84 percent (Stations 21 and 24) to 100 percent. No mortality occurred at approximately one-third of the basin sampling Stations: 1, 2, 4, 12, 14, 19, 23, 25, 27, 28, and 41. Growth rates ranged from 0.066 mg/d (Stations 21 and 28) to 0.134 mg/d (Stations 1 and 24).

#### *Pier Stations*

Adverse biological response occurred with both amphipod survival and the echinoderm larvae development when these organisms were exposed to sediments from nearly all stations located underneath piers. Echinoderm survival ranged from 36.3 percent (Station 45, Pier 12) to 91 percent (Station 48, Pier 7). All pier stations resulted in less than 80 percent echinoderm survival except for Stations 43 (Pier 15), 44 (Pier 12), and 48 (Pier 7). All stations from underneath the piers resulted in less than one percent normal development.

Survival for the amphipod bioassay ranged from 16.3 percent (Station 44) to 83 percent (Stations 47 and 52), with survival less than 80 percent occurring from exposure to all pier samples, except for Stations 47 and 52. Amphipod reburial ranged from 24.6 percent (Station 44, Pier 12) to 96.2 percent (Station 43, Pier 15). Reburial was less than 80



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percent for the following Stations: 42 (Pier 16), 44, 45, and 46 (Pier 12), 48 (Pier 7), and 49 (Pier 6).

Polychaete survival ranged from 76 percent (Station 48, Pier 7) to 100 percent (Station 50, Pier 3). Polychaete growth rates were highest when exposed to sediments collected from underneath the piers, most likely due to higher TOC and nutrient levels from those sediments. Growth ranged from 0.083 mg/d (Station 47, Pier 9) to 0.187 mg/d (Station 43, Pier 15).

#### 4.5.1.2 EVALUATION OF SEDIMENT TOXICITY

After omitting data from those reference stations which "failed" the reference sediment performance criterion (Tables 4-9 through 4-11), the RPD was calculated for echinoderm survival and normal development, amphipod survival and reburial, and polychaete survival and growth between West Basin stations and mean reference station data. West Basin bioassay data were also statistically compared to the reference station values to assess whether West Basin toxicity levels were statistically significant relative to reference station toxicity levels. Tables 4-30 through 4-32 provide the results of toxicity determination for West Basin sediments using echinoderm, amphipod, and polychaete bioassays, respectively.

Only West Basin bioassay data that met both criteria were considered a "hit," meaning they were significantly different and mathematically different from reference stations. The distribution of bioassay "hits" findings for the West Basin bioassays are presented on Figures 4-28 through 4-33. Echinoderm larval development "hits" were found at approximately 70 percent of the West Basin stations and were primarily located underneath the piers, in the northwest corner of West Basin, and at the West Basin entrance (Stations 24, 25, 31, 32, and 33). Locations of stations which showed echinoderm development "hits" were also scattered within the basin, along the LBNSY seawall, and along the northern edge of the Navy Mole. Echinoderm survival "hits" were localized at the middle-northern seawall (Stations 13 and 17), Piers 12 (fuel pier) and 16, and the northwest corner of and entrance to West Basin. About 5 times fewer "hits" resulted from the solid phase bioassays than from the pore water bioassays. The amphipod bioassay "hits" were located at stations underneath Piers 16, 12 (fuel pier), and 7, and at Station 41 (survival only), which is next to the fuel pier and close to the seawall. The only polychaete bioassay "hit" (survival) occurred underneath Pier 7 (Station 48).

### 4.5.2 Benthic Infauna

Benthic infaunal invertebrates, collected at the same locations of and at the same time with the collection of surface sediment samples from the West Basin, were analyzed to identify and describe the community of invertebrate animals living in or on the West Basin surface sediments. The benthic community analysis report, prepared by MEC Analytical Systems, Inc., the laboratory that conducted this analysis, is included as Appendix N. The West Basin samples contained greater than 20,000 organisms representing 352 taxa (species or species group). The results of the benthic infauna analysis are presented herein as indices of the invertebrate community structure, including abundance, number of taxa, and



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diversity. These indices are summarized in the following sections. The benthic infaunal community indices and major taxonomic groups are presented in Table 4-33; summary statistics are presented in Table 4-34 for the basin and in Table 4-35 for pier stations. Surface sediment spatial distributions of benthic infaunal invertebrates, illustrating abundance and number of species, are shown on Figures 4-34 through 4-41.

The most apparent feature of the benthic infauna data is the difference between the invertebrate communities at the basin stations in comparison to the communities at the pier stations. Despite high sediment sulfide content and an associated low dissolved oxygen level at pier stations, the invertebrate community appeared very diverse with a large number of animals.

#### 4.5.2.1 ABUNDANCE

The abundance values (number of individuals) of organisms found per sample ranged from 14 to 1,856 for the basin, and from 428 to 4,264 for stations beneath piers (Table 4-36). Generally, benthic organisms were more abundant in samples collected from beneath the piers than in samples collected within the basin. The large abundance values for the basin stations were reported for Station 5 and for stations beneath the piers. The largest abundance value of 1,856 for Station 5 appears to have been influenced by the presence of a great many polychaete worms of one species (*Pseudopolydora paucibranchiata*). The lowest abundance values reported for Stations 9, 10, 11, 12, 15, 16, 18, 19, and 20, near the central portions of West Basin, were greater than the reference station values. Mean abundance for the pier stations was 1,360, while the mean abundance for the remainder of the West Basin stations was 157.

#### 4.5.2.2 NUMBER OF TAXA

Individual organisms found in each sample were identified to the lowest or most specific taxonomic level possible. The term "taxa" is used to indicate the taxonomic identifications assigned to organisms, whether the identification is to species, genus, family, or other taxonomic level.

The mean value of the number of taxa was greater for stations beneath the piers (72) than for the remainder of stations in West Basin (31). Number of taxa values were higher for stations near the entrance to the West Basin than at other stations within the West Basin. The number of taxa values were low (less than the reference station value) for stations near the central portions of West Basin: Stations 9, 10, 12, and 15.

#### 4.5.2.3 BIOMASS

Biomass values, the wet weight of all organisms found in the sample, were higher for stations beneath the piers than for the remainder of stations in West Basin. Mean biomass was 83 g for pier stations and 4.0 g for the remaining stations. Low biomass values were reported for stations near the central portions of West Basin (Stations 9, 15, 16, and 20) and for stations along the LBNSY seawall (Stations 1, 10, 27, and 28). High biomass values were reported for Station 22 near the seawall of the LBNSY; Stations 4 and 26



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along the Navy Mole, Stations 19 and 25 in the central portions of the West Basin, and at Stations 31 and 33 near the entrance to the West Basin.

#### 4.5.2.4 DIVERSITY INDICES

Dominance, Evenness, Margalef Species Richness, and Shannon-Wiener diversity indices were calculated for each of the West Basin benthic infaunal invertebrate samples. Because these indices are calculated from the number of species and the abundance of each species, their values often reflect patterns of forces that are affecting the benthic community. The Margalef's diversity is more sensitive to a greater number of species, while Dominance, Evenness, and Shannon-Wiener are more sensitive to an even distribution of species abundance.

***Dominance***

Dominance is a diversity index estimating the species distribution in a sample. A larger dominance value often represents a balanced species distribution, while a smaller dominance value often represents a species distribution that is dominated by a few abundant and opportunistic species.

Dominance values for stations within the basin were generally similar for stations beneath the piers and for the reference station values. The highest dominance values were reported from stations near the entrance to West Basin. The lowest dominance value reported was from Station 5, which was possibly influenced by a large number of polychaete worms (*Pseudopolydora paucibranchiata*) which were found in the samples.

***Evenness***

Evenness is also an index of diversity within a sample. Evenness values for samples from within the basin and from beneath the piers were generally similar to the reference station values. Stations beneath the piers showed lower Evenness values than the other stations within West Basin. Station 5 in the northwest area of West Basin and Station 46 beneath Pier 12 showed the lowest Evenness values (less than the project reference value).

***Margalef Species Richness***

The Margalef diversity index is more sensitive to a greater number of species in the sample than to an equitable distribution of abundance among the species. Margalef Species Richness values were similar between the reference station values and most of the West Basin stations. However, several stations located at the entrance to West Basin and beneath a few of the piers showed a greater diversity than the reference station value.

***Shannon-Wiener***

The Shannon-Wiener diversity index, which is biased toward uniform distribution of species abundance, was similar between most of the West Basin stations and the reference station value. Similar to other diversity indices, a greater Shannon-Wiener diversity was reported for stations near the entrance to West Basin and for a few pier stations. Lower



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Shannon-Wiener diversity was reported for some stations near Pier 12 (Stations 9, 12, 15, 16, and 46) and for Stations 5 and 10 along the LBNSY seawall.

#### 4.5.2.5 SPECIES COMPOSITION

A total of 352 taxa were identified in the sediment samples collected from the West Basin. Sediment quality can often be described in terms of the types of animals found or even, in some cases, the presence of certain species (Pearson and Rosenberg 1978, Gray 1989).

Sample appearance at pier stations was different from the remaining West Basin stations because of the shell hash material that was present in the samples from beneath the piers. The shell hash material provides a more complex environment for benthic organisms, as well as providing a hard substrate material for the organisms to grow on, than the typical soft mud bottom observed in the rest of the West Basin. The difference in bottom or substrate types leads to a difference in benthic community, as noted above for abundance, number of species, and diversity.

Benthic organisms found at pier stations that are typically associated with hard substrates include the mussel *Mytilus galloprovincialis* and slipper shells of the genus *Crepidula*, the crustaceans *Grandidierella japonica* (amphipod) and *Tanais* sp., polychaetes of the genus *Sabellaria* and *Spirorbis*, the tunicate *Ascidia ceratodes*, and various hydroids.

The stations beneath piers showed higher numbers of species, greater abundance, and greater biomass than the non-pier and reference stations for each of the major taxonomic groups, crustaceans, polychaete worms, mollusks, echinoderms, and other phyla. Non-pier station samples contained similar abundance and numbers of species as the reference stations, except for crustacean abundance, molluscan abundance, and molluscan number of species.

Earlier studies of West Basin infaunal communities (Hill and Reish 1975, Reish et al. 1980) have described patterns of community response to stress conditions and species that are indicative of certain benthic conditions. The presence of indicator species contributes to the understanding of benthic conditions; however, all indices of the benthic community must be considered to achieve the best data interpretation.

For example, the greatest abundance of the polychaete worm, *Capitella capitata*, which is an indicator of stressed benthic conditions such as organic enrichment or low oxygen content, was found at pier stations. However, pier stations also represented the greatest number of species, greatest abundance, and greatest diversity indices. Although the presence of *Capitella capitata* can be interpreted to indicate stressed conditions beneath the piers, the level of stress is not sufficient to cause an adverse impact on the overall health of the benthic community as measured by species richness and species diversity. A few *Capitella capitata* were found at three of the non-pier stations (5, 25, and 41).

***Basin Stations***

Benthic communities found in samples taken from the basin stations were characterized by the predominance of five polychaete worms, *Monticellina tesselata*, *Cossura* sp. A, *Aphelochaeta multifilis* Type 2, *Chaetozone corona*, and *Paraprionospio pinnata* (Table



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4-36). The predominance of these species suggests a healthy to semi-healthy benthic environment.

*Pseudopolydora paucibranchiata*, a polychaete worm often indicative of semi-healthy areas (Reish et al. 1980), was only abundant at three basin stations, which were located in the northwest section of the West Basin. The presence of a large number of *P. paucibranchiata* at Station 5 caused this worm to be ranked as the most abundant species found in the West Basin. Two polychaete worms indicating healthy conditions, *Monticellina tesselata* and *Aphelochaeta multifilis* Type 2, were abundant at basin stations, frequently ranking among the three most abundant species identified at any station. The polychaete worm, *Cossura* sp., an indicator of healthy conditions, was one of the most abundant species in the basin samples, except that it was absent or in low abundance at stations along the LBNSY seawall, near the eastern section of the Navy Mole, and at Stations 32 and 33. Two polychaete worms that are indicators of semi-healthy benthic environments, *Chaetozone corona* and *Paraprionospio pinnata*, were abundant at most of the basin stations. One crustacean was abundant at basin stations: *Amphideutopus oculatus*.

### *Pier Stations*

The invertebrate communities found at pier stations were generally represented by species associated with hard substrates, indicator species of semi-healthy conditions, and indicator species of stressed conditions. Because of the hard substrate present beneath the piers (shell hash), the benthic community is very complex compared to areas of soft mud. Therefore, comparisons among the pier stations, basin stations, and reference stations are difficult at best.

Epifaunal organisms associated with hard substrate ranked high at all pier stations, but ranked the highest at Station 42 beneath Pier 16, and Stations 44 and 45 beneath Pier 12. These organisms are often referred to as a "fouling" community because these are the species that will attach to and grow on any item placed in harbor waters. Species of this group that ranked high at pier stations include *Crepidula dorsata* and *C. onyx* (slipper shells), *Cumingia californica* (clam), *Kellia laperousii* (clam), *Cirratulus cirratus* (worm), *Grandidierella japonica* (amphipod), *Mytilus galloprovincialis* (mussel), and *Chone minuta* (worm). These species were almost exclusively found at pier stations and not at basin or reference stations.

Indicator species of semi-healthy benthic conditions (the polychaete worms *Exogone lourei*, *Schistomeringos rudolphi*, *Pseudopolydora paucibranchiata*, and *Mediomastus* sp.) were present at all of the pier stations. *Pseudopolydora paucibranchiata* and *Mediomastus* sp. also ranked high in abundance at reference stations. Indicators of stressed conditions (oligochaete worms, nematode worms, and *Capitella capitata*, a polychaete worm) ranked high in abundance at most of the pier stations, except at Station 42 (Pier 16) and Stations 44 and 45 (Pier 12).



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## 4.6 SEDIMENT EVALUATION ZONES

SEZs were developed as groups of West Basin stations for the purpose of describing discrete subareas within the West Basin due to the similar physical and chemical properties of individual sampling stations. For this reason, SEZs were selected as the basic subareal unit for ecological risk assessment purposes, as described in the RAWP (BNI 1995a). In addition, the SEZ approach provided multiple stations for each SEZ, thereby allowing a more robust statistical analysis as compared to single stations. A multivariate statistical process was used to analyze the physical and chemical data at each of the West Basin stations and show groupings of stations with similar characteristics.

Once the sampling stations with similar physical and chemical properties were identified, West Basin SEZs were assessed according to chemical concentrations and biological responses (i.e. toxicity and benthic infauna).

### 4.6.1 Establishing Sediment Evaluation Zones

Cluster analysis, a multivariate statistical technique, was used to evaluate the physical and chemical data acquired from West Basin surface sediment stations. Physical data included grain size as percent fines and TOC. The chemical data included chemical analytes that were detected in at least 50 percent of the West Basin stations. Twenty-four variables (analytes) were used in the cluster analysis: fines, TOC, total sulfide, ten metals, eight PAHs, two pesticides, and one PCB.

A dissimilarity matrix was calculated from these data using the Bray-Curtis method. The dissimilarity matrix was evaluated by the cluster analysis technique, which calculated theoretical distances between stations and groups of stations. The results of the cluster analysis were displayed on a tree diagram figure (dendrogram) that illustrated the grouping patterns among the stations. Results of the cluster analysis were also displayed in a two-way table that showed the relative concentration of each chemical analyte per station. Relationships among the physical and chemical properties were also evaluated and presented as dendrograms.

The extent of the horizontal area represented by any individual station was determined by a Thiessen polygon method. Generally, this method identifies an area around a station bounded by the sides of a polygon that are drawn at one half the distance to adjacent stations. A detailed description of this procedure is presented in a Status Report prepared by PTI Environmental Services (PTI 1991).

The advantage of using the cluster analysis process to determine SEZs was that the analytical data derived from the sediment samples provided the basis of establishing the SEZs. This process reduced bias that may have been introduced from factors that the project did not measure, such as sedimentation rates, and from analyst interpretations.

The results of the cluster analysis indicated eight SEZs (labeled as SEZs A through H on Figure 4-42). SEZ A consists of six stations near the entrance to the West Basin and SEZ B consists of four stations in the northwest area of the West Basin. SEZ C consists of nine stations representing part of the northwest and central portions of West Basin, and



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areas near the LBNSY seawall and Navy Mole adjacent to the West Basin entrance. SEZ D consists primarily of the western West Basin area near the marina. SEZ E consists primarily of West Basin areas near piers (Piers 1, 2, 3, and 6), but also includes one area along the mid-length of the Navy Mole adjacent to Pier 12, and the area beneath Pier 9. SEZ F is comprised of two areas near Piers 3 and 6 adjacent to the LBNSY seawall and one area near Pier 15 adjacent to the Navy Mole. SEZ G represents the areas beneath Piers 1, 2, 12, and 16. SEZ H represents the areas beneath Piers 3, 6, 7, and 15. Figure 4-43 presents the West Basin SEZs on a site plan.

Station 24, near the entrance to the West Basin, did not group with any of the other stations and therefore, is not included in any of the SEZs. Station 24 was different from all other stations, showing no detectable chemical concentrations and a coarser grain size than the other stations.

The pattern of SEZ station groupings in the form of two-way result of cluster analysis with physical and chemical patterns are presented on Figure 4-44, where relative concentrations for the analytes are also shown. For example, total sulfide is apparent as an important constituent of pier sediments (Stations 42 through 52).

The pattern of SEZs apparent from the cluster analysis of sediment chemical and physical properties is generally similar to the study areas identified in the Work Plan (JEG 1993a) that were based on suspected sediment depositional patterns. Both patterns describe a transition of sediment condition with distance (east to west) into the West Basin, and a difference between basin area sediments and sediments beneath the piers. The SEZs presented herein were influenced by chemical and physical data patterns that were probably affected by other conditions in addition to sediment depositional rates such as discharge pipe and pier locations. Because the cluster analysis procedure reflects actual measured sediment quality, the SEZs display patterns that result from the combined influences on basin sediment quality. The SEZs show gradients in sediment quality with distance into the West Basin and with proximity to piers and general areas of discharge outfalls into West Basin.

The cluster analysis procedure was repeated, this time including the reference stations (Figures 4-45 and 4-46). The resulting SEZs were identical to the pattern developed excluding reference stations, as described earlier. Reference Stations 40010.1, 40010.2, and 40010.3 grouped together with SEZs C and D. Reference Stations 40018.1, 40018.2, and 40018.3 grouped together with SEZ A. Reference Station 40032.1 grouped together with Station 24.

Mean values of sediment quality parameters were compared among the eight SEZs and the reference stations using ANOVA procedures. The data were tested for homogeneity of variances (homoscedasticity) using Levene's test prior to the ANOVAs. If the data failed Levene's test, the data were logarithmically transformed ($\log_{10}$ [x+1]) and tested for homogeneity of variances again. If the transformed data failed Levene's test, then the data were rank-transformed and tested by ANOVA (equivalent to the non-parametric Kruskal-Wallis test). Significant differences among the means for $\alpha$=0.05 were tested using Tukey's HSD method, a multiple comparison test.



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## 4.6.2 Sediment Physical Characteristics

A summary of the surface sediment physical characteristics is presented for SEZs A through H in Table 4-37. Surface sediment physical parameters, grain size, and TOC were evaluated among the SEZs by ANOVA tests.

SEZ F had the greatest percentage of fine grained sediment (87 percent) and was significantly different from SEZs A, B, and D, which showed the lowest amount of fine grained material (45 to 59 percent). Results of the ANOVA showed that sediment percent fines for the reference stations were not different from the percentage of fines at any of the SEZs.

Clay size particle content was greatest beneath the piers at SEZs G and H and lowest at SEZ B. Silt size particle content did not show a pattern similar to clay size particle content. SEZs G and H showed a lower silt size particle content than most other SEZs. Sand size particle content was highest at SEZs A and B and lowest at SEZs G and H. The percentage of sediment particles in the gravel size or larger was greatest at SEZs G and H, probably due to the shell hash material in the sediment samples. Median and mean grain size values show that SEZs A and B contained the coarsest size sediments, while SEZ F contained the finest size sediments.

TOC was significantly higher at SEZs F, G, and H than at the other SEZs. TOC for the reference stations was similar to the TOC levels at most SEZs, except that TOC was higher at the reference stations than at SEZs A and B.

## 4.6.3 Sediment Chemical Data

Descriptive statistics of detected chemical analytes are shown in Table 4-38 for each of the SEZs. A summary of mean analyte concentrations for West Basin SEZs is shown in Table 4-39. Mean values of analytes were compared among the SEZs and the reference stations by ANOVA with a Tukey multiple comparison test. Mean analyte concentrations exceeding the mean reference concentrations are shown in Table 4-40 by SEZ. Sediment ER-L values were compared to the 95% UCL for each chemical analyte by SEZ. Mean analyte concentrations exceeding mean reference concentrations and the ER-L values are shown in Table 4-41 by SEZ.

None of the pesticides (aldrin, lindane, DDD, DDE, DDT) or SVOCs (phenol, bis[2-ethylhexyl]phthalate, di-n-octylphthalate) were significantly greater at the SEZs than at the reference stations.

Metals concentrations were generally greater at SEZs representing sediments beneath and adjacent to the piers. Cadmium, nickel, selenium, and silver concentrations were not significantly different at any of the SEZs than the concentrations at the reference stations. Concentrations of arsenic, beryllium, copper, lead, mercury, and zinc were higher at SEZ F than for the reference stations, and exceeded ER-L values. Chromium, copper, lead, zinc, and monobutyltin levels were higher at SEZ H than for the reference stations, and also exceeded ER-L values.



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Results of the ANOVA showed that almost all of the PAH compounds at SEZ H, which represents the area beneath Piers 3, 6, 7, and 15, were at significantly greater concentrations than for the reference stations. Most of the PAH compounds at SEZ H also exceeded the ER-L values.

SEZs E, F, and G had concentrations of several PAH compounds that were significantly higher than the reference stations as well as exceeding the ER-L values. SEZ D had concentrations of several PAH compounds that were significantly higher than the reference stations, but only total HPAHs exceeded the ER-L as well. None of the PAH concentrations at SEZs B and C exceeded those at the reference stations, and none were greater than the ER-L values. None of the PAH concentrations detected at SEZ A were greater than those at the reference stations.

PCB concentrations (as Aroclor 1260) in West Basin sediment samples, except at SEZs A and G, were significantly greater than the reference stations and exceeded the ER-L value. Aroclor 1260 was found at sampling stations within all SEZs, except for SEZ G, the area beneath Piers 1, 2, 12, and 16. The highest level of Aroclor 1260 among the SEZs was at SEZ F.

### 4.6.4 Sediment Toxicity

The mean response for each bioassay is presented in Table 4-42 for the SEZs and reference stations. The distribution of biological response among SEZs did not appear to follow any specific pattern (i.e., no single SEZ consistently had the lowest or the highest adverse biological response across the three bioassays). However, percent survival (echinoderm, amphipod, and polychaete), echinoderm normal development, and amphipod reburial were generally lower at the pier SEZs (SEZs G and H). In addition to the pier SEZs, SEZ B and Station 24 exhibited lower echinoderm survival and normal development as compared to the other SEZs. Polychaete growth was generally higher at SEZs B, G, and H, and at Station 24.

Mean echinoderm survival ranged from 53 percent (SEZ B) to 88 percent (SEZ E). Echinoderm survival averaged less than 80 percent at over one-half of the SEZs: SEZs A, B, D, G, and Station 24. Normal echinoderm development averaged less than 70 percent at each of the SEZs, ranging from 0 percent (SEZs G, H, and Station 24) to 68 percent (SEZ E).

Amphipod survival ranged from 45 percent (SEZ G) to 92 percent (Station 24). Survival was less than 80 percent at both of the pier SEZs (SEZs G and H). Mean amphipod reburial ranged from 63 percent (SEZ G) to 100 percent (Station 24).

Polychaete survival ranged from 84 percent (Station 24) to 97 percent (SEZ D). Survival was greater than 80 percent at each SEZ. Growth was highest at pier SEZs (0.160 and 0.139 mg/d at SEZs H and G, respectively) and lowest at SEZ F (0.0780 mg/d).

Evaluation of the bioassay results by SEZ was conducted as presented in Section 3, which is similar to the station-by-station evaluation. The RPDs between the mean biological response at each SEZ and mean reference data were first calculated for the three



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bioassays. Tables 4-43 through 4-45 provide the RPDs between SEZ and reference stations by test organism and endpoint. SEZ data were also statistically compared to reference station data by ANOVA followed by Tukey's multiple range test. Appendix S contains the results of the bioassay statistical analyses.

Overall results of the bioassay data evaluation by SEZ are shown in Tables 4-43 through 4-45, showing the decision matrices used to identify bioassay "hits". The distribution of bioassay "hits" by SEZ within West Basin is presented on Figure 4-47. The only SEZ bioassay "hits" were SEZs B, G, and H for echinoderm development. Station 24 is not considered a "hit" even though development and survival data are both statistically significantly different and greater than 20 percent different from reference station data. DO levels fell to below 60 percent saturation during the bioassay test; the low DO most likely contributed to the reduced survival and normal development of test organisms.

Although SEZs B and G normal development data were not statistically significantly different from the reference station data as determined by ANOVA, every station within the two SEZs resulted in "hits" when individually compared to the reference station data. SEZs B and G were thus considered "hits" for echinoderm development despite the lack of statistical significance on a SEZ level. The wide range of responses reported from the echinoderm development test probably accounted for this condition.

Although several of the SEZs showed RPDs exceeding 20 percent for echinoderm survival and amphipod survival and reburial, those SEZs were not considered as "hits" because there was no statistically significant difference between SEZ mean response and reference mean response. The primary reason that the statistical tests did not detect significant differences between such SEZs and reference station data is attributed to the large variance that exists in the echinoderm survival and amphipod data sets. Statistically significant differences were detected via ANOVA between polychaete growth data at the pier SEZs (G and H) and reference stations. These results were not considered "hits", however, since biological response was actually more favorable (higher growth rate) at the pier SEZs than at reference stations.

### 4.6.5 Benthic Infauna

The benthic infauna community at each SEZ was evaluated by community indices and species composition (Table 4-46). None of the SEZs showed a significant adverse effect compared to the reference stations. SEZs A through F were dominated by species indicating healthy or semi-healthy conditions, and indicator species of stressed conditions were absent.

SEZ G, the area beneath Piers 1, 2, 12, and 16, showed a significantly enhanced number of taxa, abundance, and Margalef diversity compared to the reference stations. SEZ G showed the highest number of taxa, abundance, biomass, and Margalef diversity, while SEZs F and C showed the lowest values of these indices.

Three indicators of semi-healthy sediment conditions, *Exogone lourei*, *Schistomeringos rudolphi*, *Mediomastus* sp., ranked among the most abundant species at SEZ G.



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Oligochaetes and *Capitella capitata*, indicators of stressed conditions, ranked high at Pier 1 of SEZ G. The other species that ranked high at SEZ G were fouling species growing on the shell hash material.

Oligochaetes, *Capitella capitata*, *Schistomeringos rudolphi*, and *Pseudopolydora paucibranchiata*, ranked high in abundance at SEZ H, a combination of both stressed and semi-healthy indicator species.

### 4.6.6 Bioaccumulation Data

The laboratory clam bioaccumulation tests have limited applicability to the SEZ analyses because only 25 percent of the stations (5 reference, 5 basin, and 4 pier stations) were selected for this test prior to development of SEZs. After the completion of the laboratory analyses and the development of SEZs, it was observed that, even though the stations to be tested for bioaccumulation had been selected by random assignment, a few of the basin stations used in the test grouped in several SEZs: Station 24, which was not assigned a SEZ; Station 29 in SEZ A; Stations 6, 8, and 14 in SEZ B; pier Stations 46 and 51 in SEZ G; and pier Stations 43 and 49 in SEZ H. Because of the small sample sizes, statistical tests were performed on the clam bioaccumulation stations grouped by reference, basin, and pier, and not by SEZ.

An examination of the data indicated that the SEZ A and B clams showed chemical concentrations essentially less than or equal to the reference station data. The pier samples from SEZs G and H showed a few chemical concentrations higher than the reference station data, but the differences were not statistically significant when the pier samples were all considered together. Clams from three of the four pier samples contained pyrene, which was not found at the reference stations but was measured in the pier sediment samples.

## 4.7 SELECTION OF CHEMICALS OF POTENTIAL CONCERN

COPCs were selected separately for human health and ecological risk assessments since each assessment has different focus and potential receptors. Therefore, in order to facilitate separate listing and discussions, COPCs for human health and ecological risk assessments were designated herein as chemicals of potential health concern (COPHCs) and chemicals of potential ecological concern (COPECs), respectively, and which are discussed in the following sections.

### 4.7.1 Chemicals of Potential Health Concern

COPHCs for West Basin were determined on the basis of fish chemistry data. The measured concentrations of analytes in West Basin and reference station fish samples were subjected to ANOVA to determine if there was a statistically significant difference between the concentrations of chemicals in fish from the two areas. No statistically significant difference ($p \leq 0.05$) was found between the concentrations of any of the chemicals identified in California halibut samples from the West Basin and the reference stations. In white croaker samples, mercury concentrations were statistically significantly



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higher in the fillets of West Basin white croaker than in those from the reference stations. In the whole body samples, white croaker from the West Basin had statistically significantly higher concentrations of arsenic, copper, and tributyltin than whole body samples from the reference stations. Details of the statistical analysis were presented earlier in Section 4.

Upon completing the statistical analyses and evaluation of the data, only three compounds found in whole body white croaker samples were at significantly greater concentrations at the West Basin than at the reference; only one compound found in white croaker fillet samples was at a significantly greater concentration at the West Basin than at the reference; and none of the analytes for halibut fillet and whole body were at significantly greater concentrations at the West Basin that at the reference. To develop conservative estimates of risk related to analyte concentrations in fish tissue, any compound detected in a fish sample type was considered a COPHC for that fish sample type. For example, any compound detected in white croaker fillet samples from West Basin were considered COPHCs for white croaker fillet. The compounds detected in fish and designated as COPHCs are presented in Table 4-47.

## 4.7.2 Chemicals of Potential Ecological Concern

COPECs were selected individually for West Basin surface sediments and fish, and were evaluated using the hazard quotient and the preponderance-of-evidence approaches to ecological risk assessment, respectively. The following sections describe how West Basin COPECs were derived.

### 4.7.2.1 FISH COPECS

West Basin fish COPECs were determined on the basis of whole body white croaker chemistry. California halibut chemistry was not included in fish COPEC determinations because concentrations of chemicals measured in West Basin California halibut were not statistically significantly higher than reference station values. Chemicals detected in West Basin whole body samples of white croaker were designated fish COPECs if the concentrations of such chemicals statistically significantly exceeded the concentrations found in whole body white croaker collected from the reference stations (details of fish tissue chemistry results and statistical analyses are found in Section 4.4.2.1). Chemicals found in West Basin whole body samples of white croaker and not in reference samples were also designated as fish COPECs. The fish COPECs, listed in Table 4-48, were used in hazard quotient calculations related to assessing potential risk to an aquatic predator, as described in Section 6.

### 4.7.2.2 SEDIMENT COPECS

Sediment COPECs were considered separately for each SEZ. Any chemical, having a SEZ mean concentration that statistically exceeded the reference mean concentration, was designated a sediment COPEC for that SEZ. Analytes that were found at West Basin stations and not at reference stations were also designated as sediment COPECs. The sediment COPECs are listed by SEZ in Table 4-49.



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West Basin sediment samples contained measurable concentrations of most metals for which they were analyzed. Antimony and thallium were not detected in any of the West Basin sediment samples. None of the mean concentrations of cadmium, nickel, selenium, or silver exceeded the reference station mean values. Arsenic, beryllium, chromium, copper, lead, mercury, and zinc were found in at least one SEZ at concentrations that exceeded the reference station values. Therefore, these seven metals were designated as sediment COPECs. The seven sediment COPEC metals were found at higher concentrations in SEZs F and H.

While tributyltin, dibutyltin, and monobutyltin were analyzed for in West Basin sediment samples, only dibutyltin and monobutyltin were found at detectable levels. Dibutyltin concentrations did not exceed the reference station values. Monobutyltin was designated a sediment COPEC because it was detected at SEZ H and not at the reference stations.

All of the PAH compounds for which the West Basin sediment samples were analyzed, exceeded reference station levels. Summary estimates of PAH concentrations, such as total PAH, total HPAH, total LPAH, total benzofluoranthenes, also exceeded the reference station values. All of the measured PAH compounds and the PAH summary estimates were designated as COPECs. The presence of PAH compounds at levels exceeding the reference station values generally occurred at stations beneath the piers (SEZs G and H) and at stations adjacent to piers (SEZs E and F).

Aroclor 1260, the only PCB compound detected in West Basin surface sediment samples, was found at levels that exceeded the reference station value. Aroclor 1260 was designated a sediment COPEC for all of the SEZs, except for SEZ G.

Aldrin, lindane, DDD, DDE, and DDT were detected in West Basin surface sediment samples. Aldrin, lindane, and DDT were designated as sediment COPEC compounds because they were found in West Basin sediments but not at the reference stations. Concentrations of DDD, DDE, and total DDTs in West Basin samples did not exceed the reference station values.

Phenol, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate were found at measurable concentrations in surface sediment samples from the West Basin. Only phenol, which was present at concentrations that exceeded the reference station values, was designated as a sediment COPEC. Bis(2-ethylhexyl)phthalate and di-n-octylphthalate concentrations did not exceed the reference station concentrations.

## 4.8 IDENTIFICATION OF AREAS OF POTENTIAL ECOLOGICAL CONCERN

Areas of potential ecological concern (AOPECs) were designated according to the guidelines described in the RAWP (BNI 1995a). The RAWP guidelines specify an evaluation matrix, shown in Table 4-50, to be used in defining SEZs potentially requiring remediation or additional characterization, including the "triggering" of a water column study. Table 4-50 shows all of the potential combinations of data results presented in four categories (sediment chemistry, bioassay, benthic community analysis, and



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bioaccumulation), along with the assigned SEZ status. The evaluation matrix was designed as a tool to interpret AOPECs based on a range of chemical or biological data.

SEZs were evaluated for chemicals exceeding reference station values; toxicity effects to polychaetes, amphipods, and echinoderm larvae greater than the reference; benthic infauna significantly different than the reference; and bioaccumulation of chemicals in clam tissue. These results were used to compile an evaluation matrix specific to West Basin (Table 4-51). This evaluation matrix provides a summary of the results of SEZ characterization discussed earlier. The evaluation matrix input for each of the SEZs shown in Table 4-51 are discussed below.

Station 24, which was dissimilar to all other West Basin stations in sediment physical and chemical properties and was not a member of any of the SEZs, was not considered an AOPEC. Eight metals and DDE were detected at Station 24, but none of these chemicals exceeded the reference station values. No PAH compounds were detected at Station 24. Also, there were no apparent toxicity effects or adversely affected benthic infauna.

SEZ A, comprising primarily stations near the entrance to the West Basin, was not considered an AOPEC. Although most of the metals, a few of the PAHs, Aroclor 1260, DDTs, and phenol were detected in SEZ A sediment samples, only Aroclor 1260 and phenol concentrations exceeded the reference station value. No toxicity effects, adverse benthic infauna effects, or clam tissue bioaccumulation were noted at SEZ A.

SEZ B, comprising primarily stations in the northwest area of the West Basin, was considered an AOPEC. Most of the metals and PAH compounds were detected in SEZ B, as well as Aroclor 1260, pesticides, and SVOCs. Three PAH compounds and Aroclor 1260 exceeded the reference station values. No toxicity effects were noted for the polychaete and amphipod tests; however, SEZ B sediment samples showed a toxicity response for the echinoderm larvae that was greater than the reference data. There was no significant bioaccumulation of chemicals in the clam tissue tests. Because of the sediment chemistry concentrations and echinoderm toxicity, SEZ B was considered an AOPEC.

SEZs C and D, comprising stations in the central portions of the West Basin, were not considered as AOPECs. Sediment samples from both SEZs C and D contained detectable levels of metals, PAHs, Aroclor 1260, pesticides, and SVOCs. At SEZ C, two PAH compounds, Aroclor 1260, and DDT exceeded the reference station values. At SEZ D, three PAH compounds and Aroclor 1260 exceeded the reference station values. No toxicity effects or adverse benthic infauna effects were reported at either SEZ C or SEZ D. None of the sediment samples from these SEZs were tested for clam bioaccumulation.

SEZs E and F, comprising stations adjacent to the West Basin piers, were not considered as AOPECs. Sediment samples from SEZ E contained PAH compounds, Aroclor 1260, and phenol that exceeded the reference station values. Six metals, PAHs, Aroclor 1260, and lindane were detected at concentrations exceeding reference station values at SEZ F. There were no significant toxicity effects or benthic community effects noted at either SEZ E or SEZ F. None of the sediment samples were analyzed for clam tissue bioaccumulation.



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SEZ G, comprising several piers, was considered an AOPEC because of chemical concentrations, echinoderm toxicity, and clam tissue bioaccumulation. Ten PAH compounds were detected at SEZ G at concentrations exceeding the reference station values. Echinoderm larvae showed an adverse toxic response when exposed to SEZ G sediment samples. Clam tissue bioaccumulation tests showed concentrations of pyrene exceeding bioaccumulation levels at the reference stations.

SEZ H, also comprising several piers, was considered an AOPEC because of chemical concentrations, toxicity levels, and clam tissue bioaccumulation. Four metals, monobutyltin, sixteen PAH compounds, and Aroclor 1260 were detected in sediment samples from SEZ H at concentrations exceeding the reference station values.

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SECTION 5

# ASSESSMENT OF HUMAN HEALTH RISK ASSOCIATED WITH CONSUMPTION OF WEST BASIN FISH

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Section 5

# ASSESSMENT OF HUMAN HEALTH RISK ASSOCIATED WITH CONSUMPTION OF WEST BASIN FISH

This section presents an assessment of human health risk associated with ingestion of chemicals measured in fish tissue collected from the West Basin, and provides descriptions of the methodologies used, as well as the findings of, the risk assessment. The objective of this task was to assess whether risk to human health posed by ingestion of West Basin fish exceeded the risk to human health posed by ingestion of fish collected from reference stations.

Comparison of the concentrations of chemicals measured in the sediments to the concentrations of chemicals measured in fish tissue was beyond the scope of this RI and not an objective of this human health risk assessment, as the migration and feeding history of the fish collected for this RI, as well as the sources of chemicals measured in fish tissue, cannot be ascertained with any degree of reliability. Some fish may have spent their entire lives within, and fed throughout, the West Basin; others may have moved in and out of the West Basin before being captured for this RI.

A variety of fish appear to live or forage in the West Basin. The Navy has conducted a series of creel census surveys of individuals fishing at the Navy Mole area within the West Basin (BNI 1994b). The surveys have revealed that the species most often caught by anglers in that area are barred sand bass (*Paralabrax nebulifer*), rubberlip perch (*Paralabrax toxotes*), kelp bass (*Paralabrax clathratus*), opaleye (*Girella nigricans*), California halibut (*Paralichthys californicus*), and white croaker (*Genyonemus lineatus*).

The California halibut and white croaker were identified in the RAWP (BNI 1995a) as being appropriate candidates for the purposes of both human health and ecological risk assessments. Both species of fish were caught by trawl in the West Basin and at the reference stations, and used to represent fish typically caught in and outside of the West Basin and consumed by recreational and subsistence anglers. The number of fish caught and the methods used to identify and quantify the concentrations of chemicals in their tissues were described in Section 4.

## 5.1 OVERVIEW OF THE HUMAN HEALTH RISK ASSESSMENT PROCESS

The standard four-step process recommended by the U.S. EPA (1989b) for conducting human health risk assessments was used. This section briefly describes each step. The sections that follow present a more detailed description of the process.

The first step was to identify the chemicals that would be evaluated in the risk assessment. To perform this step, samples of fish were collected and analyzed for chemicals of interest. The resulting analytical data were carefully scrutinized to identify and list the chemicals that were actually in the samples when collected. The list was then modified by removing chemicals determined to be non-site related contaminants introduced either in the field or the laboratory. The final list of chemicals, COPHCs, were then used in the risk assessment calculations.



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The second step in the human health risk assessment was to evaluate dose-response. This step entailed evaluating the relationship between exposure and biological effects to humans using published toxicological information.

The third step of the risk assessment process was to assess exposure. This step consisted of identifying the pathways by which receptors could be exposed to the COPHCs and estimating the exposure levels.

The fourth step was to generate the risk characterization. This final task consisted of using the exposure-biological effect information to generate a numerical answer which expressed the degree of risk to human health associated with the estimated exposure level.

## 5.2 CHEMICALS OF POTENTIAL HEALTH CONCERN

Data collection and evaluation techniques, including selection of chemical stressors, data validation, quantitation limits, data qualifiers and usability, and screening criteria, are discussed in Sections 3 and 4 of this RI Report. Tables 4-23 through 4-26 in Section 4 list chemicals detected in fish tissue collected from West Basin. The list of COPHCs for each fish tissue sample type included any analyte detected in samples of that fish tissue type (Table 4-47). For example, any compound detected in California halibut whole body samples from West Basin was considered a COPHC for the evaluation of California halibut whole body from West Basin.

## 5.3 TOXICOLOGICAL EVALUATION

Eight of the 15 COPHCs are metals and seven are manufactured organic compounds. Arsenic and hexavalent chromium are known human carcinogens. Beryllium, nickel, DDD, DDE, and α-BHC have been shown to cause cancer in laboratory animals only, and they are considered to be potential human carcinogens. Information on the acute toxicity, chronic systemic toxicity, and carcinogenicity (where applicable) of these COPHCs is summarized in Tables 5-1 and 5-2.

Dose-effect information needed to quantify the risk presented by each of these COPHCs consisted of oral cancer slope factors (CSF) for carcinogens and oral reference doses (RfD). CSFs and RfDs (hereinafter collectively called toxicity criteria) used in this RI are listed in Table 5-3 for each of the COPHCs. A CSF is an estimate of the upper-bound probability that an individual will develop cancer as a result of exposure to a unit dose of a carcinogen. An RfD is an estimate of a daily exposure level that is unlikely to cause deleterious effects in a human population, including sensitive subpopulations, over a lifetime.

The toxicity criteria for all of the COPHCs were obtained from the Integrated Risk Information Service (IRIS), which is a database sponsored by U.S. EPA; the U.S. EPA Health Effects Assessment Summary Tables (HEAST) [U.S. EPA 1994a]; or the February 1995 preliminary remediation goals (PRG) published by U.S. EPA Region IX (U.S. EPA 1995), in the order listed. The U.S. EPA Region IX PRGs was used primarily to obtain toxicity criteria developed by the U.S. EPA's Environmental Criteria and Assessment



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Office (ECAO) in Cincinnati, OH. In accordance with SWDIV policy, cancer risk estimates based on CSFs developed by the Cal-EPA were used for hexavalent chromium. The Cal-EPA CSF value for hexavalent chromium was obtained from the November 1994 table of CSFs published by the Office of Environmental Health Hazard Assessment (Cal-EPA 1994).

Although the tissues were analyzed for the mercury ion rather than for methyl mercury, mercury was assigned the RfD for methyl mercury because inorganic mercury is readily transformed by bacteria to methyl mercury in aquatic systems (Bisogni and Lawrence 1975; Wood 1974), making methyl mercury rather than inorganic mercury to be the form most likely present in the tissues of fish.

Dibutyltin was not evaluated because of the absence of an RfD. It is probably less toxic than tributyltin (SWRCB 1988), which was evaluated and was present in the fish tissues at higher concentrations than dibutyltin.

Lead was evaluated and addressed separately due to the premise that the risk it presents is estimated in a manner different from that used to estimate the risk of other chemicals. Both the U.S. EPA and Cal/EPA recommend using a pharmacokinetic model to determine if exposure to lead in the medium of concern will, when added to normal sources of lead, cause the concentration of lead in blood to rise above 10 micrograms per deciliter (µg/dl), which is currently regarded as a level above which neurological and other effects of lead could occur.

Cal/EPA's Leadspread Program, which is based on a pharmacokinetic model, is being used in other projects within CLEAN II to assess the potential risk presented by lead in soil and water. Although it accounts for lead in food, the Leadspread program is not designed for use in estimating the risk presented by lead in food, except for produce grown in contaminated soil. A rough estimate of blood lead levels resulting from ingestion of lead-contaminated fish was obtained using parts of the program. The procedure is described in subsequent sections.

## 5.4 EXPOSURE SETTING

Two types of fish consumers were evaluated in conceptualizing the exposure setting: the consumer who fishes for recreational purposes (recreational consumer); and the consumer who fishes out of necessity (subsistence consumer).

The types of information needed to estimate the potential risk associated with human consumption of contaminated fish consist of: (1) concentrations of the COPHCs in the fish samples; (2) fish consumption rate; (3) the ratio of test fish (fish collected for this RI) consumed to the total amount of fish consumed; and, (4) the length of time (days, months, or years) during which consumption of test fish might occur. COPHC concentrations in fish samples were acquired from the findings of this RI. Fish consumption rates, exposure frequencies, and exposure durations were obtained from the U.S. EPA (1991b) supplement to the Risk Assessment Guidance Manual for Superfund (U.S. EPA 1989b). The fraction of test fish in the total fish diet of the consumer was estimated.



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Both types of consumers were assumed to fish the West Basin for a period of 30 years and have families whose members also eat fish. Thirty years is the 90th percentile for residency time at one address for the U. S. population (U.S. EPA 1989a). Assuming that family members also consume fish allows for the possibility that at least one family member consumes fish from birth to the age of 30 years. Cancer risk estimates were based on that member of the family. Noncancer risk estimates were based on exposure of a family member from birth to the age of six years and an adult family member exposed for 30 years. Although neither type of consumer or family member probably eats fish every day, for calculation purposes chemical dose was based on a fish consumption frequency of 350 days/year. The remaining 15 to 16 days of the year were assumed to have been spent away from the Long Beach area. This period is the average vacation time for the U.S. working population.

Certain people may consume all soft parts of fish (i.e., cook fish whole without first removing skin and entrails). To allow for that possibility, the risks associated with consuming whole body fish as well as fillets alone were estimated for both the recreational and subsistence consumer.

The recreational consumer was assumed to fish the West Basin occasionally, so that only one-third of the fish eaten by the consumer or family members came from the West Basin. The rest of the fish consumed was assumed to be purchased from fish markets or caught elsewhere. The average daily consumption of fish by adult members of the family was assumed to be 0.054 kg, which is based on a study by Pao and co-workers (1982), who used data from the Nationwide Food Consumption Survey conducted in 1977 and 1978 by the U. S. Department of Agriculture (USDA 1983). The consumption rate (0.054 kg/day) is recommended by the U.S. EPA (1991b) as an appropriate rate for recreational fish consumers, although in the Exposure Factors Handbook (U.S. EPA 1989a), the U.S. EPA states that the rate for recreational fish consumers may be higher.

For the child member of the recreational consumer's family, the fish consumption rate was assumed to be 15/70th of the adult consumption rate, which is the ratio of the standard body weights of 15 kilograms and 70 kilograms assigned by the U.S. EPA to the 0- to 6-year age group and adults, respectively. It is the procedure used by the U.S. EPA (1994b) to estimate acceptable concentrations of chemicals in fish for different human age groups and based on the assumption that food intake is directly proportional to body weight.

All of the fish eaten by the subsistence consumer was assumed to come from the West Basin. The average daily consumption rate of fish by adult members of the family was assumed to be 0.132 kg/day, which is the rate recommended by the U.S. EPA (1991b) as appropriate for subsistence anglers. According to the U.S. EPA (1991b), this rate is the 95th percentile for daily fish consumption based on the above-mentioned study by Pao and co-workers. The consumption rate for the child was calculated in the same manner as described for the recreational consumer.



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The consumption frequency of 350 days per year appears high; however, as mentioned earlier, it was used for computational purposes only because the fish consumption rate is expressed on a per-day basis. If a meal consists of 227g (8 ounces) of fish, a consumption rate of 0.054 kg/day for 350 days/year amounts to 1.7 fish meals per week. For the subsistence consumer, the consumption rate of 0.132 kg/day for 350 days/year amounts to approximately four 8-ounce fish meals per week. Thus, the consumption rate and frequency become reasonable when expressed on a per meal basis. Table 5-4 summarizes the exposure conditions used in the risk assessment.

## 5.5 EXPOSURE ESTIMATION

Human exposure to COPHCs in fish samples was assumed to occur only by ingestion. Other routes of exposure, such as dermal contact while cleaning the fish, were believed to be insignificant relative to ingestion, and therefore not evaluated. The equation used to calculate dose by ingestion was as follows:

$$\text{Dose} = (C_f \times IR_f \times EF \times F \times ED)/(BW \times AT)$$

where:

| | | |
|---|---|---|
| Dose | = | ingested dose (mg/kg-day) |
| $C_f$ | = | concentration of chemical in fish (mg/kg) |
| $IR_f$ | = | fish ingestion rate (kg/day) |
| EF | = | exposure frequency (day/year) |
| F | = | ratio of fish ingested from West Basin to total fish ingested (unitless) |
| ED | = | exposure duration (year) |
| BW | = | human body weight (kg) |
| AT | = | averaging time (25,550 days for cancer risk, ED x 365 day/yr for noncancer risk) |

The values assigned to all of the equation parameters are shown in Table 5-4 except for chemical concentration in fish ($C_f$). For each chemical, $C_f$ was assigned a value equal to the 95% UCL of the mean concentration. In the calculation of the 95% UCL, chemical concentrations reported as being below the SQL were assigned a value equal to 0.5 SQL.

## 5.6 RISK CHARACTERIZATION

Risk characterization was the final step in the risk assessment process. It consisted of two parts: (1) quantification of risk, described in this section; and, (2) analysis of uncertainties in the risk estimates, described in subsequent sections.

Cancer and noncancer risk estimates were generated for the COPHCs on the basis of four basic exposure settings, as listed below:

- consumption of fillets by recreational consumers,



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- consumption of whole body fish by recreational consumers,
- consumption of fillets by subsistence consumers, and
- consumption of whole body fish by subsistence consumers.

Application of these four basic settings to West Basin and reference station California halibut and white croaker, consumed by children and adults, produced a total of 32 exposure settings and thus a total of 32 sets of cancer and noncancer risk estimates. Although there was no statistically significant difference between the concentrations of chemicals found in California halibut samples from the West Basin and reference stations, health risk associated with human consumption of California halibut from both areas was estimated for the purposes of this RI. The same set of 15 COPHCs was used with both fish species.

## 5.6.1 Quantification of Cancer Risk

For each exposure setting, the cancer risk presented by each of the carcinogenic COPHCs was estimated in the following manner:

$$\text{Cancer Risk} = \text{Dose} \times \text{CSF}$$

The estimated cancer risks for carcinogenic COPHCs were then summed to obtain an estimate of total cancer risk. Cancer risk estimates represent the probability that a person will develop cancer of any kind in a lifetime because of exposure to the carcinogens under evaluation. The probability of developing cancer as a result of exposure to a single carcinogen increases with dose. That probability will also increase if exposure to other carcinogens occurs.

For regulatory purposes, cancer caused by chemical carcinogens is treated as a nonthreshold effect. Therefore, there is theoretically no safe exposure level for carcinogenic effects. Zero risk cannot be achieved because of limitations in chemical analytical methods and the presence of natural carcinogenic chemicals in the environment. Cancer risk estimates generated by a risk assessment must therefore be evaluated in terms of acceptable risk. The U.S. EPA has developed risk-based guidelines for establishing acceptable remediation goals for chemicals. For carcinogens, the NCP states that upper-bound lifetime cancer risk less than $1 \times 10^{-6}$ is unconditionally acceptable and that upper-bound lifetime cancer risk between $1 \times 10^{-6}$ and $1 \times 10^{-4}$ is generally acceptable. These guidelines suggest that cancer risk above $1 \times 10^{-4}$ is unacceptable.

## 5.6.2 Quantification of Noncancer Risk

The numerical estimate of the noncancer risk presented by a chemical is called a hazard quotient (HQ) and was calculated in the following manner for each COPHC:

$$\text{HQ} = \text{Dose/RfD}$$

For each exposure setting, HQs of the COPHCs were summed to obtain a preliminary estimate of the total noncancer risk presented by the COPHCs involved. The sum of any



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set of HQs is called a hazard index (HI). A HQ or HI larger than 1.0 means that the estimated dose exceeds the reference dose, which is a dose above which toxic effects could occur.

### 5.6.3 Quantification of Lead Risk

The lead dose resulting from the ingestion West Basin fish was calculated for children and adult subsistence and recreational anglers using fish consumption rates shown in Table 5-4 and lead concentrations of 2.6 and 0.55 mg/kg, respectively, for white croaker fillets and California halibut whole body samples. No measurable concentrations of lead were found in the whole bodies of white croakers or fillets of halibut.

The median blood lead level was calculated using the following equation, which appears in the Leadspread program: blood lead = dietary constant * dose. The dietary constants from the Leadspread program are 0.04 and 0.16 for adults and children, respectively.

## 5.7 RESULTS

The total cancer and noncancer risk estimates for the 32 exposure settings produced as the result of risk quantification are listed in Table 5-5. Under the exposure conditions used to estimate risk, cancer risk was always higher in the adult than in the child, and noncancer risk was identical in both the adult and child. Cancer risk was higher in the adult because the adult was assumed to consume fish for a longer duration than the child, and therefore receive a higher chemical dose. The risk estimates are discussed below in terms of risk to the adult only.

### 5.7.1 Cancer Risk

The upper-bound cancer risks presented by all of the carcinogenic COPHCs identified for this RI, via consumption of the whole body and fillets of white croaker from the reference stations by recreational anglers, were approximately the same ($2.2 \times 10^{-4}$ for whole body versus $3.7 \times 10^{-4}$ for fillets). The upper-bound cancer risk associated with consumption of white croaker from the West Basin was similar to the risk associated with consumption of reference station white croaker. With the fillet samples, the risk was $2.5 \times 10^{-4}$ for West Basin white croaker and $3.7 \times 10^{-4}$ for reference station white croaker. With whole body samples, the risk was $3.0 \times 10^{-4}$ for West Basin white croaker and $2.2 \times 10^{-4}$ for reference station white croaker.

The upper-bound cancer risk was about one magnitude higher for the subsistence angler than for recreational anglers because of the higher fish consumption rate assumed for the subsistence angler. However, as observed with the recreational angler, the risk presented by the carcinogens in white croaker from the West Basin stations ($2.2 \times 10^{-3}$ for whole body and $1.9 \times 10^{-3}$ for fillets) was within the risk range presented by carcinogens in fish from the reference stations ($1.6 \times 10^{-3}$ for whole body and $2.7 \times 10^{-3}$ for fillets).

The upper-bound cancer risk was above $1 \times 10^{-4}$ for the subsistence angler consuming whole body California halibut collected from both West Basin and reference stations. The



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carcinogenic risk to the subsistence angler extended into the $10^{-3}$ range for reference station California halibut fillets.

COPHCs that consistently contributed most to West Basin and reference station cancer risk were arsenic, DDD, and DDE. Arsenic was by far the most significant contributor. It accounted for 86 to 94 percent of the total cancer risk. Appendix T identifies the chemicals in California halibut and white croaker fillet and whole body samples presenting the highest cancer risk to the recreational and subsistence angler.

According to a published review of the toxicological properties of arsenic by the Agency for Toxic Substances and Disease Registry (ATSDR 1993), inorganic arsenic is rapidly converted to arsenobeteine and arsenocholine in fish; both forms of arsenic exhibit low systemic toxicity, and neither are carcinogenic. Table 5-6 shows the total upper-bound cancer risk presented by carcinogenic COPHCs identified for this RI in West Basin California halibut and white croaker and adjusted total upper-bound risk after subtraction of the risk estimates for arsenic.

The results of the assessment of cancer risk suggest that there appears to be no appreciable difference in the cancer risks associated with consumption of white croaker and California halibut from the West Basin and the reference stations, even though the concentrations of some of the carcinogenic COPHCs were statistically significantly higher in white croaker from the West Basin than those from the reference stations. The results indicate, however, that the upper-bound cancer risk associated with consumption of California halibut and white croaker, regardless of the source, is within the range considered to be unacceptable in accordance with criteria presented in the NCP.

## 5.7.2 Noncancer Risk

The sum of the HQs (i.e., HIs) for the COPHCs in the fillets and whole bodies of white croaker from the reference stations and the West Basin ranged from 1.1 to 1.5 for recreational anglers. Considering the uncertainties in the reference doses and the quantification of the COPHCs, there appears to be no appreciable difference in the noncancer risk associated with consumption of white croaker from the reference stations and the West Basin. The HQs for the COPHCs in the fillets of white croaker were 11 for the subsistence consumer for the West Basin and 10 for the reference station subsistence consumer. This finding indicates that for subsistence consumers, the noncancer risk associated with consumption of the fillets of white croaker from the West Basin was the same as that associated with the consumption of fillets of white croaker from the reference stations. There appears to be a higher degree of risk associated with subsistence consumers consuming whole body of white croaker from the West Basin than from the reference stations. The HI for the West Basin whole body white croaker was 11 compared to the HI for the reference stations of 8.4.

The HIs for the COPHCs in the California halibut fillet and whole body samples were higher for reference stations than for West Basin, whether the consumer was recreational



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or subsistence consumer. The HIs for reference California halibut ranged from 0.74 to 6.7, whereas HIs ranged from 0.52 to 4.3 for West Basin California halibut.

A HQ or a HI greater than 1.0 indicates that the estimated dose is higher than the RfD, which is an estimate of the highest nontoxic dose. A HI greater than 1.0 therefore suggests that the concentration of at least one of the COPHCs in the fish is high enough to produce toxic effects alone or in combination with other COPHCs. The HIs for all combinations of consumer, fish species, body part consumed, and source of the fish were greater than 1.0 except for consumption of California halibut from the reference stations and the West Basin by recreational anglers.

Where the HI exceeded 1.0, the COPHC with the highest HQ was arsenic. Arsenic HI accounted for at least 90 percent of the total HI. Appendix T identifies the chemicals in California halibut and white croaker fillet and whole body samples presenting the highest noncancer risk to the recreational and subsistence angler.

The results of the assessment of noncancer risk indicate that, with one exception, there appears to be no appreciable difference between the noncancer risk presented by the COPHCs identified for this RI in California halibut and white croaker from the West Basin and the reference stations. The risk associated with the consumption of whole body white croaker from the West Basin by subsistence anglers (HI = 11) might be higher than the consumption of whole body white croaker from the reference stations (HI = 8.4), but the difference may not be significant given the uncertainties in the risk estimation process.

### 5.7.3 Lead Risk

Estimated dose ranged from 0.13 µg/kg-day for the California halibut whole body and child recreational angler to 4.7 µg/kg-day for the white croaker fillet and adult subsistence angler. Calculated median blood lead levels ranged from 0.0054 to 0.745 µg/dl for California halibut whole body with the adult recreational angler and for the white croaker fillet with the child subsistence angler, respectively. Median blood lead levels for white croaker and California halibut with adult and child, subsistence and recreational anglers were within that range.

These results showed that the concentration of lead in the fillets of white croaker and whole body of California halibut from the West Basin were high enough to cause the concentration of lead in the blood of subsistence and recreational consumers of the fish to be as high as about 0.745 µg/dl (child subsistence angler), which is considerably lower than the threshold of 10 µg/dl. These predicted levels result from consuming fish only. Lead from other sources such as air, drinking water, soil, and food other than fish will increase the concentration of lead in the blood.

The Leadspread Program was used to estimate the contribution to blood lead from the lead in ambient air, drinking water, and diet (excluding fish). Default concentrations recommended by Cal/EPA (1992) were assigned to drinking water (15 µg/L) and diet (9.5 µg/kg), and the highest reported quarterly average lead concentration in ambient air (0.08 µg/m$^3$) measured at the California Air Resources Board's North Long Beach air



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monitoring station in 1989 and 1990 (CARB, 1989, 1990) was assigned to ambient air. The predicted additional median blood lead level was 1.8 and 3.1 µg/dl for the child and adult, respectively, and the 99th percentile levels were 4.1 and 7.0 µg/dl, respectively. Adding the 99th percentile values to the predicted blood lead levels based on fish consumption alone did not cause predicted blood lead levels to rise above 10 µg/dl.

The contribution of lead in soil to blood lead levels could not be estimated because of the absence of information on the concentration of lead in soil in the residential areas of Long Beach or wherever the anglers might live.

In summary, the concentration of lead in the fillets of the white croaker and the whole body of California halibut from the West Basin do not appear to be high enough to cause lead toxicity in children or adults consuming West Basin fish, even when contributions from other sources of lead are considered.

## 5.8 DISCUSSION

The primary purpose of assessing risks associated with human consumption of fish was to estimate whether consumption of California halibut and white croaker from the West Basin poses a greater threat to human health than consumption of California halibut and white croaker caught at the reference stations. The scope of this RI did not include determining whether there exists a link between chemicals found in the sediment samples and the chemicals found in fish samples collected for this RI. The results of the risk assessment indicated that the cancer and noncancer risks associated with consumption of West Basin fish did not appear to be appreciably different from the risks associated with consumption of fish from the reference stations.

These results, on the other hand, also indicate that the concentrations of chemicals identified in some of the California halibut and white croaker samples may be high enough to adversely affect individuals who catch and consume these two species of fish. California halibut and white croaker from the reference stations were treated in the risk assessment as representatives of fish not impacted by the activities of the LBNC. The Cal-EPA OEHHA has recommended fish consumption limits for the LA/LB Harbor (where LBNC is located) based on chemical contamination, specifically DDT and its congeners (DDD and DDE) (Cal-EPA 1991). When arsenic is removed as a carcinogen in the human health risk assessment conducted for this RI, DDD and DDE become the primary cancer risk drivers.

Although the conversion of inorganic arsenic to organic arsenic eliminates this metal as a primary risk driver for carcinogenic effects, it remains the primary risk driver for noncarcinogenic effects. The concentrations of arsenic in the California halibut and white croaker samples are not unusually high. The highest concentrations of arsenic were found in the whole body samples: 0.7 mg/kg in California halibut and 1.8 mg/kg in white croaker. By comparison, fish and shellfish from U.S. supermarkets have been found to contain between 4 and 5 mg/kg of arsenic (ATSDR 1993).



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## 5.9 UNCERTAINTIES OF THE RISK ASSESSMENT

The human health risk calculations were based on " estimates " of chemical dose rate and toxicity. This section discusses uncertainties associated with the estimates and the potential effect of the uncertainties on the risk estimates.

### 5.9.1 Chemical Dose Rate

The chemical concentrations in West Basin fish were based on analysis of 15 fish of each species. The chemical concentrations used to calculate dose were the 95% UCL of the mean concentrations. The concentrations of several of the COPHCs in many of the samples were reported as being below their detection limits. In accordance with U.S. EPA guidelines, the concentrations of chemicals in the samples in which chemicals were reported as undetected were assigned a value equal to one-half the detection limit. When most or all of the samples contained a measurable concentration of a chemical, there was very little difference between the mean and 95% UCL, suggesting that 15 samples were sufficient for estimating the true mean when the concentrations were measurable.

Use of one-half the detection limit in the calculation of the mean increases the uncertainty in the mean. This uncertainty increases as the number of undetected concentrations increases. Use of one-half the detection limit may overestimate or underestimate the mean concentration and, therefore, the level of risk, depending on whether the actual concentration is closer to the detection limit or to zero.

The fish consumption rates were based on an analysis by Pao and coworkers (1982) data from a nationwide food consumption survey in which people were asked to record the amount of specific kinds of food they ate over a period of three days. According to Pao, the average fish consumption rate is 0.054 kg/day and the 95 percentile rate is 0.132 kg/day. U.S. EPA (1991b) recommends using the average rate for recreational anglers and the 95th percentile rate for subsistence anglers. These rates are probably inaccurate for several reasons. First, people may eat fish only on certain days of the week (e.g., Friday). If the survey days did not include the days during which fish was eaten, the consumption rate would be underestimated. Second, the survey was limited to purchased food. Therefore, the fish consumption rates do not necessarily apply to anglers whose fish consumption rate is related to fishing success. Third, in a study of fish consumption rates by recreational anglers in the Los Angeles area, Puffer (1981) estimated a median fish consumption rate of 0.037 kg/day and a 90th percentile rate of 0.225 kg/day. Puffer's results indicate that 0.225 kg/day is a better estimate of upper-bound fish consumption rate than 0.054 kg/day and that use of 0.054 kg/day underestimates risk.

A study by Pierce and coworkers (1981) showed that the fish consumption rate among anglers increases with angling frequency. Anglers who fish daily consume more fish per day than those who fish weekly, monthly, or annually. For those who fish daily, the rate was 0.381 kg/day. That rate may be more appropriate for a subsistence angler.

The fish consumption frequency of 350 days per year and the exposure duration of 30 years probably overestimate the dose calculations.



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In summary, the chemical concentrations used to estimate dose may overestimate upper-bound risk and the fish consumption rates used to estimate the dose rates for adults may underestimate risk.

## 5.9.2 Toxicity Estimates

There are several hypotheses regarding cancer development. Mathematical models based on the difference hypotheses have been developed to estimate the cancer potency of chemical carcinogens. The potency estimates produced by these models can differ by several orders of magnitude. Therefore, there is some degree of uncertainty in the accuracy of the models in estimating potency. For most carcinogens, EPA has used the linear multistage model. That model tends to produce potency estimates of intermediate value relative to the other models.

The RfDs used in the human health risk assessment presented in this section are estimates of the " daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime. " (U.S. EPA 1989a). RfDs are derived either from a no-observed-adverse-effect-level (NOAEL), or a lowest-observed-adverse-effect-level (LOAEL). Each RfD has a built-in uncertainty factor that takes into account for as many as four uncertainties:

- using an LOAEL instead of an NOAEL;
- using an NOAEL from a subchronic study rather than from chronic study;
- using an LOAEL or NOAEL from animal studies rather than from human studies; and
- variation in sensitivity of people in the general population to the chemical.

Each uncertainty has been assigned a value of 10. Therefore, if all four of the uncertainties were to apply to a given chemical, its RfD would have an uncertainty factor of 10,000 built into its value. While use of a factor of 10 for each type of uncertainty may increase the certainty in the predictive value of the RfD, 10 is an arbitrary number that is itself uncertain.



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SECTION 6

# FOCUSED ECOLOGICAL RISK ASSESSMENT

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Section 6

# FOCUSED ECOLOGICAL RISK ASSESSMENT

This section contains the results of the ERA prepared using data presented and discussed in previous sections of this RI Report. The methodologies and the hazard quotient calculations used in the ERA are also presented herein. The focus of the ERA was the sediments of West Basin. In addition, potential ecological risk posed by ingestion of chemicals measured in West Basin fish tissue (whole body) to an aquatic predator (harbor seal) was estimated.

The ERA follows standard regulatory agency guidance and the RAWP (BNI 1995a). This ERA consisted of developing a conceptual site model, performing an exposure assessment utilizing site-specific ecological data, assessing the ecological effects of the exposure assessment, and characterizing the ecological risk at West Basin, including a discussion of uncertainties in the risk assessment. The risk characterization relied on a quantitative approach of calculating hazard quotients for one higher trophic level receptor (harbor seal) and on a preponderance-of-evidence approach for final assessment of West Basin sediments.

The preponderance-of-evidence approach considered data collected from the West Basin, including surface sediment physical and chemical measurements, sediment and pore water toxicity tests, and fish tissue chemistry. The preponderance-of-evidence approach also considered the findings of the clam bioaccumulation studies and benthic infauna studies. The hazard quotient approach used fish whole body chemistry to estimate harbor seal chemical exposure (dose). This exposure was then compared against chronic toxicity benchmark values, and hazard quotients were produced. AOPECs (SEZs B, G, and H), which were initially identified in Section 4.8, were evaluated in this ERA for the purpose of assessing whether the ERA findings warranted any of these AOPECs to be classified as areas of ecological concern (AOECs).

## 6.1 PROBLEM FORMULATION

The purpose of this ERA was to assess whether chemicals found in West Basin surface sediments were associated with adverse effects to components of the marine ecosystem. The ERA is largely confined to effects from surface sediments and does not address the water column, suspended sediments, or other media as they were not within the scope of work of this RI. Surficial sediments were considered to be the biological habitat of principal concern. These sediments may have been recipients of chemicals discharged into West Basin in the past and, as such, may currently constitute a potential secondary source of chemicals to West Basin.

This subsection identifies the ecosystems potentially at risk, develops the RACSM, and selects assessment and measurement endpoints.

### 6.1.1 Ecosystems of Concern

The LA/LB Harbor contains a variety of marine habitats and marine life (Dailey et al. 1993). These habitats may be subdivided into hard substrate, soft bottom, water column, and specially designated habitats. Hard substrate habitat typically includes riprap (e.g., boulders, concrete rubble), walls, and wood and cement pilings. These different habitats



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support diverse types of biota, which are dominated by invertebrates. Barnacles, mussels, echinoderms, and seaweed dominate hard substrate habitat in LA/LB Harbor, while polychaetes, amphipods, and other burrowing infaunal invertebrates dominate soft bottom substrates. The water column generally is inhabited by fish and various plankton species. A variety of bird species inhabit the West Basin area.

The marine ecosystem in the West Basin is largely nonnatural in that man-made structures, such as the Navy Mole, piers, and even the San Pedro Bay breakwater, have altered the natural environment of this general area for over 50 years. Before human intervention, the natural shoreline, where the LBNSY is presently situated, was a sandy beach. The margins of the West Basin are currently protected from wave action by concrete or wood walls that are lined with large angular rocks. Water depth is 45 feet or greater over most of the West Basin, with maximum depths of about 80 feet near the entrance. Water depth in the West Basin is maintained by occasional dredging to allow use by large ships. There are a small number of intertidal and shallow water habitats associated with the pier pilings and steep rocky faces located along the periphery of the West Basin.

Two distinct bottom habitats occur in the West Basin: the basin area and areas beneath the piers. The bottom substrate in the basin area is generally considered to be soft silty clay comprised mostly of fine grained sediments, with grain sizes ranging to coarse sand near the opening of the basin; there is no rock bottom substrate. The habitats beneath the piers are of three types: soft sediment, shells and debris protruding from the sediment, and columnar pilings extending from the sediments to above the water surface.

## 6.1.2 Risk Assessment Conceptual Site Model

The RACSM focuses on pathways and receptors discussed in both the CLEAN I RI/FS Work Plan (JEG 1993a) and the RAWP (BNI 1995a) for the NAVSTA Long Beach, with particular reference to potential aquatic pathways and receptors associated with the West Basin. Potential contaminant migration and subsequent exposure pathways associated with ecological receptors are shown schematically on Figure 6-1. Primary sources of discharges into West Basin, as identified in Section 2, may have been associated with numerous shore- and ship-based activities such as lead caulking, painting, welding, sand blasting, vehicle and equipment washing, process tank drainage, and boiler, water softener, cooling system, and pipe flushing operations. Storm and sanitary sewer discharge, flushing of dry-docks, accidental leaks or spills, and bilge discharge represent past primary release mechanisms of chemicals into the West Basin waters.

### 6.1.2.1 RECEIVING MEDIA

Following release or discharge into West Basin, chemicals may dissolve in West Basin waters, sorb to suspended particulates in the water column, or settle into bottom sediments. Thus, the three exposure media for primary and secondary receptors identified for the purposes of developing this RACSM are surface waters, suspended particulate matter, and undisturbed bottom sediments. Of these three media, chemicals remaining



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within West Basin are most likely to reside in bottom sediments (see Appendix U of this RI Report for information on chemical fate within West Basin).

### *Surface Water*

Hydrophilic chemicals may become dissolved following discharge to surface waters, may desorb from bottom sediments, or may desorb from suspended sediments into the water column. Chemicals residing in the water column are difficult to measure because surface water represents a highly dynamic system due to oceanographic processes such as currents, flushing, and tidal flux.

Based on information gathered on discharge identification (Section 2.2), current major land- and ship-based Navy discharges to West Basin are controlled. Thus, no discernible point sources are presumed to exist that could lend themselves to quantification of chemical discharge. However, uncontrolled outside sources may exist and cause trace concentrations of chemicals to enter West Basin waters, which would be difficult to measure.

### *Suspended Sediments*

Resuspension of bottom sediments could occur as a result of mechanical actions such as dredging, propeller disturbances, ship movements, and, to an extent, tides or other oceanographic factors. For the purposes of this RI, no distinction was made between dissolved chemicals and those that are sorbed to particulates suspended in the water column.

Although it is likely that sediment resuspension will occur in West Basin, it was deemed that resuspended sediments represent a minor exposure medium when compared to bottom sediments for the following reasons: 1) suspended sediment particulates are generally settleable solids; and 2) even when sediment particles become suspended in the water column, they are difficult to quantify or trace to a specific land or ship use activity (BNI 1995a). Thus, any chemicals possibly adsorbed to disturbed sediments will ultimately reside on the West Basin floor or may be transported out of the West Basin altogether.

### *Undisturbed Bottom Sediments*

Exposure of aquatic biota, especially demersal and benthic-dwelling organisms, may occur as a result of sediment ingestion, e.g., during burrowing, ingesting invertebrates as prey, direct contact, or uptake via the gills. Because they may represent both a sink (reservoir) and potential source of chemical toxicants, the bottom sediments are most representative of the possible exposure pathways for chemicals in the surface waters resulting from discharges or releases to West Basin. Chemicals discharged into West Basin would be expected to adsorb to suspended sediment particles or bottom sediments to some extent. Therefore, undisturbed surficial sediments were emphasized as the medium of principal concern in this ERA.



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### 6.1.2.2 EXPOSURE ROUTES AND RECEPTORS

Sediments in West Basin were considered to be the potentially affected media for this RI. Principal exposure routes to chemicals associated with bottom sediments (the predominant exposure medium), dissolved in surface water, or sorbed on suspended sediment particles include ingestion, dermal absorption, and respiration. Primary receptors of the chemicals include marine invertebrates and fish, both benthic and pelagic. Secondary receptors, defined as predators potentially exposed to chemicals via ingestion of prey species, include predatory wildlife (JEG 1993a), such as carnivorous fish, and marine birds and mammals, consuming fish caught from West Basin. These pathways and potential associated receptors are illustrated in Figure 6-1.

Analyses of sediment and food ingestion pathways provide information about indications of significant contamination. Dermal contact with the water column, respiration of chemicals in the water and sediment, and ingestion of chemicals in the water column were not addressed in this ERA as these tasks were not within the scope of this RI. Dermal contact with sediments by benthic infauna and demersal fish was considered an exposure pathway; this exposure route was indirectly evaluated via benthic community analysis and the harbor seal hazard index calculation based on ingestion of demersal fish.

Based on the ingestion exposure routes, the following general classes of ecological receptors might be potentially exposed to chemicals in West Basin sediments:

- fauna living in contact with the sediments,
- fauna living near the sediments (i.e., organisms beneath piers living on exposed shells),
- fauna eating the sediments, and
- fauna foraging on organisms living in contact with the sediments.

No fish or invertebrates in the West Basin are known to be species of special concern by federal or California state regulatory agencies. However, numerous marine organisms inhabit the West Basin that are similar to those found in LA/LB Harbor (LA/LB Harbor Departments and U.S. ACOE 1990). The following discussion summarizes major taxa of marine wildlife found in the LA/LB Harbor.

#### *Invertebrates*

Soft bottom habitats typically support organisms that burrow into sediment (infauna), such as worms, and those that inhabit the surface of the harbor floor (epifauna), such as sea stars and sea urchins. Diverse benthic species typical of other southern California bays and harbors exist in LA/LB Harbor. Annelid worms dominate soft bottom habitats with other abundant phyla, including mollusks, arthropods, and echinoderms. Annual seasonal changes in community composition of infaunal organisms are expected due to physical and climatic changes.



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***Plankton***

Among the organisms that typically inhabit the water column are plankton, which can be characterized as small floating or weakly swimming animals (zooplankton) or plants (phytoplankton) and larval forms of many fish species (ichthyoplankton). Water column habitat is defined as the area of water from the surface to the harbor bottom. The outer LA/LB Harbor exhibits seasonal phytoplankton patterns with diatoms dominating in the spring and dinoflagellates in the fall. The most dominant phytoplankton species found in LB Harbor include *Chaetoceros* sp., *Asterionella japonica*, and *Skeletonema costatum*, while red tides are mainly attributed to seasonal blooms of *Gonyaulax polyhedra*. Dominant zooplankton organisms include copepods and cladocerans (LA/LB Harbor Departments and U.S. ACOE 1990).

***Fish***

LB Harbor contains a large and diverse population of fish. Both pelagic and demersal fish are well-represented by this population. The distribution and abundance of fish varies by season and location within the harbor. Population peaks generally occur in the spring and early summer, while populations tend to decrease in the late summer and fall. The dominant fish in terms of both abundance and biomass is the white croaker (*Genyonemus lineatus*) (JEG 1993a). Fish species captured in the West Basin using trawls for this RI are listed in Table 4-22.

The productivity of LB Harbor ichthyofauna is estimated at being 1.7 to 1.9 g/m$^2$ dry weight per water surface area per year. Other southern California in-shore and estuarine habitats yield one-fifth to one-half the productivity of LB Harbor. LB Harbor is a nursery for all species of fish that reside there as adults (MEC 1988), as all fish collected as adults have also been collected as larvae.

***Birds***

The LA/LB Harbor habitat is used by both marine and land birds, especially migratory and wintering water birds. The greatest abundance of birds occurs between September and March. MBC documented 85 species of birds (67 water- and 18 land-associated) during a 1983 to 1984 LB Harbor biological survey (MBC 1984). The most abundant bird species were Hermann's gull, California brown pelican, western gull, surf scoter, Brandt's and double-crested cormorants, ring-billed gull, black-bellied plover, and western grebe. This high diversity is presumed to be due to the variety of habitat and food resources within LB Harbor.

A few of the bird species known to reside in or that frequent the LA/LB Harbor are threatened or endangered:

- The California least tern (*Sterna antillarum browni*) is a state and federal endangered species. It migrates from Mexico to coastal southern and Central California in the spring (early April) to breed, and migrates south again in August. The least tern's migration is linked to onshore movement of the northern



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anchovy, topsmelt, and jacksmelt. It nests in coastal areas adjacent to shallow marine and estuarine habitats. Two breeding colonies of California least terns have been reported on Terminal Island about one mile west of the West Basin, and they are known to forage in LB Harbor (LA/LB Harbor Departments and U.S. ACOE 1990).

- The California brown pelican (*Pelecanus occidentalis californicus*) is a state and federal endangered species. It forages along the California coast year round. The highest densities of the pelican occur in the LA/LB Harbor from early July through early November (LA/LB Harbor Departments and U.S. ACOE 1990). It is known to forage in the West Basin.
- The American peregrine falcon (*Falco peregrinus*) is a state and federal threatened species. LB Harbor is part of its habitat range, but it is rarely sighted (LA/LB Harbor Departments and U.S. ACOE 1990) and not known to forage in the West Basin (peregrine falcons feed almost exclusively on other birds).
- The Western snowy plover (*Charadrius alexandrinus nivosus*) is a federal threatened species. It resides on coastal sandy beaches and shores of salt ponds and alkaline lakes. It feeds at the water's edge or among scattered debris on sandy beaches, but sightings of this bird near LB Harbor are sporadic and infrequent (LA/LB Harbor Departments and U.S. ACOE 1990), and no suitable habitat for the species exist in the West Basin.

***Mammals***

The only marine mammals known to use the West Basin, and this only on an occasional basis, are the harbor seal (*Phoca vitulina*) and the California sea lion (*Zalophus californianus*). The Guadalupe fur seal (*Arctocephalus townsendi*) is a state and federally threatened marine mammal which occurs occasionally offshore in southern California, but has never been known to use the West Basin. Whales, including all listed species, are also not known to use the West Basin (JEG 1993a).

## 6.1.3 Ecological Endpoints

Ecological endpoints are receptors and their characteristics that may be adversely affected by environmental stressors. Ecological risk assessment guidance specifies two types of endpoints: assessment and measurement (U.S. EPA 1992c). Assessment endpoints are qualitative or quantitative expressions of environmental values to be protected from site-related stressors. The identification of assessment endpoints at any site is dependent upon several factors, including the species that are considered to be of concern and the stressors that are present within the assessment area. Assessment endpoints link the ERA to the risk management process. Measurement endpoints are characteristics of species or ecosystems that can be evaluated through ecological monitoring or other sampling activities and can be quantitatively or qualitatively related to the assessment endpoints. The measurement endpoints are generally determined for indicator species likely to inhabit



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the areas of investigation. The following sections describe the selection of the assessment endpoints and identification of the measurement endpoints for the West Basin.

### 6.1.3.1 ASSESSMENT ENDPOINTS

Criteria used for the selection of assessment endpoints for West Basin included: 1) regulatory and social significance; 2) ecological relevance; 3) amenability to measurement or prediction; and 4) susceptibility to contaminants (U.S. EPA 1992c). Social significance indicates that the assessment endpoint has value to the public or to regulatory agencies (e.g., population abundance of game animals, viability of endangered species). Ecological relevance refers to the role of the assessment endpoint in the ecosystem or community. Measurability indicates that some measurement exists to allow evaluation of the endpoint. Susceptibility to contaminants indicates the potential for the assessment endpoint to be exposed to and adversely affected by chemicals.

Numerous characteristics of species, communities, and ecosystems in the West Basin could be considered as potential assessment endpoints. For example, species of regulatory or social significance may occur in the AOPECs. These species could be susceptible to COPECs through ingestion of contaminated media or food items, and the COPECs could affect their growth, survival, or reproduction. In terms of ecological relevance, functional groups such as invertebrates could also be considered, since these are important prey organisms for higher trophic levels. These receptors would also be highly susceptible to COPECs in sediments due to their burrowing habits. The criterion of measurability is also an important consideration, since toxicological data for aquatic invertebrates and fish are limited, and assessment endpoints must be carefully selected to allow evaluation.

Taking these considerations into account, several categories of assessment endpoint species were selected as representative of the aquatic ecosystem in West Basin (Table 6-1). Benthic infauna, analyzed as a community because of the large numbers of species and the complexity of the invertebrate ecosystem, and a primary consumer fish species (white croaker) were chosen to signify potential West Basin primary receptors of chemicals. One secondary consumer fish species (California halibut) and a marine mammal (harbor seal) were chosen to represent potential West Basin secondary receptors of chemicals.

No threatened or endangered species, except birds, regularly use the West Basin. Birds were not deemed a receptor for the purposes of this ERA under the premise that no direct link existed between the bird's foraging activity and the surface sediment chemical concentrations. The bird species identified as potentially residing in or frequenting West Basin feed primarily at the surface of the water column, and thus are not likely to prey on demersal fish, which are designated as primary receptors for the purpose of this ERA.

A systematic method was used to identify fish assessment endpoint species. First, fish species likely to be found in West Basin were divided into major taxonomic groups. The relative abundance of each species likely to occur at the site and thus be caught by predators was evaluated. Only species known to be abundant or common in West Basin



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were considered for selection as assessment endpoint species. Second, each taxonomic group was divided into functional groups by combining species with similar potential for exposure to sediment COPECs (e.g., bottom feeders, pelagic species). This was accomplished by defining the trophic level, the feeding habitat, and the nonfeeding habitat of each fish species expected to occur in West Basin. The trophic levels were generally defined as herbivore, carnivore, omnivore, and detritivore. The feeding habitat and nonfeeding habitat types included bottom sediment or water column. Each of the feeding and nonfeeding habitats may be further subdivided to represent different niches within each habitat.

In order to limit the number of functional groups for consideration, only those groups presented in Table 6-1 were selected for further analyses. These groups represent three aquatic assessment endpoint species groups: invertebrates, fish, and mammalian carnivore. For purposes of this ERA, each of the species in a functional group was considered representative of others in the same group with regard to potential exposure to COPECs and toxicological effects.

Assessment endpoints for the West Basin ERA include the health and viability of the benthic invertebrate community, the fish community, and the mammalian carnivores. These assessment endpoints will be evaluated through the measurement endpoints described below.

### 6.1.3.2 MEASUREMENT ENDPOINTS

Specific measurement endpoints were based on the ecological assessment endpoints discussed above, with the emphasis placed consistently on measurement of indicators relating to sediment quality. Selection criteria for measurement endpoints (indicators) were also based on U.S. EPA's Framework documents (U.S. EPA 1992c, 1992d), and included: 1) relevance to assessment endpoints; 2) ability to measure response within the context of natural (e.g., biological) variability; 3) early warning ability; 4) stress-specificity, ease, or economy of measurement; 5) level of documentation; and 6) predictability.

Measurement endpoints used to assess the health of the benthic invertebrates included community analysis, bioassays, and chemical measurements. Benthic invertebrates were identified and counted, providing for an assessment of the balanced and healthy nature of the community composition. The bioassays provided a direct measurement of acute and chronic toxicity from surface sediment and surface sediment pore water using survival, development, and reburial as acute endpoints and growth as a chronic endpoint. Surface sediment chemical concentrations provided a direct measurement of chemical loadings in the sediment. Direct measurements of the potential for bioaccumulation from sediment were made using clam tissue chemical concentrations.

The fish community was assessed with fish tissue chemical concentrations as measurement endpoints. Fillets and whole-body homogenates of white croaker and California halibut



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were analyzed for chemical residue. California halibut bile was also analyzed for residues for PAH compounds.

Mammalian carnivores, representing higher order predators, were assessed with an HQ calculation based on dose and toxicity benchmark.

## 6.2 EXPOSURE ASSESSMENT

The exposure assessment consisted of four components: 1) identifying and evaluating potential sources of chemicals discharged into West Basin waters; 2) defining nature and extent of chemical distribution and COPECs; 3) evaluating sediment fate and transport; and 4) developing exposure scenarios for bioaccumulation and food chain transfer. This section focuses on the development of an exposure profile for an indicator predator species (harbor seal). The source identification and nature and extent of chemical distribution within West Basin were discussed in Section 2 and Section 4 of this RI Report, respectively. COPECs identified in sediments at each SEZ are listed in Table 4-49 and discussed in Section 4. COPECs identified in fish tissue that were used in the harbor seal hazard quotient calculations were also discussed in Section 4.

### 6.2.1 Fate and Transport of West Basin COPECs

This section contains the conclusions of the West Basin COPEC fate and transport analysis contained in Appendix U. The qualitative analysis utilizes physical and chemical parameters commonly used to evaluate transport and fate processes. The parameters include volatilization coefficients (Henry's Law Constant, vapor pressure), octanol-water partition coefficients, sediment-water partition coefficients, water solubility, and half-lives in surface water.

The predominant fate of PAHs, PCBs, organochlorine pesticides, organotins, and metals released to a marine environment such as West Basin involves adsorption to both suspended particulate and bed sediments. Additionally, PAHs, PCBs (especially the heavier chlorinated compounds [5 or more chlorine atoms]), and organochlorine pesticides will degrade via photolysis, and metal ions will form complexes with both organic and inorganic ligands. All four groups of chemicals will bioaccumulate in aquatic organisms.

Chemical-sorbed particles within the water column will eventually deposit into bed sediments, which is the ultimate fate of West Basin COPECs. Once within the bed sediments, the organic compounds (including organotins) will, over time, biodegrade. Metals will either remain bound to the bed sediments or remobilize into the marine ecosystem through microbial processes. As sorbed to sediment particles, West Basin COPECs may be resuspended in the water column and transported via currents to other areas of West Basin.



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### 6.2.2 Quantification of Exposure

The exposure route for benthic invertebrates was deemed to be dermal contact with sediments, and ingestion of sediment and smaller sediment dwelling organisms, assuming the greatest amount of exposure to sediment occurs at a depth of not greater than 10 cm below the surface of the sediments. The wildlife exposure routes included: ingestion of sediment dwelling invertebrates and incidental ingestion of sediment by white croaker; ingestion of sediment dwelling invertebrates and incidental ingestion of sediment, as well as ingestion of smaller fish by California halibut; and ingestion of white croaker by the harbor seal. These ingestion routes were based upon known foraging behavior of each receptor. The exposure scenarios for ecological receptors identified within West Basin are presented in Table 6-2.

The exposure medium used in the HQ calculation portion of the ecological investigation was white croaker, which were captured in the West Basin by trawl nets. Whole body and fillet tissue analyses were performed for each sample, but only whole body results were used because it was assumed that harbor seals consume the entire fish. The fish COPEC list consisted of only those chemicals (a total of seven) statistically significantly greater in concentration in the West Basin than in the reference stations and those chemicals occurring in West Basin samples and not in reference station samples. Quantitative risk calculations were not made for the harbor seal feeding on fish from the reference area on the basis of the premise that the risk to the harbor seal would be lower when exposed to chemicals in whole body white croaker ingested from the reference stations than from the West Basin. This premise is supported by the findings that concentrations of the fish COPECs are statistically significantly lower in reference station fish than in West Basin fish. California halibut were not used in this analysis because the concentrations of chemicals measured in California halibut tissue from the West Basin were not statistically different than reference station values for any fish COPEC.

Consistent with U.S. EPA guidance for risk assessment (U.S. EPA 1989b), the 95% UCL of the arithmetic mean concentration was used as an estimate of the average concentration in the fish tissue for the purposes of estimating exposure and risk. The exposure of the harbor seal to a fish COPEC from ingestion was calculated based on the following assumptions:

- harbor seals consume only white croaker,
- harbor seal body weight is 84.6 kg (U.S. EPA 1993c), and
- harbor seal consumption rate of white croaker is 5.9 kg/day (consumption of 0.07 kg of fish per kg of harbor seal body weight per day [U.S. EPA 1993c]).

## 6.3 CHARACTERIZATION OF ECOLOGICAL EFFECTS

This section characterizes ecological effects in two ways: 1) it derives toxicological benchmark values for each fish COPEC in support of the harbor seal hazard quotient calculations; and 2) it evaluates potential surface sediment toxicity by using West Basin-



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specific surface sediment bioassay and benthic infaunal data, and assesses bioaccumulation potential of sediment COPECs by using fish and clam tissue chemistry data, in support of the preponderance-of-evidence approach. Section 6.3 concludes with a discussion of the sediment COPECs as they relate to West Basin-specific biological findings.

### 6.3.1 Hazard Quotient Approach

The toxicological evaluation involved characterizing the inherent toxicity of the fish COPECs and establishing toxicity benchmarks (TBs) for each fish COPEC for the harbor seal. The TB is a concentration or dose representative of the expected "no observed adverse effect level" (NOAEL) for any given receptor and fish COPEC. TBs were selected from published dose response studies, which typically involve the use of standard laboratory or domestic test species of animals. Extrapolation of these benchmarks to wild populations is uncertain; thus, a conservative approach was taken to avoid underestimating potential toxicity. These uncertainties and their relevance to the ERA are discussed further in this section.

Each COPEC being evaluated in the risk assessment for the harbor seal, the TB selected for evaluation was termed a Toxicity Reference Value (TRV). Potential impacts to the harbor seal at estimated exposure doses were evaluated using published toxicological data for mammalian species (Opresko et al. 1995). From these data, a test species NOAEL was selected as a TB for each fish COPEC. Toxicity data reported as dietary concentration (mg/kg in food) were converted to a dose (i.e., mg/kg-body weight as an average daily intake) using data and weight adjustments (Opresko et al. 1995) presented in the source study or from information on average ingestion rates and body weights of test animals (see Table 6-3). TBs were drawn from studies that considered reproductive and developmental effects, or other critical effects indicative of overt impacts to individual organisms that may affect population size. Studies incorporating chronic exposure durations, multiple exposure levels, and statistical evaluation of test results were preferred.

Within any group of animal species, the major source of variation in sensitivity to toxic effects of contaminants is varying body size (Opresko et al. 1995). In general, smaller organisms are more tolerant of toxins as a result of their higher rate of metabolism and greater detoxification capability. To account for this source of variation in sensitivity, the TBs were adjusted to estimate species-specific wildlife TRVs using the approach described by Opresko et al. (1995). Dose equivalency for organisms of varying body sizes was adjusted for differences in body size between test species and endpoint species by dividing the body weight of the test species by the body weight of the endpoint species, taking the one-third power of the result, and multiplying by the known toxicity benchmark (NOAEL) of the test species. The resulting TRVs were used to calculate an HQ for each COPEC.

The TRVs for the harbor seal are listed in Table 6-3. The TRVs are presented as dose estimates, in units of mg/kg-body weight/day, to allow direct comparison with the



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exposure estimates. From examination of the values shown in Table 6-3, it can be seen that TRVs vary greatly among fish COPECs.

Dibutyltin was not evaluated because of the absence of a TRV. It is probably less toxic than tributyltin (SWRCB 1988), which was reported to be present in the fish tissues at higher concentrations than dibutyltin.

## 6.3.2 Preponderance-of-Evidence Approach

Sediment bioassay, benthic community analysis, and bioaccumulation data were used to evaluate chemical concentrations of surface sediments in the preponderance-of-evidence approach discussed herein. This approach involved development of an evaluation matrix that summarized results from all project data sets (Table 4-51). The evaluation matrix was used to score and rank SEZs, with the intent of classifying them as either an AOPEC or a nonAOPEC. This section discusses the results of statistical comparisons used to identify patterns and trends between bioassay, benthic infaunal, and clam tissue chemistry data with surface sediment chemistry data.

### 6.3.2.1 BIOASSAY

The results of solid phase and pore water bioassay tests for each SEZ were compared statistically with reference values (Section 4). If the bioassay results were judged to implicate a sediment COPEC in the observed effect, the SEZ was considered to pose a potential hazard to the intact ecosystem in that SEZ. Correlation analysis, principal components analysis, or multiple regression were used to investigate patterns between the bioassay and sediment chemistry data. If the toxicity results can be associated with physical or chemical data patterns, a distributional or toxilogical pattern may exist.

Results of the toxicity bioassays for West Basin showed the echinoderm larvae as most sensitive (30 of 50 stations exhibiting a response) and the polychaetes as least sensitive (1 of 52 stations exhibiting a response). The amphipod sensitivity was intermediate to the echinoderm and polychaete (6 of 52 stations exhibiting a response). Toxicity test results were often contradictory in that patterns between toxicity and sediment chemistry and physical properties could not be established. Results of the echinoderm survival and development tests were especially paradoxical.

The environment beneath the piers appears to be different than in the basin and at reference stations. Sulfide levels were several times higher in the anaerobic environment beneath the piers and most TOC levels at most of the pier stations were elevated (Section 4). The beneath-pier pore water used in bioassay tests had greater ammonia and sulfide concentrations than any other samples (Appendix M), though there were no clear patterns of these concentrations with bioassay test results. The only clear trend discernible from the data was that pore water conditions beneath the piers appeared to be detrimental to echinoderm development. Conversely, polychaetes exhibited greater growth, for samples collected from beneath the piers, than for reference stations, which indicates that beneath-



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pier conditions may not be as toxic as an examination of chemistry or echinoderm bioassay results might suggest.

### *Correlation Analysis*

To investigate patterns between toxicity and sediment chemistry and physical properties, correlation analyses were performed measuring the intensity of association between sediment chemistry and physical traits, and bioassay results. All detected chemicals were used in the analysis, regardless of sediment COPEC status of the analyte. Minimum threshold for the correlations was set at r = 0.40; data were evaluated as both untransformed and log-transformed, and separated by pier samples and samples from the remainder of West Basin for different permutations (Section 4).

There was no clear trend to the results of these analyses (Table 6-4). A few significant correlations were found, but these appear to be nonsensical (i.e., a positive relationship between echinoderm survival and acenaphthene concentration [r = 1.0]). This type of correlation derives from the low frequency of detection of acenaphthene and has no biological meaning. Results of correlation analyses must be interpreted with respect to the frequency of detection of each analyte. Also, correlations among the various bioassay tests showed a significant positive correlation, such as between echinoderm survival and echinoderm development (r = 0.65) and amphipod survival and amphipod reburial (r = 0.94). These expected correlations are due to the dependence of one endpoint on the performance of the other endpoint for any bioassay test species. Other significant correlations between the bioassay tests were negative (e.g., amphipod survival and polychaete growth [r = -0.62) and amphipod reburial and polychaete growth [r = -0.51]), which indicates that the tests themselves were possibly responding to different stressors. The acute echinoderm tests, run for a duration of 48 hours in this study, appeared to reveal little about ecological effects of the West Basin sediments.

The relationship between pier station sediments and adverse biological response is strong (i.e., 100 percent of the pier stations had at least one bioassay "hit" compared to 58 percent of the basin stations). The pier stations were characterized by sulfide levels approximately 40 times greater than the basin stations. These high sulfide levels infer anaerobic conditions. This distinguishing feature correlated well with other characteristics of the pier sediments, such as concentrations of some PAHs and gravel size particles (shell hash). Sulfide correlated weakly with most concentrations of metals and other PAHs, clay size particles, and TOC. Because of these complex correlations, it is difficult to identify the most important variable associated with any bioassay response. Sulfide levels correlated well with poor amphipod performance, but also correlated well with enhanced polychaete performance.

### *Multivariate Analysis*

PCA was used to describe chemical and physical variables that displayed similar variance patterns (Appendix S). The results of the PCA suggest five primary factors: 1) several



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HPAH compounds, 2) Aroclor 1260, copper, lead, and mercury; 3) cadmium, DDE, and TOC; 4) beryllium, nickel, and fines; and 5) sulfides.

Predictably, the PCA recognized the HPAH compounds as a similar unit. However, TOC and fines were recognized as separate factors despite a good correlation between them (r = 0.70). Sulfide also, predictably, comprised its own factor. Elements in each PCA factor corresponded to the condition for that factor at each individual sediment sampling station (e.g., the PCA algorithm accounts for the sediment chemical concentrations and variance for PCA factor number two [Aroclor 1260, copper, lead, and mercury] and calculates a single value for each sampling station which accounts for those chemicals). This value was used in regression analysis to determine the significance of those chemicals, at the concentrations detected at each station in relation to all other stations, on West Basin biological systems.

Stepwise multiple regression was used to evaluate the predictive relationship between the bioassay results and the PCA factors (Appendix S). As might be expected, the multiple regression equation for echinoderm normal development included all of the five primary PCA factors, except the HPAH factor. This appears to agree with the bioassay results that did not exhibit a clear distributional pattern, and may have been sensitive to several stress variables.

Sulfide was either the most important factor or second most important factor of the multiple regression equation for all bioassay endpoints. Amphipod survival and reburial, which showed a strong negative correlation with sulfide, also had the sulfide factor as the most important variable of the multiple regression equation.

The PCA and multiple regression analyses appeared to show results that displayed similar patterns regarding bioassay performance and sediment chemical and physical traits. Bioassay performance was clearly related to pier station sediment chemistry, as represented primarily by sulfide, but also PAHs. Distinguishing any individual stress variable that was controlling the response of any bioassay endpoint was not readily possible with these data.

### *Effects Range Analysis*

Table 6-5 presents the mean and 95% UCL chemical concentrations at different SEZs in relation to toxicity test results. Also shown are the highest individual chemical concentrations for the basin stations which did not show a toxicity test "hit" for any of the six bioassays, and for pier stations which only showed a toxicity test "hit" for the pore water echinoderm development bioassay. The ER-L and ER-M levels are also shown for each chemical for comparison purposes. Six chemicals (dibutyltin, monobutyltin, acenaphthene, fluorene, methylnaphthalenes, and phenol) were either not detected in the basin stations or detected at too few stations to produce a no "hit" result.

Mean chemical concentrations from only three SEZs (F, G, and H) were found to exceed the no "hit" chemical concentration (Table 6-5). For SEZ F, the only chemical concentrations which exceeded the no "hit" value were copper, lead, mercury, zinc,



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benzo(b)fluoranthene, Aroclor 1260, and di-n-octylphthalate. However, mean bioassay results showed that there was no adverse toxicity response at SEZ F.

In SEZ G, the only chemical concentrations which exceeded the no "hit" value were di-n-octylphthalate and total sulfide. These data indicate that either di-n-octylphthalate or total sulfide may be related to the toxicity response observed in the echinoderm development test for SEZ G.

SEZ H had 17 chemicals with concentrations which exceeded the no "hit" value. A review of the maximum concentrations associated with toxicity responses indicates that the echinoderm development toxicity response may be related to one or more of these 17 chemical compounds.

The mean concentrations of benzo(a)anthracene, dibenzo(a,h)anthracene, acenaphthylene, and Aroclor 1260 at SEZ B, the only sediment COPECs at this AOPEC, were less than the highest concentrations of these compounds associated with no toxicity responses. It appears unlikely that the existing concentrations of benzo(a)anthracene, dibenzo(a,h)anthracene, acenaphthylene, and Aroclor 1260 at SEZ B are related to the toxicity response observed in the echinoderm normal development test.

### 6.3.2.2 BENTHIC COMMUNITY

The results of the benthic infaunal community analysis for each SEZ were compared with the results of reference stations and results of other applicable investigations from the literature. If the infaunal results were statistically significantly different than the reference stations in a manner that adversely effected the ecosystem, the SEZ was considered to contain adverse benthic impacts.

There is a high degree of variability between the piers and basin stations in the results of the benthic community analysis. Among the West Basin stations, the pier stations had the greatest species diversity, number of individuals, and biomass. Even the three separate samples (Stations 44, 45, and 46) collected at intervals beneath a single pier (Pier 12) were only about 50 percent similar in species composition.

Infaunal communities are generally considered good indicators of habitat quality because they respond to chemical inputs as well as to cessation of inputs to their environment on relatively short time scales (Canfield et al. 1994, Chapman et al. 1991, Ferraro et al. 1991). Community interactions (e.g., predation and competition) result in variability over time and from place to place, but, in general, the condition of *in situ* organisms can be the primary determination in evaluating suspected toxicological effects on an ecosystem.

The benthic community at the basin stations appeared healthy and diverse. Many species were observed that are considered indicators of nonpolluted conditions. Station 9 (SEZ C) had the lowest values for some infaunal measures, but this station also had acceptable results for all of the bioassay tests, and it did not have any chemical occurrence or concentration that might result in a degraded community. This variability can be



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attributed to variations typically encountered during the sampling of any media such as sediments at West Basin and at reference stations.

The beneath-pier benthic invertebrate community appeared to be more complex because three primary types of organisms occurred: 1) those attached to pier pilings, 2) those living at the sediment surface on protruding objects such as shells, and 3) those living in contact with surface sediments. The organisms attached to pilings typically modify the surface sediment chemistry when they detach and sink to the bottom and decay. These organisms were not directly studied for this risk assessment and will not be discussed further, except that they are probably the source of much of the shell hash material observed in the sediments beneath piers.

Studies have shown a measurable response by infaunal organisms along gradients of chemicals (Ferraro et al. 1991, Lenihan 1992). There appeared to be a gradient of chemical concentrations from beneath-pier surface sediment stations to stations between piers (SEZs E and F) for many sediment COPECs. There was no gradient of benthic infauna response from beneath-pier stations to stations between piers as demonstrated by the benthic infauna cluster analysis, in which the pier stations formed their own unique grouping while the between-pier stations grouped with the basin and reference stations (see Appendix N). The benthic infaunal community beneath the piers appeared to be responding to pier-related conditions that likely had a greater effect than simply sediment chemical concentration. This is not to say that conditions under all piers are identical, however.

The pier stations with the fewest sediment COPECs and lowest chemical concentrations were Stations 42 (Pier 16, the pier nearest the entrance to the West Basin) and 47 (Pier 9, a more recently constructed pier in the northwest area of the West Basin). Station 42, with 106 taxa, had the highest number of benthic infauna taxa in the West Basin, and Station 47 had the third highest with 91 taxa. Tidal flushing and lower chemical concentrations appear to slightly improve benthic infauna species diversity beneath these two piers.

The benthic communities in the West Basin do not appear to be at risk from chemical concentrations found in the surface sediments. Typically, harbor environments are highly artificial and are not representative of pristine conditions, but since abatement and control of chemical releases into LA/LB Harbor and the West Basin, the existing benthic community has reached a level of 'semihealthy' composition (Reish et al. 1980). There is no indication that the benthic community in the West Basin is at risk from existing chemical concentrations in surface sediments of the basin; a functional infaunal community exists even at stations with the highest sediment chemical concentrations.

The benthic community beneath the piers appears to be quite different than in the basin and at the reference stations, possibly as a result of exposure to a chemical or combination of chemicals in sediments. However, it is certain that the physical differences between the benthic habitat of the basin and the area beneath the piers has caused much of the differences between the benthic communities. The laboratory analyses performed as part



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of this RI (toxicity, bioaccumulation, and benthic infaunal community assessment), however, have indicated that the benthic community is healthy and not at risk from possible chemical effects. These results correspond well with the findings of Reish et al. (1980), who demonstrated significant improvements in the benthic infauna of the LA/LB Harbor and West Basin since 1962. Thus, the benthic community of West Basin appears to have improved over time as discharge of chemicals into basin waters has been eliminated or is being controlled.

The fuel pier (Pier 12), for which construction began in 1984 following dredging of the immediate area, shows a benthic invertebrate community that is similar to the other pier stations. This suggests that invertebrate recruitment has been active in the area beneath the fuel pier. Approximately 10 years after sediment dredging, the benthic community beneath the fuel pier appears to be similar to the benthic community beneath other piers where dredging has not occurred for at least several decades.

The sediments beneath the piers do not appear to be a threat to other areas of the West Basin or LA/LB Harbor as long as they remain undisturbed; there were no plans known at the time of writing this RI Report to disturb the sediments beneath the piers. There was no discernible relationship between infaunal species observed at between-pier and beneath-pier stations to indicate that the beneath-pier conditions, including chemical concentrations, were having an effect on any other nearby station (i.e., the sediments beneath the piers are not acting as a source of chemicals). Also, the hard substrate epifaunal taxa living just above the beneath-pier sediments were thriving, so there appears to be no transport of any detrimental chemicals at the sediment-water interface.

There are no known ARARs or defined cleanup levels for sediments in LA/LB Harbor and this RI was unable to establish any specific sediment quality guidelines. Treatment of sediments beneath the piers, including removal or capping, is unlikely to result in any different benthic infaunal community than the one now present because of the unique conditions found beneath these piers.

### *Correlation Analysis*

Correlation of all chemical and physical analytes with seven benthic infaunal measurement indices (dominance, evenness, Margalef diversity, number of taxa, Shannon-Wiener diversity, total biomass, and total abundance) produced both positive and negative correlations (Table 6-4). Even if the number of actual chemical detections is taken into account and individual stations are separated according to pier and general harbor area stations, the correlation results were not very informative.

The correlation analysis shown in Table 6-4 suggests some strong correlations between the benthic infaunal indices and some chemical compounds. However, these apparent correlations are artifacts of the analysis because of very few data values. Chemical compounds such as LPAHs, lindane, phenol, and bis(2-ethylhexyl)phthalate were detected infrequently in the West Basin and show an artificial correlation with the benthic infaunal indices.



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A strong correlation was noted between the gravel fraction of the sediments and five of the seven infaunal indices. This correlation is probably due to the response of the benthic community to the presence of shell hash in the surface sediment underneath piers, which was reported by the analytical laboratory as gravel fraction sediments. Other correlations were present between the infaunal indices and parameters that appeared to be strongly associated with the sediments beneath the piers, such as some HPAH compounds (e.g., pyrene) and total sulfide.

***Multivariate Analysis***

PCA analysis and stepwise multiple regression were used to evaluate the relationship between benthic infauna community indices and groups of chemical and physical parameters displaying similar variance patterns. This procedure was similar to the one used with the bioassay results and groups of chemical and physical parameters.

The results of the PCA (Appendix S) show five primary groups of variables, or factors: 1) several HPAH compounds; 2) Aroclor 1260, copper, lead, and mercury; 3) cadmium, DDE, and TOC; 4) beryllium, nickel, and fines; and 5) total sulfide. PCA assigns scores for each of these factors by station, which were used as variables for the stepwise multiple regression.

Similar to the PCA/stepwise multiple regression results for toxicity, total sulfide was shown as a primary factor in the multiple regression equation for the benthic infaunal indices. Total sulfide was the primary variable for abundance, number of taxa, biomass, and Margalef's diversity. Because these benthic infaunal indices generally increased at pier stations, it is not possible to discern whether the relationship between the indices and total sulfide is genuine or if the relationship is due to the physical presence of the pier.

Although the PCA analysis identified several unique factors or groups of variables, the stepwise multiple regression only showed total sulfide as a strong contributor to patterns of benthic infaunal indices. The PCA/multiple regression analysis, therefore, shows a similar finding as the correlation analysis.

### 6.3.2.3 BIOACCUMULATION INVESTIGATIONS

In addition to toxicity tests and the benthic infauna community assessment, several other ecological studies were performed to assess bioaccumulation potential. These studies involved analyses of fish tissue, fish bile, and clams, as discussed below.

***Fish Tissue***

In general, the fish population in the West Basin appears robust. Several different types of fish were captured during project trawls and the fish appeared in similarly good condition in the West Basin and in the reference stations (Tables 4-21 and 4-22). Specific tissue chemical analyses are reported below.

**California Halibut.** The California halibut tissue chemical concentrations were not statistically significantly different between fish in the West Basin and at the reference



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stations. There were no statistically significant differences between the two locations for any chemical analyte in either fillet or whole body samples. The West Basin samples contained three analytes that were not found in corresponding reference fish (tributyltin and dibutyltin for fillets, and selenium for whole body), but the concentrations were very low and each analyte occurred in only a single sample. Chemical concentrations found in California halibut from several other locations within southern California are provided in Appendix E. The ranges found in California halibut from the West Basin, from the reference stations, and from other California harbors are similar.

California halibut are occasional residents in the West Basin. Appendix V contains a synopsis of the life history and biology of California halibut. Concentrations of analytes measured in California halibut from the West Basin indicate no ecological concern at the population or community level.

**White Croaker.** The statistical results indicate significant differences for some analytes in white croaker between the West Basin and reference station values. Appendix V contains a synopsis of the life history and biology of white croaker. White croaker are most likely year-round residents of the West Basin, and it was by far the most common fish caught during trawls for this study (almost 600 white croaker were caught in 27 trawl attempts in the West Basin). Considering individual analytes, white croaker often have higher concentrations than associated with California halibut, but the trend is not comprehensive, as demonstrated in both West Basin and reference station values (Section 4).

Arsenic and mercury in fillets, and mercury in whole body West Basin samples were within or below the range of values commonly measured in southern California harbors, as shown in Appendix E. Concentrations of copper and zinc (both fillet and whole body), lead (fillet only), and arsenic and chromium (whole body only) in West Basin samples were above the commonly measured ranges. This trend in metals concentrations as compared to other southern California harbors was also true for white croaker from the reference stations. The coefficient of variation for the various analytes commonly exceeded 75 percent, and there was no clear pattern to determine the locations where the fish were swimming or feeding and thus obtaining elevated chemical levels.

The analytes which were statistically greater in West Basin fillets or whole body than the reference station values were endosulfan II, dibutyltin, tributyltin, arsenic, copper, and mercury. Furthermore, based on the number of fish captured (Table 4-21) and their external physical appearances (Table 4-22), there was no evidence of the elevated levels of chemicals having any detrimental effects on the white croaker population in the West Basin.

### *Fish Bile*

Little historical data are available for levels of PAH metabolites in finfish bile. Typical total PAH metabolite levels in the bile of fish from urban areas (e.g., Puget Sound) have generally been reported to be significantly above 100 microgram per gram (µg/g), whereas for fish from nonurban regions, the levels are typically less than 100 µg/g when determined



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based on naphthalene (Krahn et al. 1986b, 1986c, 1987). Hellou and Payne (1987) found that residence time of naphthyl glucuronide-type metabolites within trout which had been injected with No. 2 fuel oil was approximately 6 days, and that residence time decreased as water temperature increased. Dixit and Anderson (1977) reported that total naphthalenes have been shown to bioaccumulate in gall bladder bile by a factor of 1,000 or more in fish exposed to water-soluble fractions of fuel oil for a few days. In 1986, Krahn et al. (1986c) reported total PAH metabolite levels averaging 200 µg/g (based on naphthalene) and 210 µg/g (based on phenanthrene) in the bile of white sturgeon caught 57 miles downstream of an oil spill in the Columbia River, five days after the spill. Fish caught in a relatively nonurban location 13 miles upstream had total PAH metabolite levels in the bile ranging from 17 to 32 µg/g when determined based on naphthalene, and 9.6 to 9.7 µg/g when determined based on phenanthrene. Krahn et al. (1987) reported total PAH metabolite levels ranging from 1.3 to 21 µg/g in English sole collected from Puget Sound when determined based on benzo(a)pyrene. However, significantly higher concentrations would likely have been determined if these analyses had been performed at the naphthalene or phenanthrene wavelength pairs. In 1986, Krahn et al. (1986c) reported on the analysis of a set of fish bile samples that had been analyzed at each of the benzo(a)pyrene, naphthalene, or phenanthrene wavelength pairs; the concentrations determined based on naphthalene and phenanthrene were approximately 10 times greater than the concentrations determined based on benzo(a)pyrene.

When comparing the data generated in this RI Report to data reported by Krahn et al., the measured levels of PAH metabolites in the bile of several of the fish appear to be similar to levels from an urban/industrial or contaminated region, while other samples had levels that were closer to what could be expected for regions remote from industrialized areas. The relationship between the naphthalene, phenanthrene, and benzo(a)pyrene metabolite levels were comparable to what have been reported by Krahn et al. in studies where two or three parameters were determined. However, it must be pointed out that PAH metabolite levels may vary significantly from one species of fish to another, even if they are from the same environment, and different species of fish were evaluated as part of this RI than the Krahn studies. Additionally, different analytical detectors, and slightly different detector conditions, were used which can yield data differences. Furthermore, the sample-specific metabolite composition affects the apparent total metabolite concentration because of the significant analytical detector response differences for different metabolites. Total PAH metabolite data should therefore not be considered absolute, but only a component of a data set in an environmental assessment.

ANOVA results indicated no statistically significant difference between the bile content of West Basin and reference station California halibut for naphthalene, phenanthrene, pyrene or benzo(a)pyrene. Although correlations between concentrations of aromatic hydrocarbons in sediments and biological response in fish have been reported (Malins et al. 1987), it was impractical to conduct a correlation of sediment PAH chemistry and California halibut bile PAH concentrations for this RI. The sediment chemistry analyses for portions of West Basin, particularly beneath the piers, have shown elevated PAH



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levels. However, the California halibut, the fish species captured for bile analyses as part of this RI, is a wide-ranging tertiary carnivore (Dailey et al. 1993), and there does not appear to be a direct link between chemical concentrations in these fish to chemical concentrations in sediments beneath the piers. Also, it was impossible to relate bile chemical concentrations with California halibut fillet tissue chemistry (nine fish had chemical analyses performed for both bile and fillet) because the fillet tissue chemistry concentrations were all less than reporting limit for naphthalene, phenanthrene, pyrene, and benzo(a)pyrene.

It is not practical, from existing data, to relate bile chemistry results from this study to existing or possible future health risks to the California halibut population using LA/LB Harbor. The California halibut typically use the West Basin only seasonally, and the amount of time an individual fish might spend within the West Basin is not known. Judging from the condition and number of California halibut captured during this RI, the fish do not appear to have been detrimentally impacted by their use of the West Basin.

***Clam***

The bioaccumulation tests were intended to provide information about the availability of chemicals in surface sediments to benthic organisms, and possibly for use to calculate bioaccumulation factors for estimating chemical uptake by benthic organisms. Bivalve mollusks do not rapidly metabolize PAHs and can be considered as acceptable indicators of chemicals in the marine environment. Gossett (1983) reported that mussel tissue PAH concentration was ten-times the concentration in nearby sediments.

Five basin stations which were selected for the laboratory bioaccumulation tests (Stations 6, 8, 14, 24, 29) all showed relatively low concentrations of chemicals in the sediment samples.

Correlations of surface sediment chemistry with the associated clam tissue analyses for detected chemicals showed no remarkable relationships. The correlation coefficients for compounds detected in clam tissue (r values) were: 0.14 for DDE, -0.40 for arsenic, 0.00 for chromium, 0.48 for copper, 0.31 for mercury, 0.26 for zinc, 0.10 for pyrene, and -0.07 for tributyltin. Thallium was not detected in sediments and therefore was not included in the correlation analysis. Clam tissue chemical concentrations appeared not to be dependent upon sediment chemical concentrations found in the West Basin sediments. The one exception may be pyrene which was only found in clams exposed to sediments from beneath piers, the concentrations of which ranged up to 30 µg/kg (Station 49). The sediments beneath the piers had the greatest concentrations of pyrene: 870 µg/kg for Station 51, 2,800 µg/kg for Station 43, and 2,000 µg/kg for Station 49. However, there was no correlation between these sediment concentrations and the clam tissue concentrations. Also, several other PAH compounds were found at elevated levels in the sediments from beneath the piers, yet none were discovered at detectable levels in the clam tissues. Clam tissue concentrations of chemicals have been shown to vary greatly throughout the year regardless of the surrounding sediment concentration (NOAA 1991b)



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Pyrene concentrations in clam tissue (20 µg/kg at Stations 43 and 51, and 30 µg/kg at Station 49) at the end of the 28-day test were not exceptionally high compared to findings in other harbors. NOAA (1991b) compiled data for bivalves from several studies and reported average values: 1.25 mg/kg for arsenic, 0.08 mg/kg for chromium, 0.63 mg/kg for copper, 0.02 mg/kg for mercury, and 8.91 mg/kg for zinc in Los Angeles Harbor; 1.54 µg/kg for tributyltin at San Pedro Fishing Pier; and 65.0, 84.4, and 34.0 µg/kg for pyrene in the entire United States (reported as HPAH), West Coast, and the Bight, respectively.

The fact that the clam tissue data did not correlate with associated sediment chemical concentrations may indicate that the chemical concentrations and forms found in the West Basin sediments are not particularly bioavailable.

### 6.3.3 Discussion of Sediment COPECs

An evaluation of the toxicological effects, concentration, and extent of distribution was made for each sediment COPEC found in each SEZ. If a sediment COPEC was found to have an adverse effect on the ecosystem, that particular SEZ was considered to contain adverse concentrations of chemicals.

The following section contains a discussion of sediment COPECs as they relate to specific findings from the biological studies discussed in Section 6.3.2.

#### 6.3.3.1 METALS

Seven metals were identified as sediment COPECs: arsenic, beryllium, chromium, copper, lead, mercury, and zinc in SEZ F; and chromium, copper, lead, and zinc in SEZ H. Pier stations in SEZ H and between-pier stations in SEZ F are located in close proximity to each other. Arsenic and beryllium at SEZ F were found at concentrations below the maximum concentration associated with a toxicity response, and these two metals probably do not occur at detrimental levels in the West Basin sediments.

Bioassay results were quite variable in SEZ F, with Stations 10 and 21 showing healthy results and only Station 17 with significantly lower results. SEZ H stations also performed variably under the bioassays and there was no clear trend. Bioassay and benthic infauna community results were as variable for stations with low metals concentrations as stations with high metals concentrations, and there were no statistically significant correlations of metal concentrations (total or extractable) with any bioassay or benthic infauna result which could explain the findings. The benthic infaunal community beneath the piers performed very well when considering number of taxa, number of individuals, and biomass.

Sediment metal concentrations have been considered in light of the SEM/AVS ratio (Allen 1993, Allen et al. 1993). In the case of SEZ F and SEZ H, the average sediment sulfide levels were drastically different, 157 mg/kg and 4,050 mg/kg, respectively. The low SEM/AVS ratio could account for the apparent noneffect of metals under the piers, but it is less useful in understanding the results from SEZ F.



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There was a relatively high accumulation of clay size particles in sediments between the piers, such as SEZ F. Negatively charged exchange sites on the surface of clay particles have been shown to adsorb cationic metals (Woodward et al. 1984). Once bound, the metals may remain biologically unavailable, especially under high pH values (up to 8.7 [LA/LB Harbor Departments & U.S. ACOE 1990]) and oxidizing conditions found at the sediment-water column interface. Metals deeper than the surface sediment layer encounter reducing conditions which cause them to precipitate, also making them biologically unavailable.

The bioaccumulation study illustrates the complexity of the situation in that correlations of sediment metal concentrations and clam tissue metal concentrations yielded only two statistically significant results. Copper was positively correlated ($r = 0.48$) and arsenic was negatively correlated ($r = -0.40$), indicating the poor relationship between sediment concentration and biological availability for these sediments.

Based on this discussion, metal concentrations in the West Basin do not appear to have a detrimental ecological effect as evidenced by the biological and chemical data results.

### 6.3.3.2 SULFIDE

Sulfide was a sediment COPEC only in sediment samples from beneath the piers. This appears to be a natural phenomenon resulting from reducing conditions in the sediments beneath the piers, since these sediments are likely to be poorly oxygenated. Sulfide is typically derived from organic matter which could have at least three major sources beneath the piers:

- A portion of the sediments beneath the piers has been left intact from effects of natural impacts. The West Basin area was historically at the mouth of the Los Angeles River and the entire Long Beach coastal area was a mosaic of estuaries and salt marshes. The natural sediments in this area would have contained large amounts of decaying organic debris which would serve as a source of sulfur.
- Every piling of each pier has a substantial epifaunal community. These animals are the source of the large amount of shell hash encountered beneath each pier. As the animals die, they sink to the bottom, and their decaying remains contribute sulfur to the sediments.
- The benthic invertebrate community beneath each pier is substantial in terms of taxa, number of individuals, and biomass. The natural death and decay of these organisms contributes sulfur to the sediments.

The benthic organisms living in the sediments beneath many of the piers are opportunistic deposit-feeding taxa which have a high tolerance for elevated chemical concentrations, and it is difficult to distinguish if their occurrence is related to sulfide concentrations or other chemicals (e.g., PAHs) which were also found at elevated concentrations beneath the piers.



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### 6.3.3.3 BUTYLTINS

Monobutyltin was defined as a sediment COPEC at SEZ H because of a single occurrence at Station 43 (beneath Pier 15, 3.6 µg/kg). Dibutyltin was detected once in the West Basin and once at the reference stations, without a statistically significant difference. There is no known explanation for the occurrence of monobutyltin at Station 43.

The bioassay results at Station 43 were among the healthiest when considering all of the piers. The benthic infauna at Station 43 contained 38 taxa and 3.2 grams of biomass. Considered overall, surface sediments at Station 43 had many detected chemicals with some of the highest concentrations of all West Basin stations. It is impossible to assess the impact of a single constituent such as monobutyltin; however, it does not appear that the *in situ* community at Station 43 has been detrimentally impacted by monobutyltin.

### 6.3.3.4 PAHs

The most numerous sediment COPECs and the ones which in general most greatly exceeded the reference station levels were the PAHs. PAHs were found at elevated levels at the between-pier SEZs E and F and at the pier SEZs G and H. SEZs F and H showed the greatest number of individual PAH chemicals and highest concentrations. At SEZ H, sixteen PAH compounds were identified as sediment COPECs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, pyrene, acenaphthene, acenaphthylene, anthracene, fluorene, methylnaphthylenes, and phenanthrene.

The results of PCA/multiple regression analysis and correlation analysis suggest that the concentrations of PAH compounds may be related to the patterns of toxicity response. These analyses also indicate that the distributions of PAH compounds are similar. HPAH compounds show similar distribution patterns and were recognized in the PCA analysis as a single factor.

PAH concentrations constitute an important factor in the chemical characteristics of the sediments beneath and adjacent to the piers (SEZs E, F, G, and H). None of the mean concentrations of PAH compounds at SEZs E or G exceeded the maximum concentration associated with no toxicity response. At SEZ F, the only mean PAH concentration to exceed the maximum value associated with no toxicity was benzo(b)fluoranthene. None of the PAH concentrations at SEZs E, F, or G exceeded the ER-M value. Because the PAH concentrations were less than ER-M values and less than maximum concentrations associated with no toxicity, it is possible that the adverse toxicity response noted at SEZ G is not related to concentrations of PAH compounds.

### 6.3.3.5 PCBs

Aroclor 1260 was the most ubiquitous sediment COPEC in the West Basin. PCBs were reportedly disposed of at unknown locations in the West Basin many years ago, but there is no clear pattern to Aroclor 1260 distribution that might implicate suspected disposal



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points. PCBs were not found in sediments beneath the piers at SEZ G and at relatively low levels in sediments under piers in SEZ H. PCBs have been shown to be naturally degraded by bacteria (Boyle et al. 1993, Higson 1992), even under anaerobic conditions such as what is likely occurring beneath the West Basin piers; however, no general explanation could be developed for the lack of PCB in sediments collected from beneath the piers.

There was no correlation between Aroclor 1260 concentration and any measured bioassay or infaunal effect. For example, two stations with high Aroclor 1260 levels (Station 17 with the highest Aroclor 1260 level [880 µg/kg] and Station 10 with an Aroclor 1260 level of 540 µg/kg) showed similar responses for bioassay results except for echinoderm survival and development which exhibited the following responses: Station 17 had 46 percent survival and 0 percent normal development, and Station 10 had 100 percent survival and 90 percent normal development. Moreover, both stations had a healthy infauna community. Based on this evaluation, Aroclor 1260 levels do not appear to cause any detrimental ecological effects to the overall West Basin ecosystem.

#### 6.3.3.6 PESTICIDES

DDT and its derivatives are commonly found throughout southern California coastal waters (Dailey et al. 1993) including at all reference stations utilized for this RI. DDT was a sediment COPEC only in SEZ C as a result of a high concentration at a single station (Station 16). Station 16 had concentrations of DDD of 42 µg/kg, DDE of 60 µg/kg, and DDT of 34 µg/kg. This was the only station which had a detected concentration of DDT. Station 16 is very close to the shore and the existing sediment concentrations of DDT and its derivatives may be the result of a single disposal episode.

Bioassay results and benthic infauna results indicated no adverse ecological effects from the DDT and DDT derivative concentrations at Station 16. Also, there was no significant correlation found between DDT and any biological response.

Likewise, lindane (γ-BHC) was a sediment COPEC at SEZs C, D, and F because of concentrations ranging up to 6.8 µg/kg, which occurred at Station 10. As discussed above for Aroclor 1260, Station 10 performed well with respect to all bioassays and apparently has a healthy benthic infaunal community. No toxicity response was associated with lindane concentrations of 6.8 µg/kg.

Aldrin was detected once in the West Basin, and was shown as a sediment COPEC for SEZ C. No toxicity was associated with this occurrence of aldrin.

Based on this evaluation, pesticides do not appear to cause unfavorable ecological effects in the West Basin.

#### 6.3.3.7 PHENOL

Except for PAHs, the only SVOC that was a sediment COPEC was phenol, which was found at Station 47 (SEZ E beneath Pier 9, 210 µg/kg) It was also detected at one other



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location, Station 31 (SEZ A, 94 µg/kg), at a level below the PSDDA screening level. The reported occurrence of phenol at Station 47 is unaccountable since this location is not near any known outfall; phenol may have been discharged from the pier directly into West Basin waters.

The bioassay test results at Station 47 were depressed, as was typical for all pier stations; however, the benthic infauna was remarkable at Station 47, boasting 96 taxa and over 92 grams of biomass. There does not appear to be an adverse ecological effect from phenol concentrations in the West Basin.

## 6.4 RISK CHARACTERIZATION

In this section, the ecological hazard that may exist as a result of exposure to the COPECs (both for fish and for sediments) at the West Basin are identified and discussed. The ecological significance of the identified risks is discussed in terms of the spatial, temporal, and biological scale of potential adverse effects on the West Basin ecosystem. Measurement endpoints and assessment endpoints are linked to provide a framework for interpretation of the ecological risks.

The methods of ecological risk characterization used were two-fold: the hazard quotient (HQ) approach and the preponderance-of-evidence approach. The HQ approach used bioaccumulation (fish tissue) data to evaluate potential adverse effects of fish ingestion by harbor seals. Section 6.4.1 compares this exposure against chronic toxicity benchmark values (derived in Section 6.3.1) and calculates HQ values. The preponderance-of-evidence method involved developing an evaluation matrix for all chemical and biological data (Table 4-50), and used statistical correlations (multivariate techniques) in an attempt to identify patterns and trends (Section 6.3.2). This method utilized what has become known as the sediment quality triad approach to ERA (Alden 1992, Green et al. 1993), and directly supported the designation of SEZs B, G, and H as AOPECs. Considering the findings of Section 6.3.2, Section 6.4.2 evaluates whether SEZs B, G, and H warrant classification as AOECs.

### 6.4.1 Hazard Quotient Calculation

To identify risks to the harbor seal, estimated exposure doses and TRVs (Section 6.3.1) were used to calculate an HQ for each of the fish COPECs identified in whole body tissue of white croaker. The HQ was calculated from total exposure to white croaker, divided by the TRV for that receptor. If the HQ was greater than 1, a potential hazard of adverse effects resulting from exposure was presumed for a given fish COPEC. If an adverse effect arising from total exposure was identified, the hazards of exposure to individual fish COPECs were examined to partition and evaluate the potential sources of risk.

The HQ values calculated for the harbor seal are shown in Table 6-6. The sum of each individual HQ is also shown as a Hazard Index (HI), which equaled 11. The arsenic HQ accounted for 100 percent of the total HI. The sum of the HQs for the remaining fish COPECs, excluding arsenic, equaled 0.29.



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A potential risk of adverse effects for arsenic was identified for the harbor seal on the basis of the calculated HQ. Although the estimated risk attributed to arsenic was above the threshold for the harbor seal, West Basin white croaker arsenic concentrations were similar to arsenic concentrations measured in fish collected throughout the southern California Bight (Appendix E). In addition, since the potential risks were quantified for effects on individual organisms using conservative assumptions to account for uncertainty, significant ecological effects at the population and community levels are not expected.

Arsenic exceeded an HQ value of 1 for the harbor seal. The arsenic concentration in whole body white croaker from the West Basin was about 40 percent greater than in whole body white croaker collected at the reference stations. Only one small area of the West Basin, SEZ F, has surface sediment arsenic concentrations which exceeded the reference station surface sediment concentrations. It is impossible to determine where in the LA/LB Harbor the white croaker, which were collected in the West Basin, have obtained elevated arsenic levels, but it is unlikely that the sediments in one small area, SEZ F, are the only source of arsenic. Arsenic concentrations in the West Basin sediments ranged from 6.8 to 19 mg/kg while arsenic in reference sediments ranged from 2.8 to 14 mg/kg.

## 6.4.2 Preponderance-of-Evidence Approach - Discussion of AOPECs

Three AOPECs were identified in Section 4.8: SEZs B, G, and H. These three SEZs were identified as AOPECs because of sediment chemistry concentrations exceeding reference station values, and adverse toxicity response in the echinoderm bioassay. In addition, SEZs G and H showed bioaccumulation of pyrene in tissue of laboratory clams.

### 6.4.2.1 SEZ B

SEZ B had four sediment COPECs: three PAHs and Aroclor 1260. All of these compounds were listed as sediment COPECs because none were detected in the reference station sediments. All the PAH concentrations were less than the maximum value associated with toxicity responses. Benzo(a)anthracene and acenaphthylene concentrations were also less than the ER-L value; no sediment quality guidelines are available for dibenzo(a,h)anthracene. Aroclor 1260 concentrations exceeded the ER-L value (for total PCBs), but were less than the maximum value associated with no toxicity response. The low concentrations of PAHs and Aroclor 1260 at SEZ B do not appear to be related to the toxicity response observed in the echinoderm bioassay. The benthic infauna represented at SEZ B appear healthy and normal.

SEZ B is not considered an AOEC because the sediment chemistry appears to be below levels that would cause adverse biological responses and the benthic infauna appear not to be adversely effected. The cause of the toxicity response in the echinoderm development test is not known.



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### 6.4.2.2 SEZ G

SEZ G, comprised of Stations 42, 44, 45, 46, 51, and 52 (sediments beneath Piers 1, 2, 12, and 16), had eleven sediment COPECs: ten PAHs and total sulfide. Adverse echinoderm toxicity response was noted at all of the stations in SEZ G. However, Stations 42 and 46 showed no detectable concentrations of any chemical analytes. HPAH and LPAH detection limits were higher at Stations 42 and 46 than at the other basin stations, but the HPAH detection limits were less than the maximum concentration associated with no toxicity response. These data suggest that the adverse echinoderm toxicity response at Stations 42 and 46 were not related to chemical concentrations because none were detected, and most detection limits were less than the ER-L value and the maximum concentration associated with no toxicity. The echinoderm toxicity does not appear to be related to a stressor other than those chemicals listed as sediment COPECs for SEZ G. No other bioassay tests showed toxicity "hits" for SEZ G.

Pyrene concentrations were noted in clam tissue at SEZ G, and not at the reference stations. However, pyrene was not a sediment COPEC for SEZ G and the pyrene concentrations were within the range reported from other southern California studies. The clam tissue data is insufficient to adequately describe the bioaccumulation pattern for pyrene in the SEZ sediments.

SEZ G is not considered an AOEC because the concentrations of chemical analytes appear to be below levels that are associated with adverse biological response, and the echinoderm toxicity results are probably due to an environmental stress other than those measured in this RI. The benthic invertebrates at SEZ G were abundant and diverse, and predominantly represented by the invertebrate community found living on the shell hash material.

### 6.4.2.3 SEZ H

SEZ H, comprised of Stations 43, 48, 49, and 50 (sediments beneath Piers 3, 6, 7, and 15), had 23 sediment COPECs: five metals, sixteen PAHs, Aroclor 1260, and total sulfide. However, these chemical concentrations do not appear to adversely affect the sediment quality, as assessed by toxicity bioassays and benthic infauna studies. The echinoderm toxicity response found at SEZ H should be expected due to environmental stresses related to conditions beneath the piers but not measured during this RI (see SEZ G discussion of echinoderm toxicity above). Clam bioaccumulation tests suggest that pyrene has accumulated in the tissues of these animals, but there is insufficient data to determine if this represents an adverse effect. The pyrene concentrations found in clam tissue were similar to levels reported by other southern California studies, and appear to be at tolerable levels within clam tissue. The benthic invertebrates at SEZ H are a combination of those invertebrates living in or on the sediments and those invertebrates living on the shell hash material. Although some of the invertebrates living in the sediments may indicate stressed environmental conditions unlike those found at other



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West Basin stations, the invertebrate community living just above the sediment on the shell hash is quite abundant and diverse, apparently well adapted to life beneath the piers.

SEZ H is not considered an AOEC because: 1) the observed toxicity response is probably related to a stress variable associated with the presence of the piers but not measured by this project; 2) the clam bioaccumulation results do not indicate an adverse effect due to sediment chemistry; and 3) the benthic infaunal community does not indicate an adverse condition.

On the basis of the results of AOPEC evaluations, described above, the evaluation matrix containing preliminary status of SEZs (Section 4) was finalized as shown in Table 6-7. This evaluation matrix reveals that SEZs B, G, and H are not considered West Basin AOECs.

## 6.5 UNCERTAINTIES OF THE RISK ASSESSMENT

In this section, the principal uncertainties of the ecological risk assessment are evaluated and interpreted.

There are uncertainties inherent in the selection of COPECs which include potential limitations introduced by the number and type of chemicals targeted to be analyzed, and the lack of ecological risk-based screening criteria for many of the chemicals and media of concern. It must be assumed that the sample collection and analyte list, under the scrutiny of the technical oversight agencies, followed standard practices of sample collection and laboratory analyses and the data set was reliable. The lack of screening criteria is an inherent limitation of ERAs. Instead, chemicals found in West Basin fish and sediments were screened against reference station values and those found to be at concentrations statistically significantly exceeding reference station values, and those chemicals occurring in West Basin samples and not in reference station samples, were evaluated in the ecological risk assessment.

The reference stations encompass the range of physical variability found in the basin stations; therefore, the screening of West Basin analytes by reference station concentrations was deemed adequate. There was no commensurate reference for the pier stations, and it is possible that the identified COPECs for the pier stations are an overestimate of the specific chemicals which might be having biological effects in sediments beneath the piers.

The California halibut bile analyses statistically demonstrated that the West Basin and reference station fish were similar. Some of the West Basin fish had elevated levels of PAH compounds in bile, but it is impossible to determine if these PAH compounds are derived from the West Basin. Also, the possible pathway for these PAH compounds from sediment or water to the fish bile is unknown. It is not possible to determine whether the fish have obtained the chemicals found in whole body and fillets in the West Basin, because fish are mobile and the amount of time they spend or forage in the West Basin is unknown.



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The potential risks of arsenic to the harbor seal are subject to uncertainty as a result of the simplifying assumptions used to estimate exposure. Principal uncertainties of the extrapolation methods used to derive TBs include the use of uncertainty factors for converting LOAEL values to NOAEL values, body size scaling from taxonomically unrelated species, and toxicity of the forms of chemicals used in toxicity tests versus the forms of COPECs in whole body white croaker occurring in the West Basin. Uncertainty and scaling factors associated with each of these extrapolations are provided in Opresko et al. (1995).

The harbor seal was assumed to ingest 100 percent of its dietary intake as white croaker from the West Basin which is very conservative and highly unlikely. Also, the dose of COPEC the harbor seal receives from white croaker was conservatively estimated.

Uncertainty associated with the preponderance-of-evidence approach is that the sampling for this RI occurred as a one-time event and, even though present conditions are judged acceptable, it is not practical to determine the trend of ecosystem health from a single measurement. Fortunately, the major sources of contamination to the West Basin sediments have been stopped or greatly reduced for some time, contributing to improved ecological conditions and suggesting that ecological conditions will continue to improve in the future. Also, other studies (Reish 1959, 1971, 1978, Reish et al. 1980), which were not as extensive as this RI, have shown a general improvement in the condition of the marine environment in the LB Harbor, including West Basin sediments, over the past 30 years. It is therefore presumed that this RI represents an adequate representation of existing conditions in West Basin sediments and that ecological conditions in these sediments will likely continue to improve in the future, all things being equal.

The design of the evaluation matrix was very conservative regarding designation of a "hit" in any category. The conservative design introduces an uncertainty about the described risk: the actual risk may be less than indicated.

Uncertainties of the risk assessments presented in this section are not expected to diminish the significance of data acquired in this RI or the conclusions supported by these data. Investigations of marine sediments typically have to deal with similar uncertainties. Such uncertainties can conceivably be reduced by significantly increasing the scope and cost of the investigation, but the results may not reduce the uncertainties appreciably.

The evaluations described in this report are based on currently available information that contain inherent uncertainties and could vary if further data concerning the site or its conditions or other information become available. In conducting sampling, site conditions were evaluated from a limited number of data points, following accepted industry statistical practices in selecting the number and types of samples and tests to be performed. However, due to the size of the West Basin, the types and lengths of naval operations performed there, and the complexity of the sediments, there is the potential that conditions away from the sampling points may differ.



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## SECTION 7

# CONCLUSIONS AND RECOMMENDATIONS

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# Section 7
# CONCLUSIONS AND RECOMMENDATIONS

This section summarizes the findings of this RI, including the human health and ecological risk assessments.

## 7.1 HUMAN HEALTH RISK ASSESSMENT

Human health risk assessment was performed to evaluate the potential hazard of human consumption of California halibut and white croaker caught in the West Basin by recreational and subsistence anglers. Previous to this RI, the California Department of Fish and Game had issued a fish advisory for the LA/LB Harbor, including the West Basin, to alert anglers to limit their consumption of fish caught in this area because of chemical contamination, specifically PCBs and DDT and its congeners (DDD and DDE).

The results of the risk assessment suggest that chemicals in California halibut and white croaker tissues from the West Basin, particularly arsenic and DDT congeners, may occur at concentrations that could adversely affect individuals who consume these fish. However, cancer and noncancer risks associated with consumption of California halibut or white croaker from the West Basin do not appear to be appreciably different from the cancer and noncancer risks associated with consumption of California halibut or white croaker from the reference stations. In addition, no statistical significance existed between DDT congener concentrations in West Basin fish and reference fish as a result of the ecological risk assessment (see Section 7.2). Although arsenic concentrations in West Basin white croaker whole body samples were statistically significantly higher than reference whole body samples, West Basin arsenic concentrations were within or below the range of values commonly measured in fish collected from southern California harbors.

## 7.2 ECOLOGICAL RISK ASSESSMENT

Chemical analyses of surface sediments detected several analytes in excess of project screening criteria; these analytes were designated as sediment COPECs. Results of toxicity tests and a benthic infauna community assessment performed for this RI were evaluated in light of the sediment COPECs present at each station and SEZ. Toxicity test results did not show patterns related to chemical distribution. Project-derived sediment COPEC-noneffect-levels indicated that only a few samples with the highest chemical concentrations might possibly be of ecological concern. The locations of these samples were beneath or immediately adjacent to piers.

The results of toxicity tests indicated that sediments from beneath the piers exhibited toxic characteristics for echinoderm development -- the most sensitive test used in this RI. Examination of the data suggests that this pattern is related to a physical or chemical stressor (analyte) not measured during this RI and not related to contaminant releases by the LBNC. Echinoderm toxicity response occurring at basin stations did not show a noticeable pattern. Toxicity responses for echinoderms were reported at some basin stations with measurable chemical analytes and at other basin stations without measurable chemical analytes.



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The infaunal community, the chief ecosystem of concern, for basin areas appears to be robust in terms of number of taxa, ecological function of different taxa (i.e., 'healthy', 'semihealthy' species), number of individuals, and total biomass. The infauna appears to have improved significantly since abatement of chemical discharges to the West Basin over the last 30 years, and there does not appear to be an ecological risk from surface sediment chemical concentrations. The invertebrate community beneath the piers exceeds basin and reference stations in number of taxa, number of total individuals, and total biomass and is also a mixture of healthy and semihealthy species.

The ERA for West Basin stations suggests that conditions beneath several piers appear to have modified the infaunal community in that they are quite different in species composition, number of individuals, and biomass than the basin stations. The beneath-pier infaunal community does not appear to be at risk from detected surface sediment chemical concentrations and seems to contain a wide variety of taxa taking advantage of a diversity of micro-habitats. Sediments beneath piers, if left intact, appear to present no risk to other pelagic or benthic communities in the West Basin. However, concentrations of some of the analytes in surficial sediments from beneath some of the piers were determined to be higher than in sediments from reference stations. Significant changes to these sediments, such as removal of the piers, construction of additions to existing piers, construction of new piers, dredging beneath piers, or other activities that would disturb the sediments beneath the piers could result in an ecological risk.

In addition to the sediment chemistry analysis, toxicity tests, and benthic community analysis, the ERA also considered clam bioaccumulation test results, chemical analyses of fish tissues, the condition of captured fish, including physical examinations and types of fish, and a toxicological evaluation of the possible effects of ingestion of West Basin fish with known chemical concentrations on an aquatic predator, the harbor seal.

White croaker collected in the West Basin showed elevated tissue concentrations for arsenic and according to a very conservative estimate, if consumed in large quantities by harbor seals, may present a risk to the harbor seal. The source of arsenic in white croaker is undetermined and does not appear to relate to West Basin surface sediment concentrations. White croaker arsenic values were generally similar to results of other studies in the LA/LB area. No other chemical analytes were noted at significantly greater concentrations for the West Basin than for the reference for clam or other fish samples.

No AOECs were identified because no areas of the West Basin, as presently managed, appear to present an undue risk to the selected ecological endpoints on the basis of the results of this RI. Further characterization of West Basin sediments is, therefore, not indicated.

No assessment was made of specific sediment transport processes into the West Basin. Future uses of the LA/LB Harbor outside of the West Basin could result in transport of sediment-sorbed chemicals into the West Basin which may cause an increase in human health risk or ecological risk.



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## 7.3 RECOMMENDATIONS

Based on discussions related to, and the results of the human health risk assessment and the ecological risk assessment provided in this RI Report, no chemicals or areas of concern were identified for the West Basin which require remedial action or further characterization, such as water column investigations. Therefore, no further action is recommended for the West Basin.

Sediment chemical concentrations beneath some of the piers were determined to be higher than project reference. Significant changes to these sediments, such as removal of the piers or the sediments, construction of additions to existing piers, construction of new piers, or other activities which disturb sediments beneath the piers could result in an ecological risk.

No assessment was made of specific sediment transport processes into the West Basin. Future uses of the LA/LB Harbor outside of the West Basin could result in transport of sediment-sorbed chemicals into the West Basin that may cause an increase in human health risk or ecological risk."

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# GLOSSARY OF TERMS

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# GLOSSARY OF TERMS

| | |
|---|---|
| **ABUNDANCE** | The number of individuals in a population of a species in a given unit of area. |
| **ACUTE TOXICITY** | Death or physiological disorder in an organism resulting from a single dose of, or exposure to, a compound or compound mixture. All acute exposures occur over a small portion of an organism's life span or life cycle; see CHRONIC TOXICITY and SUBCHRONIC TOXICITY. Most acute toxicity testing is conducted over a short exposure period, *e.g.*, 72 or 96 hours. |
| **ADSORPTION** | Physical adhesion of molecules, colloids, or other chemical substances to solid particulate surfaces without chemical reaction. Adsorption is an important factor affecting environmental movement and fate of chemicals; see DESORPTION and SORPTION. |
| **ADVECTION** | Removal or transport of suspended materials via currents or other oceanographic processes. |
| **ADVERSE EFFECT** | A condition caused by a specific action that results in harm to an organism or its habitat. |
| **APPARENT EFFECTS THRESHOLD** | A chemical concentration in sediment above which an adverse toxic effect would always be expected. |
| **AQUATIC LIFE** | Organisms inhabiting water for all or part of their life cycle. |
| **AQUEOUS PHASE** | Referring to the dissolved phase in water rather than the solid phase. |
| **ASSESSMENT ENDPOINT** | The ecological resource which requires evaluation and, ultimately, protection. For example, the viability of a population is a commonly used assessment endpoint requiring evaluation. Also see MEASUREMENT ENDPOINT. |
| **BENTHIC/BENTHOS** | Refers to the ocean or harbor bottom, including the sediments and biota inhabiting the bottom. |
| **BENTHIC COMMUNITY ANALYSIS** | Numerical evaluation of infaunal invertebrate communities inhabiting a site/location; data are used to evaluate the potential effects of contaminated sediments on native biota. |
| **BIOACCUMULATION** | The process whereby exposure of an organism to chemical residues results in concentrated levels of that chemical in specific receptor tissue. Exposure may occur through dermal, respiratory, and ingestion routes; see BIOCONCENTRATION. |

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## Glossary of Terms (continued)

| | |
|---|---|
| **BIOASSAY** | A test using organisms to determine the toxicity of a compound or chemical mixture; primary function is to provide case-specific information regarding the toxicity of such compound or chemical mixture. |
| **BIOCONCENTRATION** | The process whereby exposure of an organism to chemical residues results in concentrated levels of that chemical relative to the surrounding aquatic environment. Exposure normally occurs through passive accumulation from the water column; see BIOACCUMULATION. |
| **BIOCONCENTRATION FACTOR (BCF)** | The ratio of concentration of a chemical within the tissue of an organism to that of the surrounding aquatic medium. |
| **BIODEGRADATION** | Decomposition of a chemical contaminant which is catalyzed or aided by the action of microorganisms, *e.g.*, bacteria. |
| **BIODEPLETION** | A reduction or depletion of a chemical substance from an organism specifically or food chain in general; see BIOMAGNIFICATION |
| **BIOLOGICAL IMPACT** | Any impact to a population of organisms; the impact may be measured using species abundance, species diversity, or other measurement indices. |
| **BIOMAGNIFICATION** | The process by which a chemical compound concentrates with increasing trophic level as it moves through the food chain; see BIOACCUMULATION and BIOCONCENTRATION. |
| **BIOMARKERS** | Test organisms used as indicators of environmental conditions. |
| **BIOMASS** | Refers to the amount of biotic matter within a specific area. For example, when sampling benthos, one of the indices used to evaluate benthic communities is the total amount of biomass present within a fixed volume. |
| **BIOTA/BIOTIC** | Relating to living organisms, including plants and animals, i.e., as opposed to inanimate or nonliving matter. |
| **CHRONIC TOXICITY** | An adverse biological response, such as mortality or an effect on growth or reproductive success, resulting from repeated or long term exposures to a compound, usually at low concentrations; see ACUTE TOXICITY and SUBCHRONIC TOXICITY. |
| **CONCENTRATION** | An amount of a chemical compound in a specified amount of medium, *e.g.*, water, sediment. Measured in standard units such as milligrams per liter (mg/L), microgram per kilogram (µg/kg), or other appropriate units. |

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## Glossary of Terms (continued)

| | |
|---|---|
| **CONTAMINATION** | Refers to the presence of specific chemical compounds, typically those included on U.S. EPA's Priority Pollutant list, present in special media of concern. Does not refer to or imply the occurrence of a toxic effect or adverse impact associated with the chemical or group of chemicals. |
| **DEGRADATION** | Transformation of a chemical compound by physicochemical or biochemical processes into its basic components. |
| **DEMERSAL** | Fish which dwell at or near the sea bottom. |
| **DESORPTION** | Dissociation of a chemical from a surface to which it had previously adhered; also see ADSORPTION and SORPTION. |
| **DETRITIVORE** | Organisms, such as insect larvae, worms, and crustaceans, that digest and recycle dead and dying material on water beds. |
| **DOSE** | An amount of substance administered per unit of animal body weight. Measured in milligrams of substance per kilogram of animal body weight (mg/kg), or other appropriate units. Useful for calculating risk in a receptor organism. |
| **$EC_{50}$** | MEDIAN EFFECTIVE CONCENTRATION; concentration eliciting a sublethal response in 50 percent of the organisms tested; see $LC_{50}$. |
| **ECOLOGICAL COMMUNITY** | Any assemblage of populations living in a specific habitat. |
| **ECOLOGICAL HAZARD** | Actual or potential adverse effects of chemical substances on aquatic biota (plants or animals). |
| **ECOLOGICAL RISK ASSESSMENT** | An evaluation of the actual or potential long-term or short-term effects of chemical compounds on aquatic receptors. |
| **$ED_{50}$** | MEDIAN EFFECTIVE DOSE; dose eliciting a non-lethal response in 50 percent of the organisms tested; see $LD_{50}$. |
| **ENDPOINT** | A toxicological response or measured effect. |
| **ENVIRONMENTAL FATE** | The result of natural processes acting upon a substance, including transport (*e.g.*, sedimentation), physical transformation (*e.g.*, volatilization, precipitation), chemical transformation (*e.g.*, photolysis) and biological transformations (*e.g.*, oxidation and reduction). |
| **EQUILIBRIUM PARTITIONING** | Refers to a theoretically based process whereby chemical agents reach equilibrium between the sediment solid phase and its interstitial water; the theory holds that total organic carbon (TOC) is one of the key driving factors for governing this distribution, especially for organic chemicals. |

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## Glossary of Terms (continued)

| | |
|---|---|
| **EPIBENTHIC** | Organisms inhabiting the sediment surface; i.e., living on top of the sediment. Also see INFAUNAL ORGANISMS. |
| **EXPOSURE ASSESSMENT** | Also EXPOSURE ANALYSIS; an evaluation of potential likelihood that humans, non-target wildlife, or biological habitats will be exposed to potentially harmful effects of a chemical. |
| **EXPOSURE PATHWAY** | The route by which exposure to a toxicant occurs. A complete exposure pathway consists of contaminant source(s), transport media (*e.g.*, surface water or sediments), the contact point between the transport medium and the receptor (*e.g.*, water supply system), and the receptor route or mechanism of entry (*e.g.*, ingestion of water, biota, or inhaled dust). If an exposure pathway is incomplete, it does not warrant further consideration in the risk assessment. |
| **EXPOSURE SCENARIO** | Overall description of the potential contact of an organism or population with a chemical substance under specified conditions, *i.e.*, routes of contact, life history of the organism, *etc.* |
| **HABITAT** | An environment that provides the requirements (*i.e.*, food, water, and shelter) essential to development and sustained existence of a species. |
| **HALF-LIFE ($t_{1/2}$)** | The time necessary for the concentration of a chemical to decrease by 50 percent. Provides a measure of the persistence of a chemical in a given medium. The greater the half-life, the more persistent a chemical is likely to be. |
| **HAZARD** | A potential adverse effect associated with exposure to a chemical substance. |
| **HAZARD QUOTIENT** | Risk expressed as a ratio of dose (exposure) to toxicity for a specific exposure duration. HQ values are used to address both acute and chronic risk. |
| **HENRY'S LAW CONSTANT** | Provides a measure of the extent of chemical partitioning between air and water at equilibrium. The higher the constant, the more likely a chemical is to volatilize than to remain in solution. |
| **HOMOLOGUE** | Specific chemical compound within a larger group of chemical compounds (e.g., benzo(a)pyrene is a homologue within the PAH class of organic chemicals). |
| **HOMOSCEDASTICITY** | Homogeneity of variances in a set of samples (data). |
| **HUMAN HEALTH RISK ASSESSMENT** | Appraisal of the actual or potential short-term or long-term effects of chemical compounds on humans, such as fishermen or residents. |



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## Glossary of Terms (continued)

| | |
|---|---|
| **HYDROLYSIS** | The decomposition of chemical compounds resulting from a reaction with water. |
| **ICHTHYOFAUNA** | The fish life of a region. |
| **INDICATOR SPECIES** | A species thought to be biologically representative of the reproductive success of other key species within a particular population or biological community. |
| **INDIGENOUS SPECIES** | Biota which are native to a specific habitat. |
| **INFAUNAL INVERTEBRATES/ ORGANISMS** | Organisms living within the sediments (usually within 10 cm of the surface) rather than on top of the sediments. Also see EPIBENTHIC ORGANISMS. |
| **INTERTIDAL ZONE** | Sediments lying between the high- and low-tidal marks. |
| **$K_d$** | SEDIMENT-WATER DISTRIBUTION COEFFICIENT; the ratio of concentrations of a specific chemical substance sorbed to sediment versus the concentration dissolved in water. The higher the $K_d$ value, the more likely the chemical will adsorb to sediment than dissolve in water. |
| **$K_{oc}$** | The ratio of concentrations of a specific chemical substance sorbed to the organic carbon fraction of sediment versus the concentration dissolved in water. The higher the $K_{oc}$ value, the more likely the chemical will adsorb to organic carbon in sediment rather than dissolve in water. |
| **$K_{ow}$** | OCTANOL/WATER PARTITION COEFFICIENT; a ratio that provides a measure of the extent of chemical partitioning between water and octanol at equilibrium. Octanol is used as a surrogate for lipids, *e.g.*, fatty tissue or other organic substrate. |
| **$LC_{50}$** | MEDIAN LETHAL CONCENTRATION; a calculated concentration of a substance expected to kill 50 percent of laboratory test organisms. |
| **$LD_{50}$** | MEDIAN LETHAL DOSE; a calculated dose of a substance expected to kill 50 percent of laboratory test organisms. |
| **LOCALIZED SPECIES** | Species which does not seasonally migrate. |
| **LOEC** | LOWEST OBSERVED EFFECT CONCENTRATION; the lowest exposure level, or concentration at which an observable toxic effect occurs. |
| **LOEL** | LOWEST OBSERVED EFFECT LEVEL; the lowest exposure level (dose) at which an observable toxic effect occurs. |

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## Glossary of Terms (continued)

| | |
|---|---|
| **LYOPHILIZATION** | A laboratory freeze-drying technique. |
| **MEASUREMENT ENDPOINT** | Specific measurable data taken to evaluate whether assessment endpoints (e.g., the viability of a specific population) have been potentially affected by the presence of chemical contaminants; also see ASSESSMENT ENDPOINT. |
| **MINERALOGY** | The chemical constitution of sediment particles occurring in the aquatic environment. |
| **NEGATIVE CONTROL** | Bioassay in which test organisms are exposed to clean sediments. Used to obtain a measure of biological response associated with exposure to clean sediment. |
| **NOEC** | NO OBSERVED EFFECT CONCENTRATION; the highest concentration level tested at which no observable difference between the test and control population occurs. |
| **NOEL** | NO OBSERVED EFFECT LEVEL; the highest dose tested at which no observable difference between the test and control population occurs. |
| **NON-POINT SOURCE** | Discharge that originates from a number of undefined sources, including storm water runoff, precipitation, or accidental spills or releases. |
| **NUMBER OF SPECIES** | The number of species in a specific area. Often compared to an equivalent area at a reference location. |
| **NUMERICAL SEDIMENT QUALITY GUIDELINES/CRITERIA** | Chemical analyte-specific toxicity-based values, normally expressed as a chemical concentration, used to establish concentrations in sediment which are expected to be protective of aquatic organisms. |
| **OMNIVORE** | Organisms that eat both plants and animals. |
| **PARTITION COEFFICIENT** | A chemical-specific property describing the ratio in one substrate or phase compared to another, *e.g.*, the amount of a chemical sorbed to sediment compared to the amount dissolved in water. |
| **PELAGIC** | Organisms inhabiting the water column rather than the benthic environment. |
| **PERSISTENCE** | The ability of a chemical compound to remain intact following its release into the environment. |
| **PHOTOLYSIS** | Also PHOTODEGRADATION; the decomposition or dissociation of a molecule resulting from ultraviolet light absorption. |
| **POINT SOURCE** | Discharge that originates from a well-defined location, typically a wastewater discharge, subject to regulation under the Clean Water Act. |



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## Glossary of Terms (continued)

| | |
|---|---|
| **POLLUTION** | Refers to the presence of specific chemical compounds present in specific media of concern. Differs from the term "contamination" in that it does imply the occurrence of a toxic effect associated with the presence of the chemical or group of chemicals. |
| **POPULATION** | A group of organisms belonging to the same species which inhabits a specific area or habitat. |
| **PORE WATER** | The water residing in the interstices or pores between sediment particles. |
| **POSITIVE CONTROL** | Bioassay in which a known quantity of toxicant (reference toxicant) is spiked into the test matrix; used to measure the sensitivity of test organisms. |
| **PREDATOR** | An animal that hunts, kills and consumes another (prey) organism. |
| **PREPONDERANCE OF EVIDENCE** | Using all available site-specific chemical and biological data to evaluate the potential for ecological effects associated with the presence of specific chemical compounds. |
| **PREY** | An organism which is hunted, killed, and consumed by another (predatory) organism. |
| **RECEPTOR ORGANISM** | Organisms potentially exposed to a chemical compound of potential concern via any of a number of potential pathways. |
| **RESECTION** | Removal of specific organs or tissues from organisms (e.g., fish) captured for the purpose of sampling. |
| **RISK** | A potential adverse effect associated with exposure to a chemical substance. |
| **SEDIMENT QUALITY OBJECTIVE** | A site-specific term used to define cleanup goals for specific chemical compounds of potential concern. |
| **SEDIMENTOLOGY** | The dynamics associated with erosion, deposition, transport/advection, or other behavior of sediment particles in an aqueous environment. |
| **SEDIMENTATION** | The deposition of sediment particles in an aqueous environment resulting from a number of oceanographic processes. |
| **SEICHE** | An oscillation of the surface of a lake or landlocked sea that varies in period from a few minutes to several hours. The regular resonating waves pass from one edge of the body of water to the other and back. |
| **SOLID PHASE BIOASSAYS** | Bioassays conducted on the bulk phase of sediment (i.e., not from the interstitial water or other phase). |

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## Glossary of Terms (continued)

| | |
|---|---|
| **SOLUBILITY** | The amount or ratio of a solute (a dissolved substance) that will saturate a fixed volume of solvent under static conditions. Solubility is important to understanding a chemical's mobility in water. More soluble substances are potentially more bioavailable but also will be distributed more efficiently through the water column (less concentrated). |
| **SONICATION** | An ultrasound-based laboratory technique used to separate or extract specific chemical analytes. |
| **SORPTION** | A generalized term referring to both adsorption and desorption. |
| **SUBCHRONIC TOXICITY** | Adverse biologic response of an organism, such as mortality or an effect on reproductive success, resulting from relatively short term exposure to a test sample or compound. |
| **SUBLETHAL RESPONSE** | Toxicological response which is less severe that mortality, such as growth inhibition or reproductive impairment. |
| **SUBTIDAL ZONE** | Sediments lying below the lowest tide level. |
| **SYNERGISTIC EFFECT** | The result of a combined action of two or more chemical substances to achieve an effect (either positive or negative) which is greater than that of which the individual chemical is capable. |
| **THREATENED/ENDANGERED (T&E) SPECIES** | A species in danger of extinction throughout all of its native range. |
| **TOXICANT** | A chemical substance capable of inducing a toxic effect. |
| **TOXICITY** | The ability or capacity of a chemical substance to induce an adverse effect. |
| **TOXICOLOGICAL BENCHMARK** | A guideline value derived as a measure of sensitivity to acute or chronic exposure for the purpose of protecting aquatic life; may be derived for the protection of individual species or species groups. |
| **TOXICOLOGICAL EVALUATION** | An assessment of the potential adverse effects of specific compounds of potential concern. |
| **UNCERTAINTY** | Inherent error resulting from any activity relating to sampling or analysis of data. |
| **UNCERTAINTY ANALYSIS** | Estimation or evaluation of the contributions or magnitudes of errors resulting from analysis of environmental or other data. |
| **UNCERTAINTY FACTOR** | A factor which quantifies the numerical relative uncertainty in deriving toxicological benchmarks, especially when compound-specific data are based on non-project specific toxicological testing. Such uncertainty can arise from overall data quality, interspecies variability, endpoint |



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## Glossary of Terms (continued)

| | |
|---|---|
| | sensitivity, endpoint extrapolation, and many other sources. |
| **VAPOR PRESSURE** | The pressure exerted by a chemical in its solid or liquid phase to convert to its gas (vapor) phase in equilibrium at a given temperature. |
| **VOLATILIZATION** | Conversion of a solute from solid or liquid phase to vapor phase; e.g., converting liquid water into steam. |



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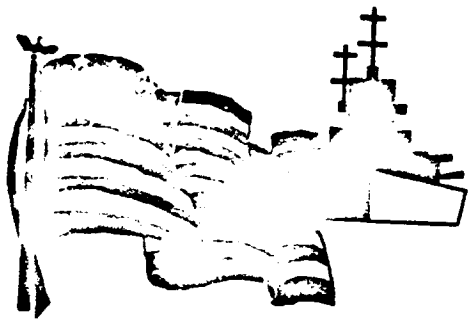
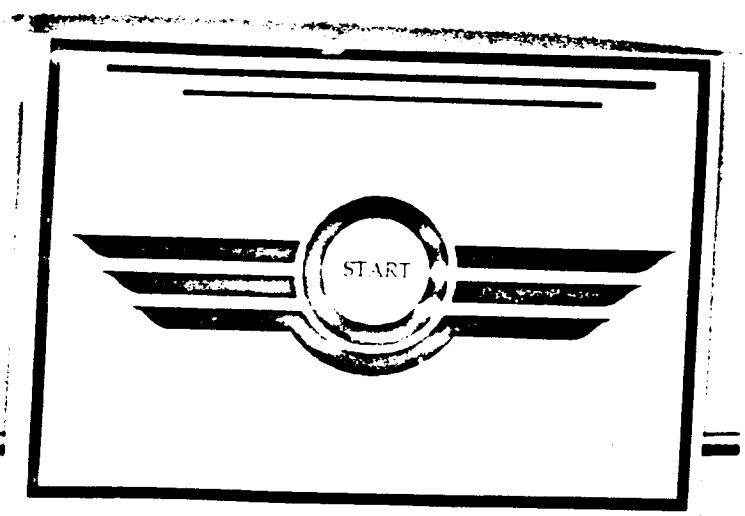


# DRAFT
# REMEDIAL INVESTIGATION (RI) REPORT
# INSTALLATION RESTORATION PROGRAM
# FOR SITE 7
# NAVAL STATION LONG BEACH
# LONG BEACH, CALIFORNIA
# CTO-0026



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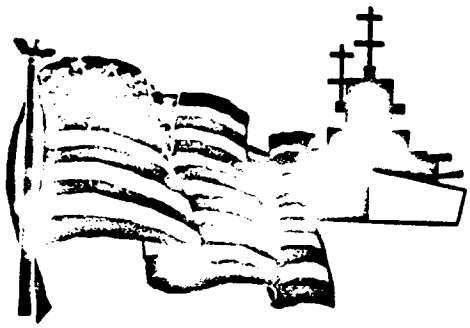

# DRAFT
# REMEDIAL INVESTIGATION (RI) REPORT
# INSTALLATION RESTORATION PROGRAM
# FOR SITE 7
# NAVAL STATION LONG BEACH
# LONG BEACH, CALIFORNIA
# CTO-0026

BOX 13

Submitted to:

Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

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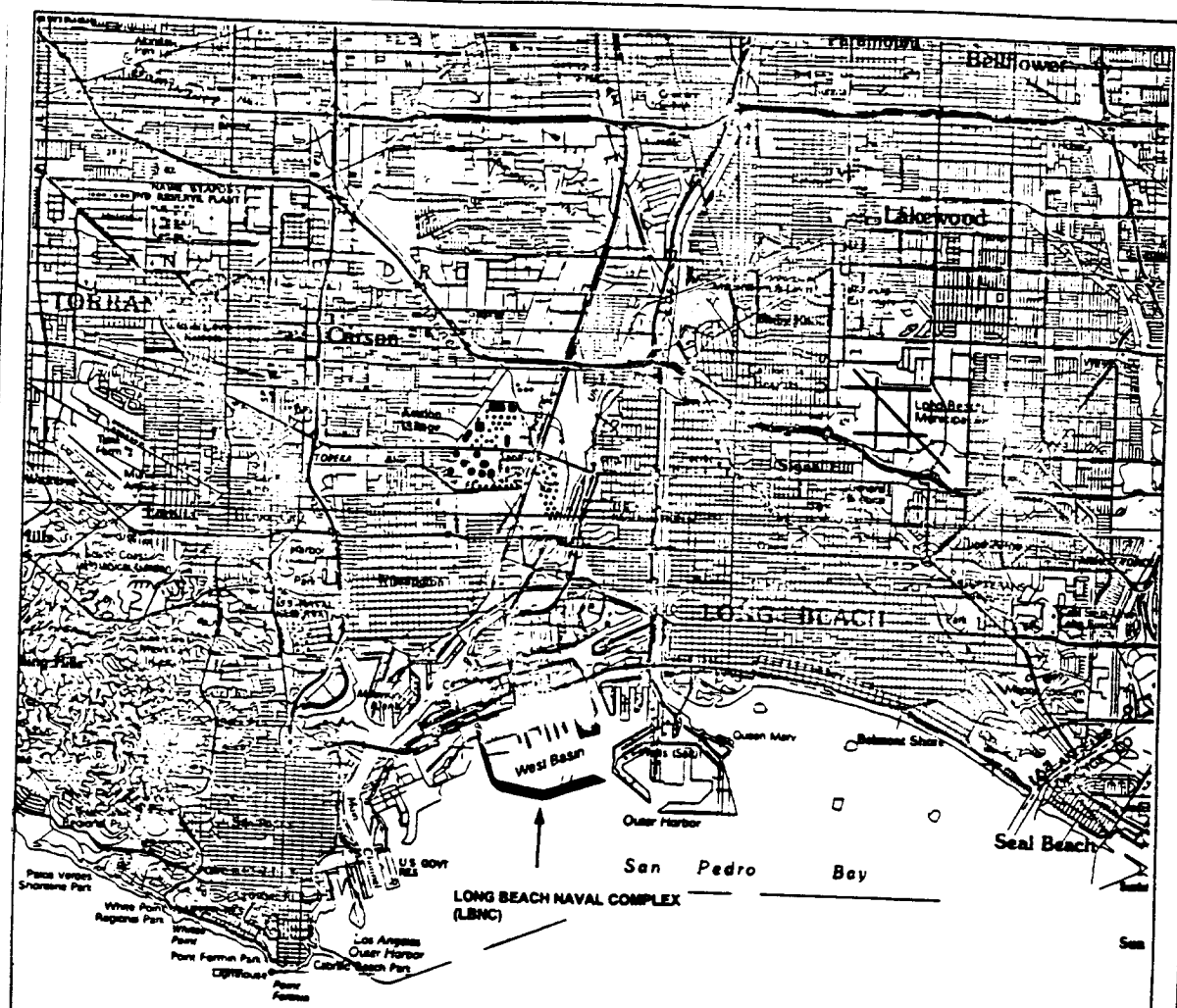


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REMEDIAL INVESTIGAION REPORT
WEST BASIN (SITE 7)
FIGURE 1-1
REGIONAL SETTING
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

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JOB NO. 22214-026

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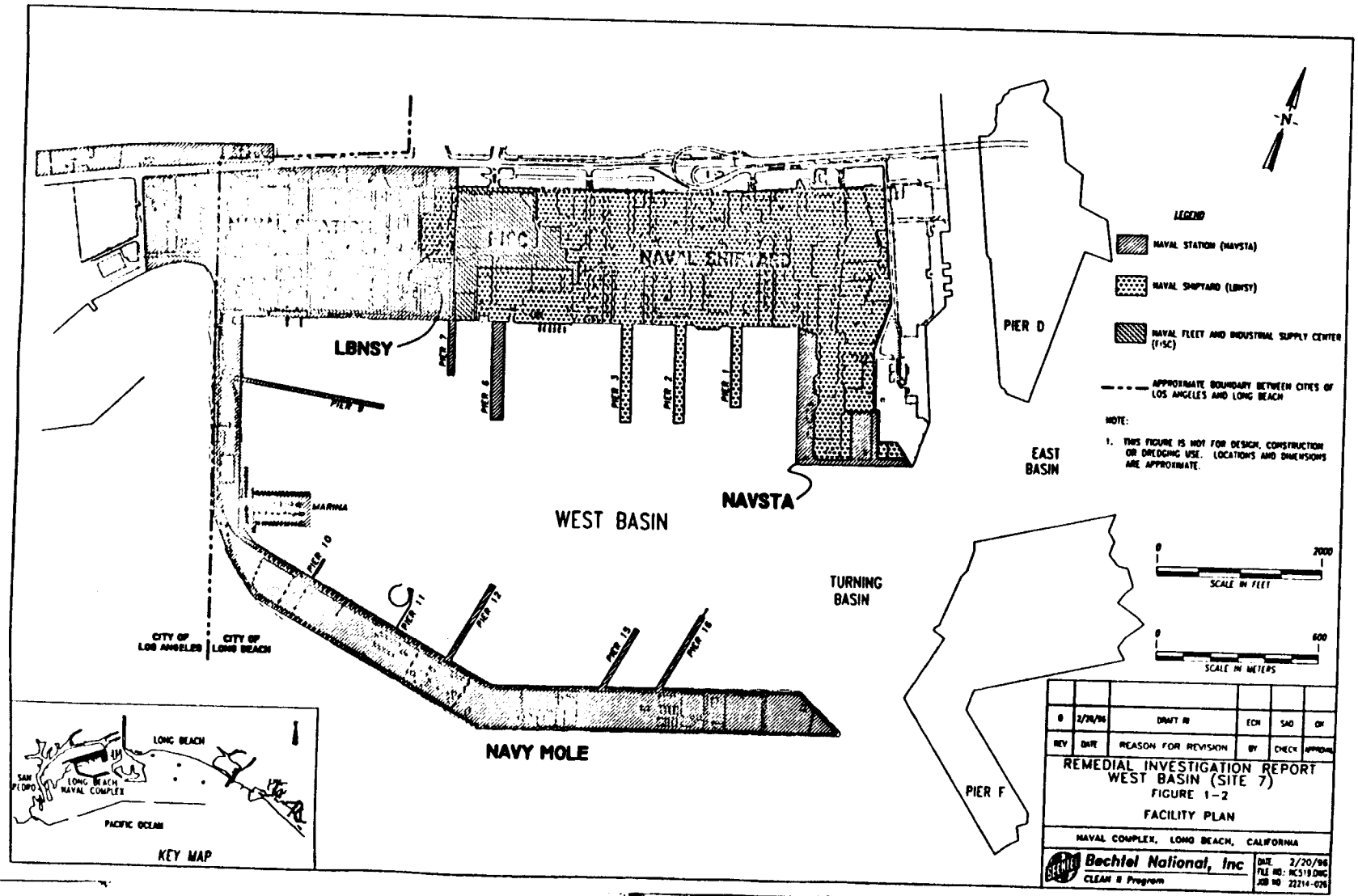
LBNSY
NAVSTA
WEST BASIN
TURNING BASIN
EAST BASIN
PIER D
PIER F
NAVY MOLE
MARINA
CITY OF LOS ANGELES
CITY OF LONG BEACH
LONG BEACH
LONG BEACH NAVAL COMPLEX
SAN PEDRO
PACIFIC OCEAN
KEY MAP
N
LEGEND
NAVAL STATION (NAVSTA)
NAVAL SHIPYARD (LBNSY)
NAVAL FLEET AND INDUSTRIAL SUPPLY CENTER (FISC)
APPROXIMATE BOUNDARY BETWEEN CITIES OF LOS ANGELES AND LONG BEACH
NOTE:
1. THIS FIGURE IS NOT FOR DESIGN, CONSTRUCTION OR DREDGING USE. LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
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SCALE IN FEET
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REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 1-2
FACILITY PLAN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA
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JOB NO 22214-076

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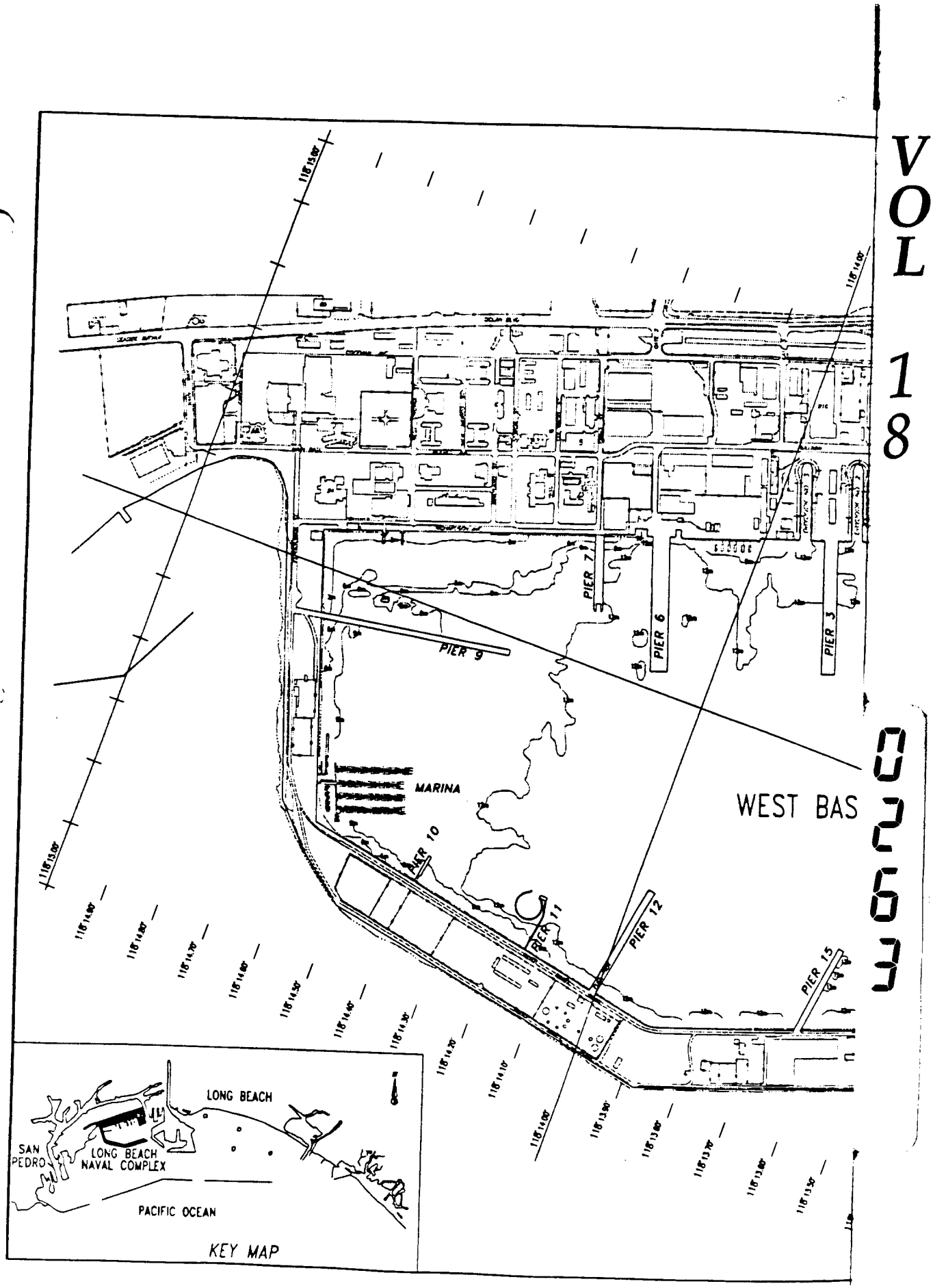


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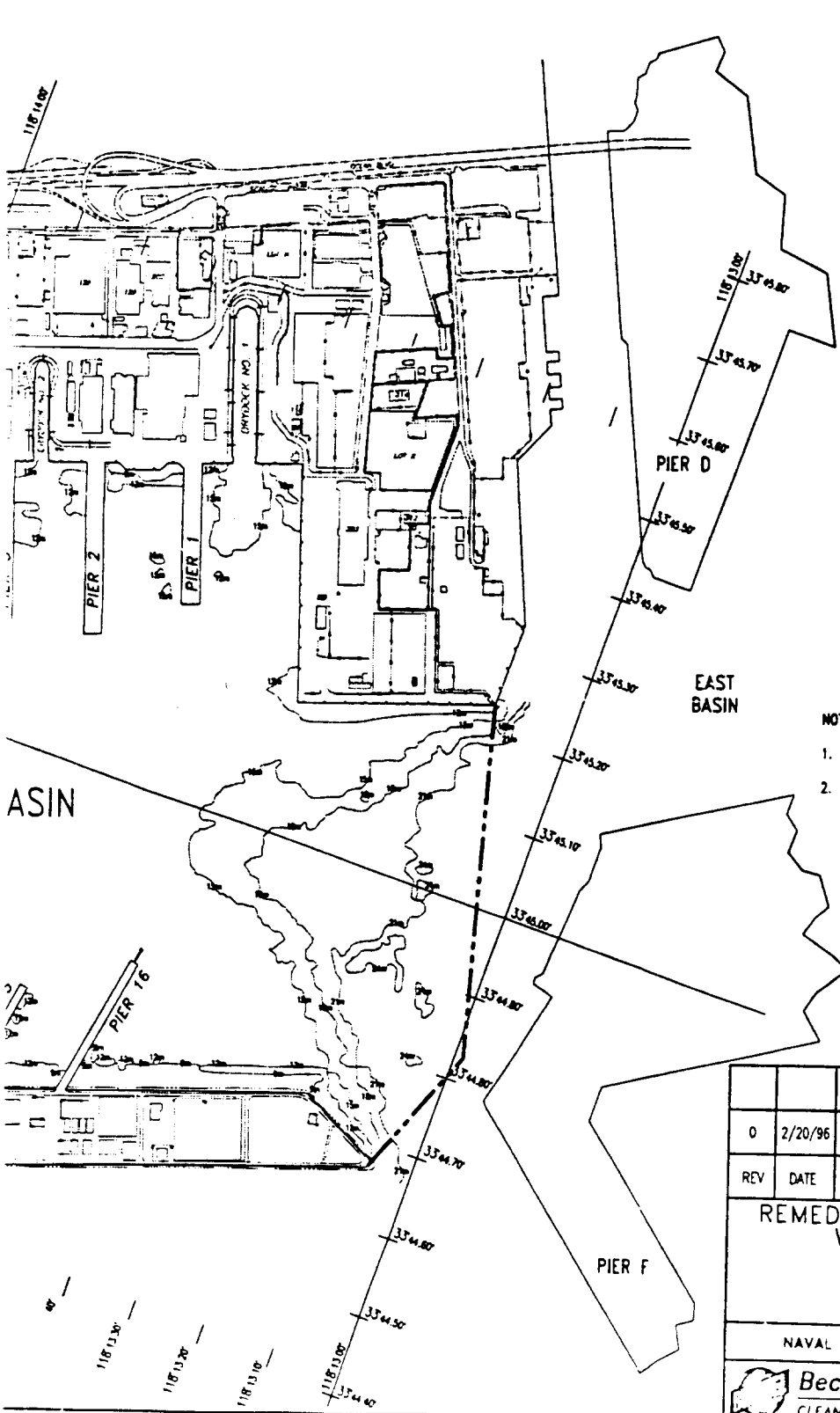


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REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 1-3
PROJECT BASE MAP

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

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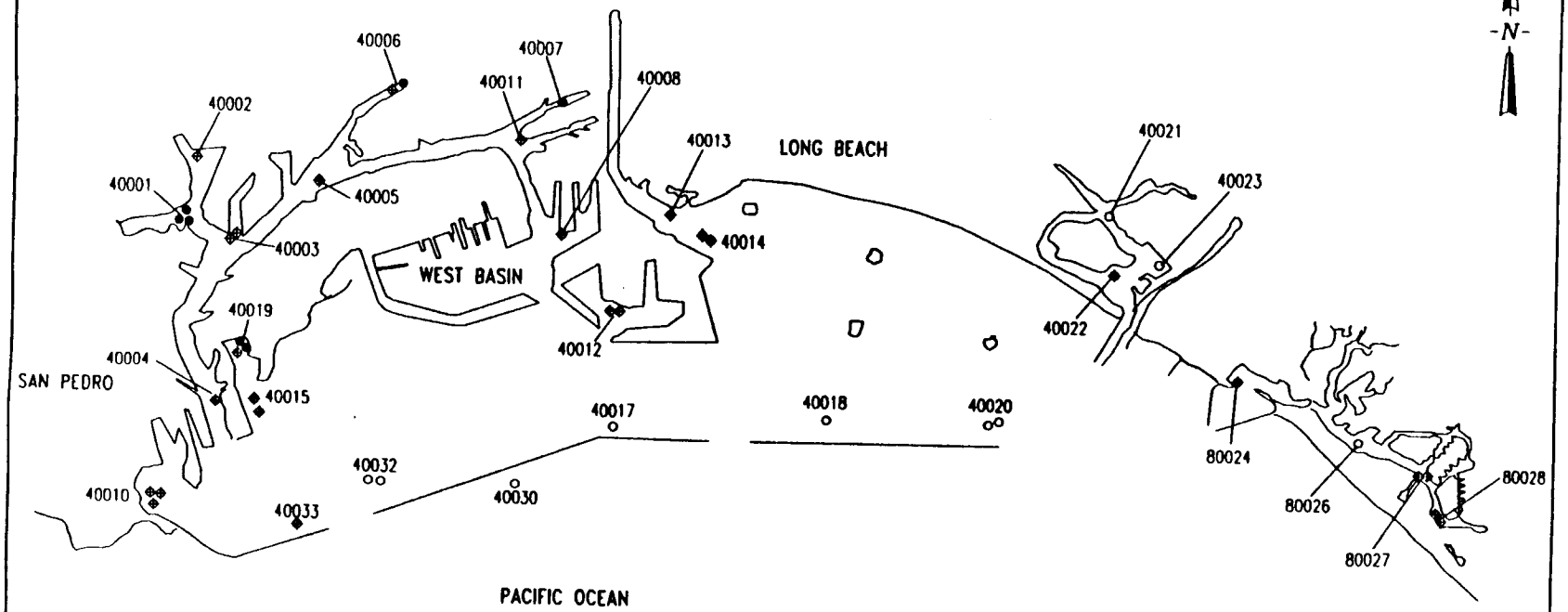


LEGEND

- ○ PAH CONCENTRATION ≤655.34 ug/kg (TEL)
- ◆ 655.34 < PAH CONCENTRATION < 6,676.14 ug/kg
- ● PAH CONCENTRATION ≥6,676.14 ug/kg (PEL)

TEL = THRESHOLD EXPOSURE LIMITS
PEL = PERMISSIBLE EXPOSURE LIMITS
PAH = POLYNUCLEAR AROMATIC HYDROCARBONS
ug/kg = MICROGRAM PER KILOGRAM

SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, BAY PROTECTION AND TOXIC CLEANUP PROGRAM, SWRCB AND NOAA, NOV 1994.

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REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 2-1
SUM OF PAH CONCENTRATIONS
IN SEDIMENT (ug/kg)

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
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FILE NO.: NC485.DWG
JOB NO.: 22214-026

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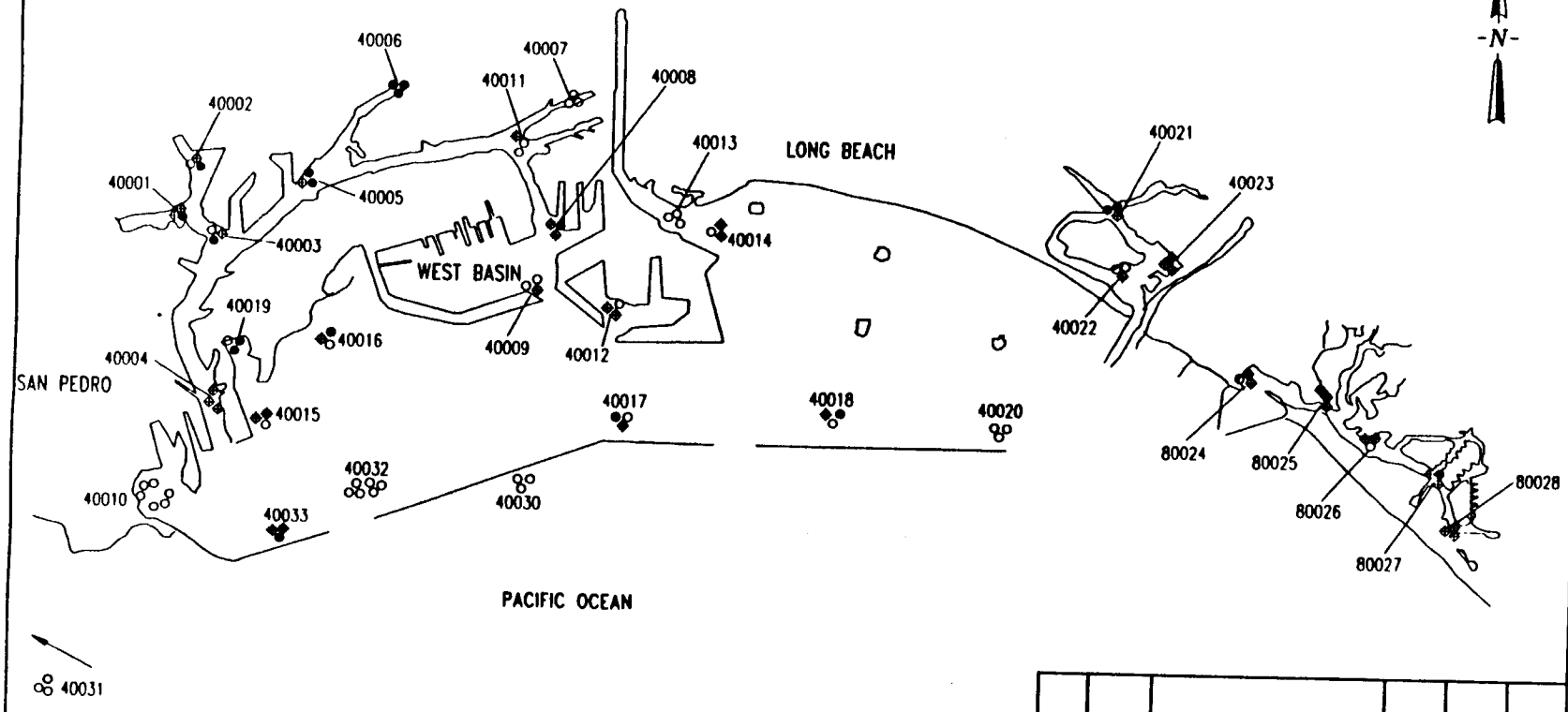



*LEGEND*

- ○ NOT STATISTICALLY SIGNIFICANT
- ◆ STATISTICALLY SIGNIFICANT AT $p<0.05$
- ● STATISTICALLY SIGNIFICANT AT $p<0.01$

WHERE p=PROBABILITY

SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, BAY PROTECTION AND TOXIC CLEANUP PROGRAM, SWRCB AND NOAA, NOV 1994.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | | |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)

FIGURE 2-2

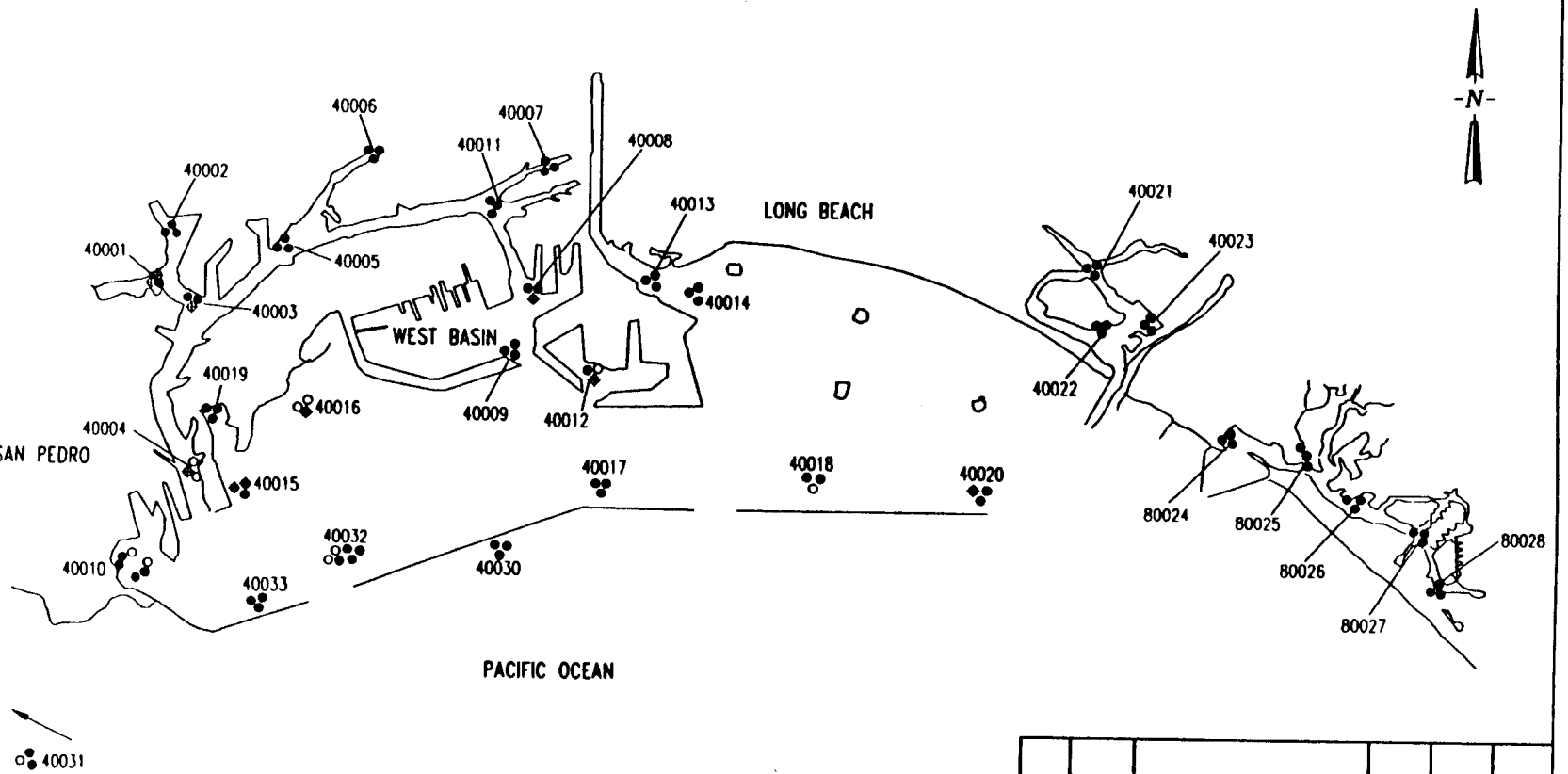
AMPHIPOD STATIONS vs CONTROLS
STATISTICAL SIGNIFICANCE OF TOXICITY TEST RESULTS

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO.: NC486.DWG
JOB NO.: 22214-026

R0062875




LEGEND

- ○ NOT STATISTICALLY SIGNIFICANT
- ◆ STATISTICALLY SIGNIFICANT AT $p<0.05$
- ● STATISTICALLY SIGNIFICANT AT $p<0.01$
  WHERE p=PROBABILITY

SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, BAY PROTECTION AND TOXIC CLEANUP PROGRAM, SWRCB AND NOAA, NOV 1994.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
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REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 2-3
ABALONE 100% PORE WATER TOXICITY TEST
STATION STATISTICAL SIGNIFICANCE COMPARED TO CONTROLS
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

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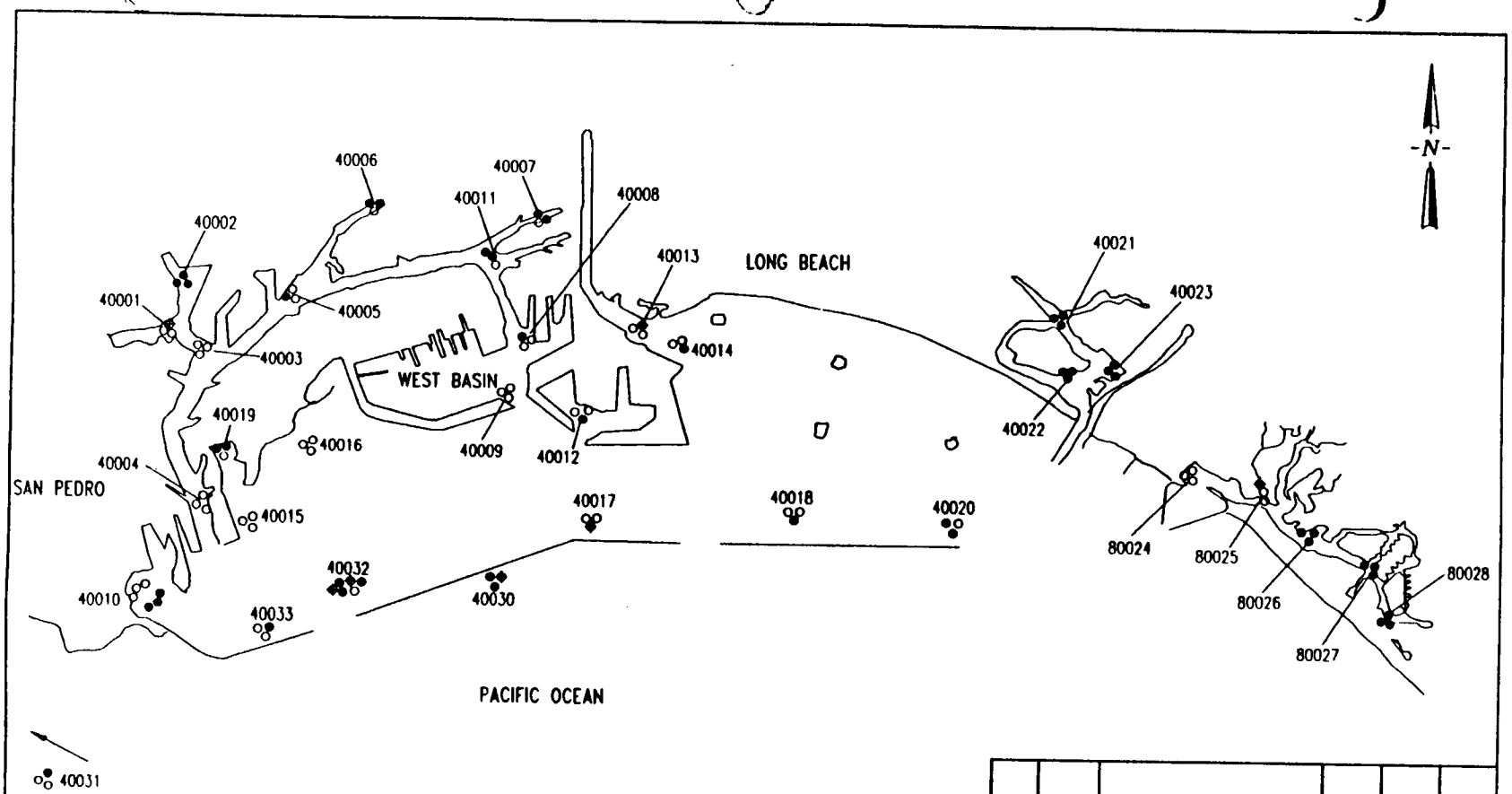
FILE NO.: NC487.DWG
JOB NO.: 22214-026

R0062876




*LEGEND*

- o NOT STATISTICALLY SIGNIFICANT
- ◆ STATISTICALLY SIGNIFICANT AT $p<0.05$
- ● STATISTICALLY SIGNIFICANT AT $p<0.01$

WHERE p=PROBABILITY

SOURCE: SEDIMENT CHEMISTRY AND TOXICITY IN THE VICINITY OF THE LOS ANGELES AND LONG BEACH HARBORS, BAY PROTECTION AND TOXIC CLEANUP PROGRAM, SWRCB AND NOAA, NOV 1994.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/20/96 | DRAFT RI | ECN | | |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)

FIGURE 2-4

ABALONE 50% PORE WATER TOXICITY TEST
STATION STATISTICAL SIGNIFICANCE COMPARED TO CONTROLS

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/20/96
FILE NO.: NC488.DWG
JOB NO.: 22214-026

R0062877

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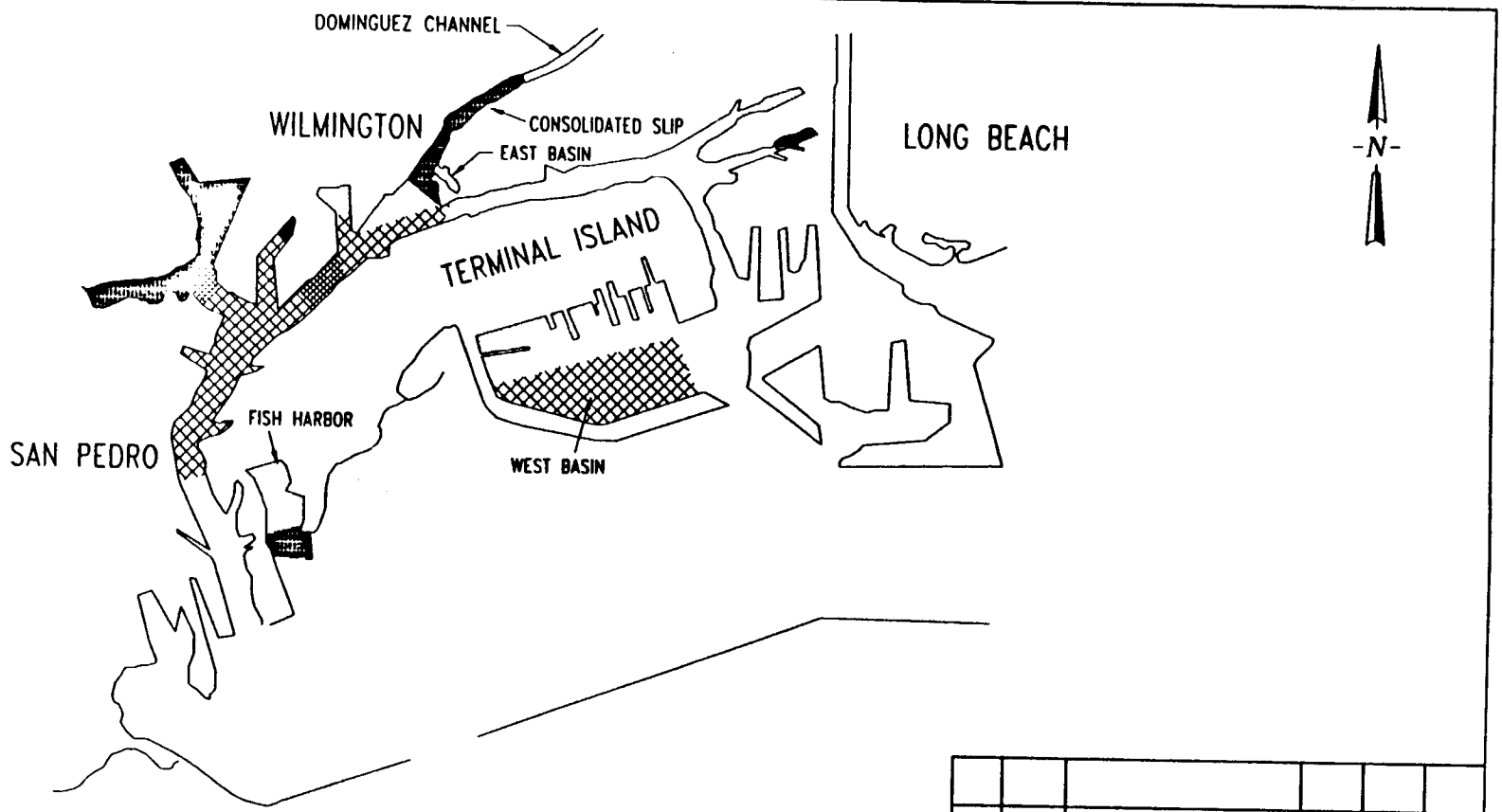


*LEGEND*

- HEALTHY ZONE
- POLLUTED ZONE
- SEMI HEALTHY ZONE I
- VERY POLLUTED ZONE
- SEMI HEALTHY ZONE II

SOURCE: THE BENTHIC BIOLOGICAL CONDITIONS OF LOS ANGELES-LONG BEACH HARBORS: RESULTS OF 28 YEARS OF INVESTIGATION AND MONITORING, REISH ET AL., 1980.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/20/96 | DRAFT RI | ECN | | |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)

FIGURE 2-5

COMPOSITE OF BENTHIC BIOLOGICAL CONDITIONS IN LOS ANGELES-LONG BEACH HARBOR IN 1954 (BEFORE STATE POLLUTION ABATEMENT PROGRAM) AND IN WEST BASIN IN 1971

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/20/96
FILE NO.: NC492.DWG
JOB NO.: 22214-026

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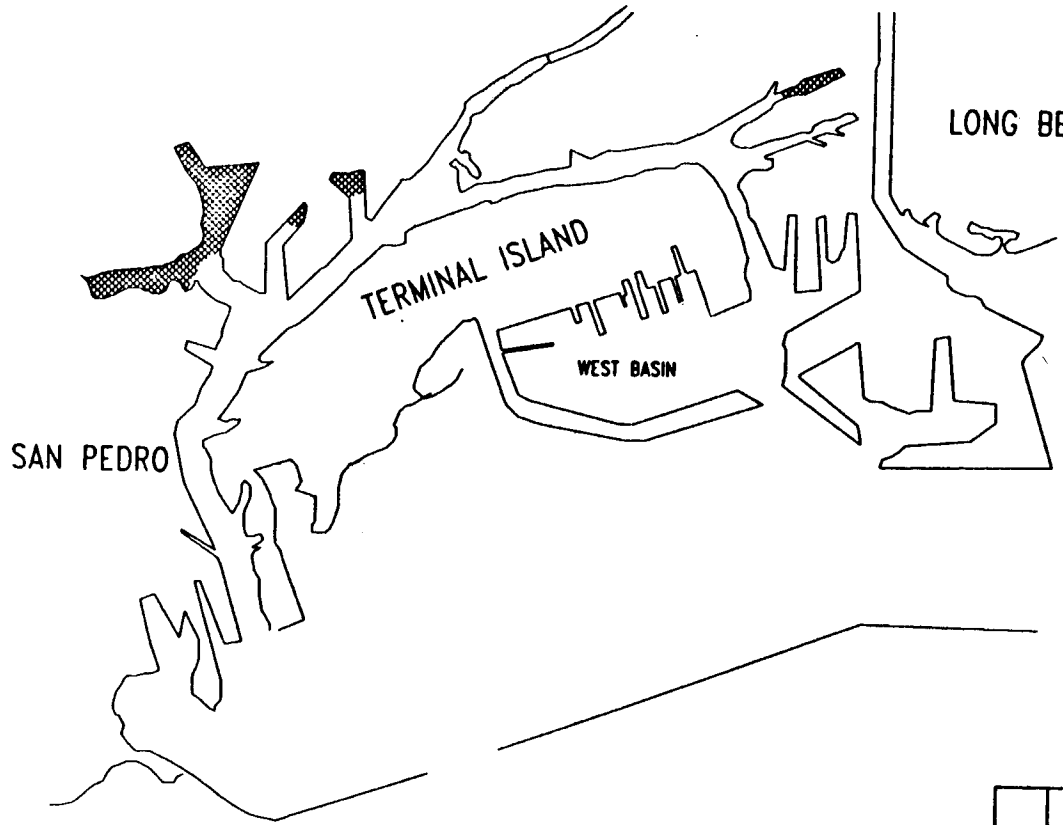


LEGEND

- HEALTHY ZONE
- SEMI HEALTHY ZONE 1
- POLLUTED ZONE

SOURCE: THE BENTHIC BIOLOGICAL CONDITIONS OF LOS ANGELES-LONG BEACH HARBORS: RESULTS OF 28 YEARS OF INVESTIGATION AND MONITORING, REISH ET AL., 1980.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/20/96 | DRAFT RI | ECN | | |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)

FIGURE 2-6

COMPOSITE OF BENTHIC BIOLOGICAL CONDITIONS IN LOS ANGELES-LONG BEACH HARBORS IN 1973 (AFTER STATE POLLUTION ABATEMENT PROGRAM) AND IN WEST BASIN IN 1978

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/20/96
FILE NO.: NC491.DWG
JOB NO.: 22214-026

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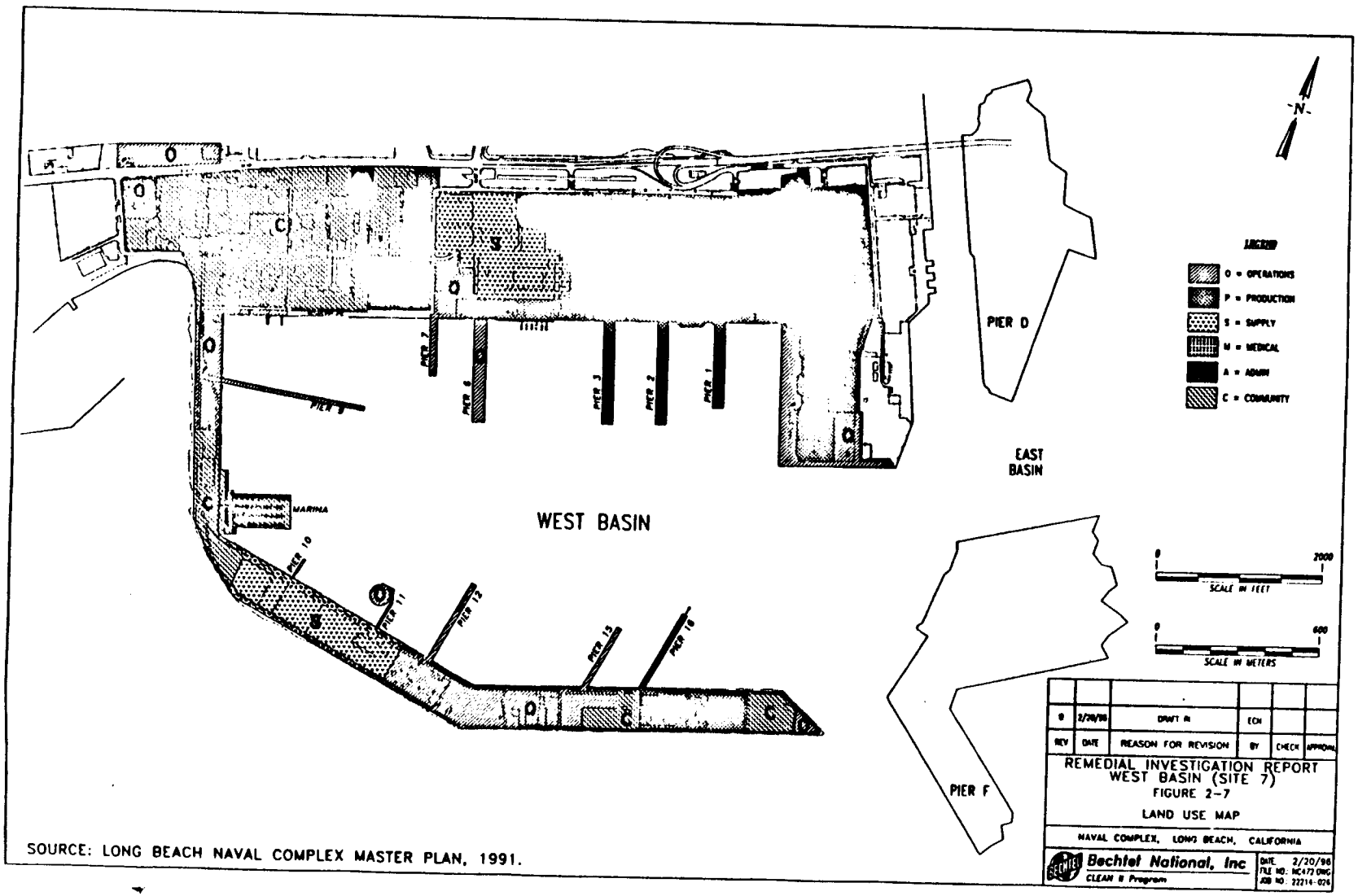
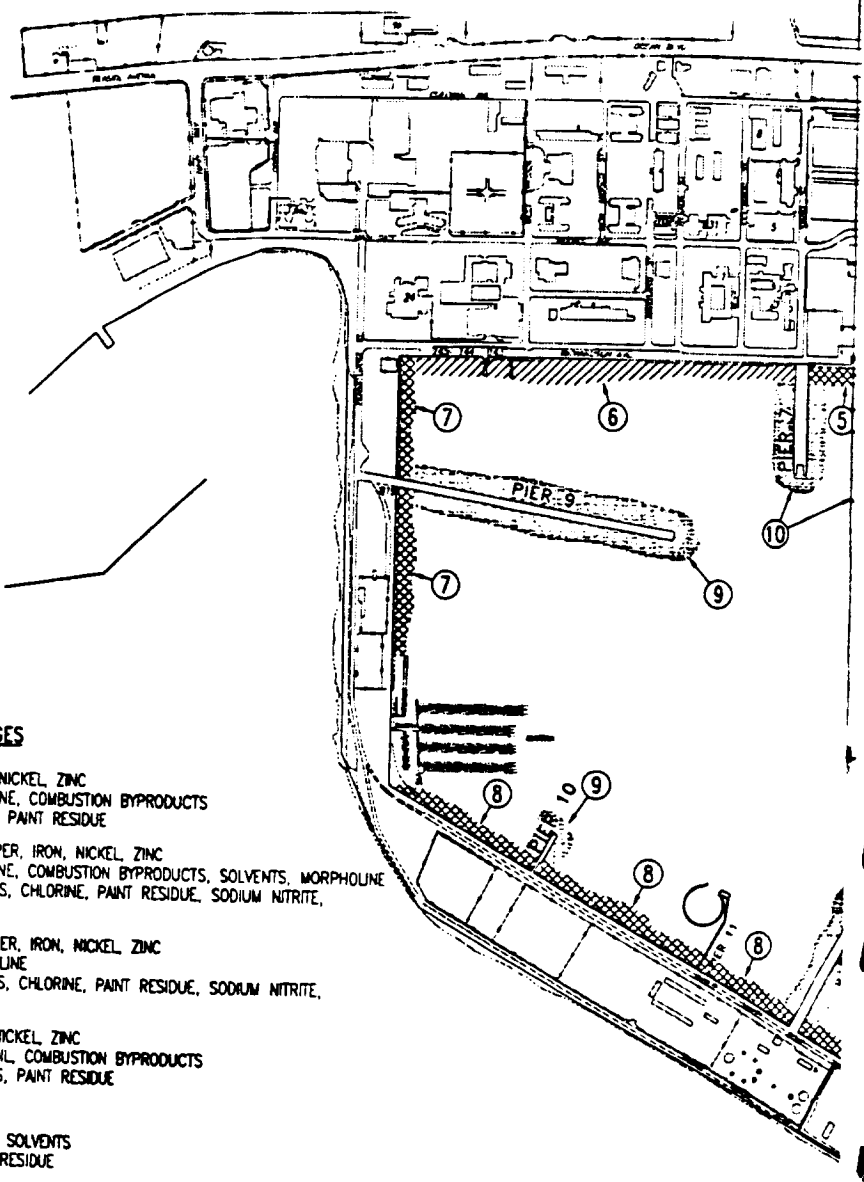



SOURCE: LONG BEACH NAVAL COMPLEX MASTER PLAN, 1991.

R0062880




| LOCATION | PAST DISCHARGES |
|---|---|
| 1 | *METALS:* CHROMIUM, COPPER, IRON, NICKEL, ZINC<br>*ORGANICS:* OIL AND GREASE, KEROSENE, COMBUSTION BYPRODUCTS<br>*OTHER:* BRINES, CHLORINE, NITRATES, PAINT RESIDUE |
| 2 | *METALS:* ALUMINUM, CHROMIUM, COPPER, IRON, NICKEL, ZINC<br>*ORGANICS:* OIL AND GREASE, KEROSENE, COMBUSTION BYPRODUCTS, SOLVENTS, MORPHOLINE<br>*OTHER:* SANITARY WASTEWATER, BRINES, CHLORINE, PAINT RESIDUE, SODIUM NITRITE, HYDRAZINE, ACIDS |
| 3 | *METALS:* ALUMINUM, CHROMIUM, COPPER, IRON, NICKEL, ZINC<br>*ORGANICS:* OIL AND GREASE, MORPHOLINE<br>*OTHER:* SANITARY WASTEWATER, BRINES, CHLORINE, PAINT RESIDUE, SODIUM NITRITE, HYDRAZINE, ACIDS |
| 4 | *METALS:* CHROMIUM, COPPER, IRON, NICKEL, ZINC<br>*ORGANICS:* OIL AND GREASE, WASTE OIL, COMBUSTION BYPRODUCTS<br>*OTHER:* SANITARY WASTEWATER, BRINES, PAINT RESIDUE |
| 5 | *METALS:* COPPER, IRON, ZINC |
| 6 | *ORGANICS:* WASTE OILS AND GREASES, SOLVENTS<br>*OTHER:* SANITARY WASTEWATER, PAINT RESIDUE |
| 7 | *ORGANICS:* WASTE OILS AND GREASES<br>*OTHER:* SANITARY WASTEWATER, PAINT RESIDUE, INK AND CARBON |
| 8 | *OTHER:* SANITARY WASTEWATER |
| 9 | *METALS:* COPPER, ZINC, HEXAVALENT CHROMIUM<br>*ORGANICS:* OILY WASTES, SOLVENTS<br>*OTHER:* SANITARY WASTEWATER, PAINT CHIPS |
| 10 | *METALS:* COPPER, ZINC, HEXAVALENT CHROMIUM<br>*ORGANICS:* OILY WASTES, SOLVENTS<br>*OTHER:* SANITARY WASTEWATER, PAINT CHIPS |
| 11 | *ORGANICS:* WASTE OILS, SOLVENTS<br>*OTHER:* SANITARY WASTEWATER |
| 12 | *ORGANICS:* DIESEL FUEL, JET FUEL |
| UNIDENTIFIED LOCATIONS | TRANSFORMER FLUIDS, PESTICIDE RESIDUES, RUST PREVENTATIVE, ACCIDENTAL SPILLS OF VARIOUS CHEMICAL SUBSTANCES |

SOURCE: INFORMATION COMPILED FROM VARIOUS REPORTS

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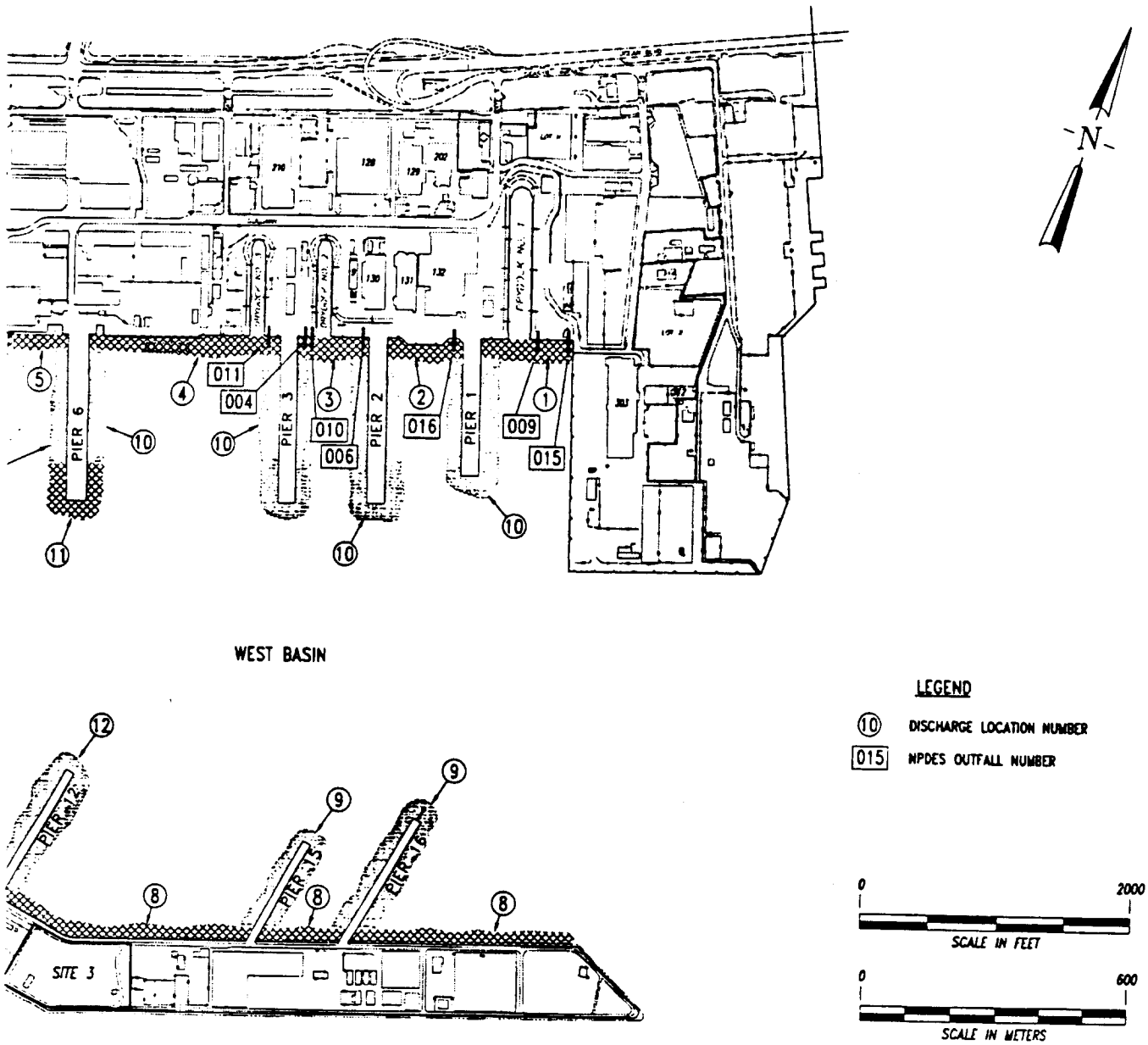


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REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 2-8
CURRENT NPDES OUTFALLS AND GENERAL LOCATIONS OF PAST DISCHARGES

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

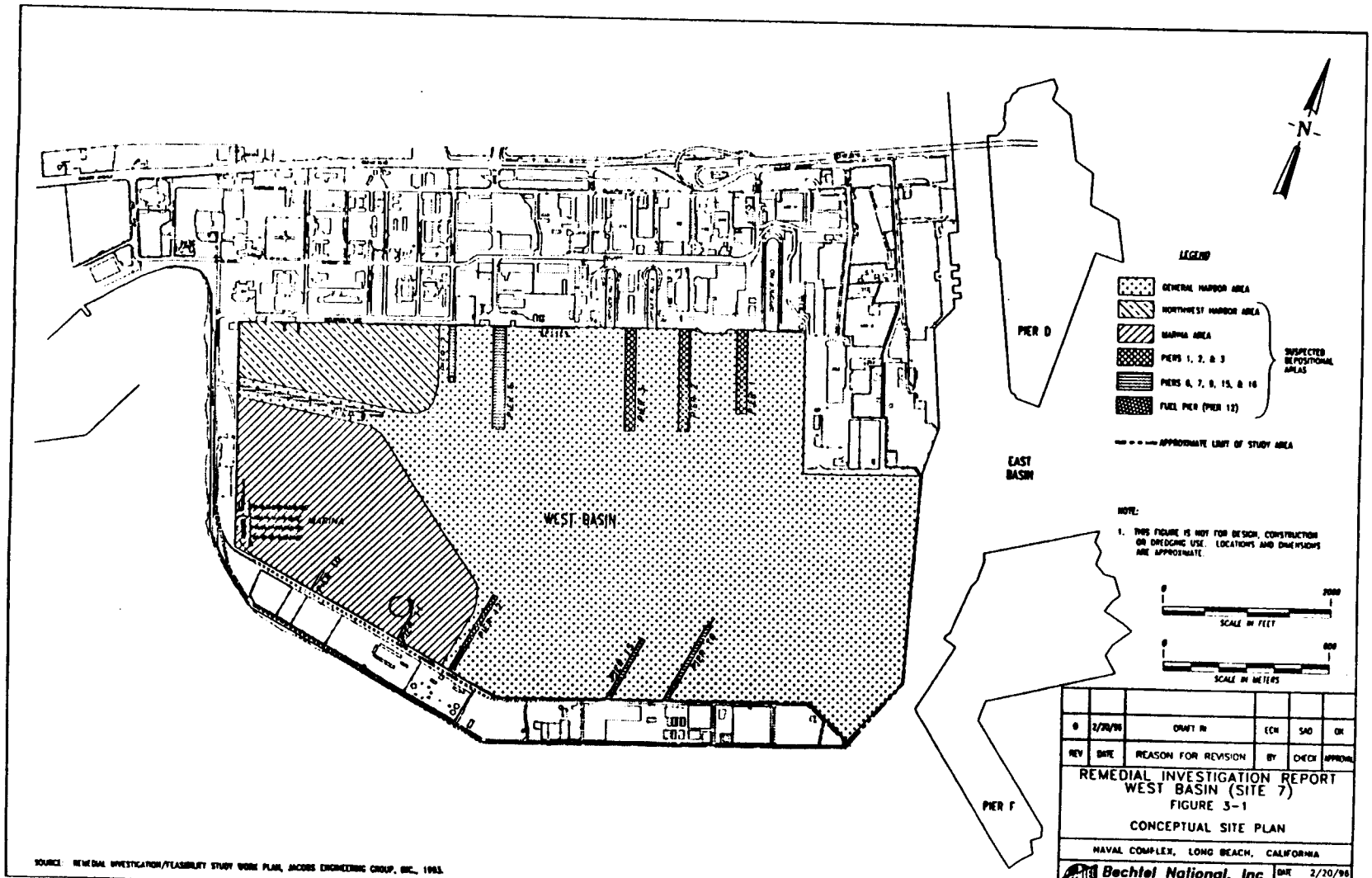
Bechtel National, Inc
CLEAN II Program

DATE 2/20/96
FILE NO NC650.DWG
JOB NO 22214-026

VOL 18

0273

R0062882


N
LEGEND
GENERAL HARBOR AREA
NORTHWEST HARBOR AREA
MARINA AREA
PIERS 1, 2, & 3
PIERS 6, 7, 8, 15, & 16
FUEL PIER (PIER 12)
SUSPECTED DEPOSITIONAL AREAS
APPROXIMATE LIMIT OF STUDY AREA
PIER D
EAST BASIN
WEST BASIN
MARINA
PIER F
NOTE:
1. THIS FIGURE IS NOT FOR DESIGN, CONSTRUCTION OR DREDGING USE. LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
SCALE IN FEET
SCALE IN METERS
SOURCE: REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN, JACOBS ENGINEERING GROUP, INC., 1993.
REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 3-1
CONCEPTUAL SITE PLAN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA
Bechtel National, Inc
CLEAN II Program
DRAFT IN
REASON FOR REVISION

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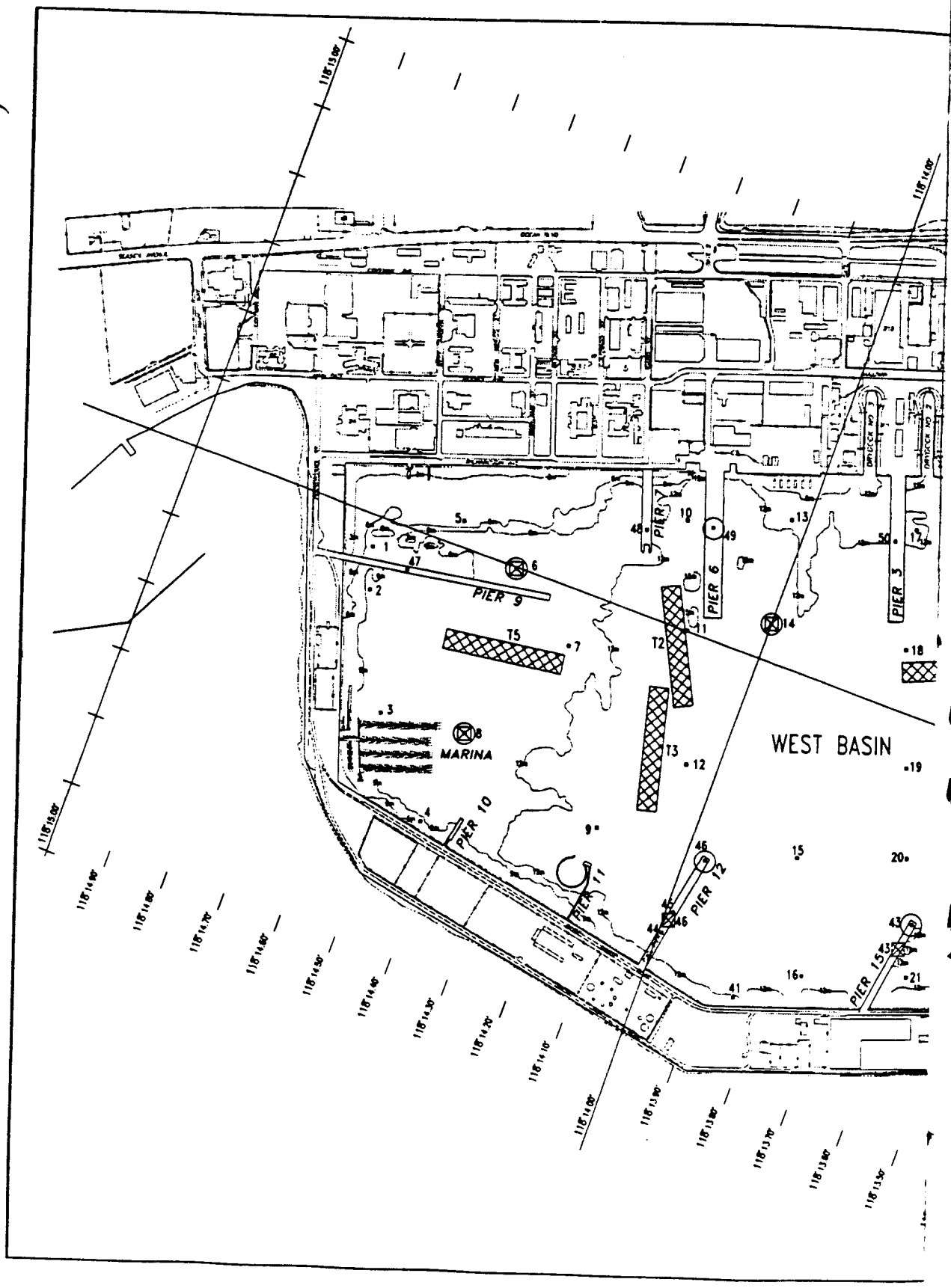


VOL 18 02715

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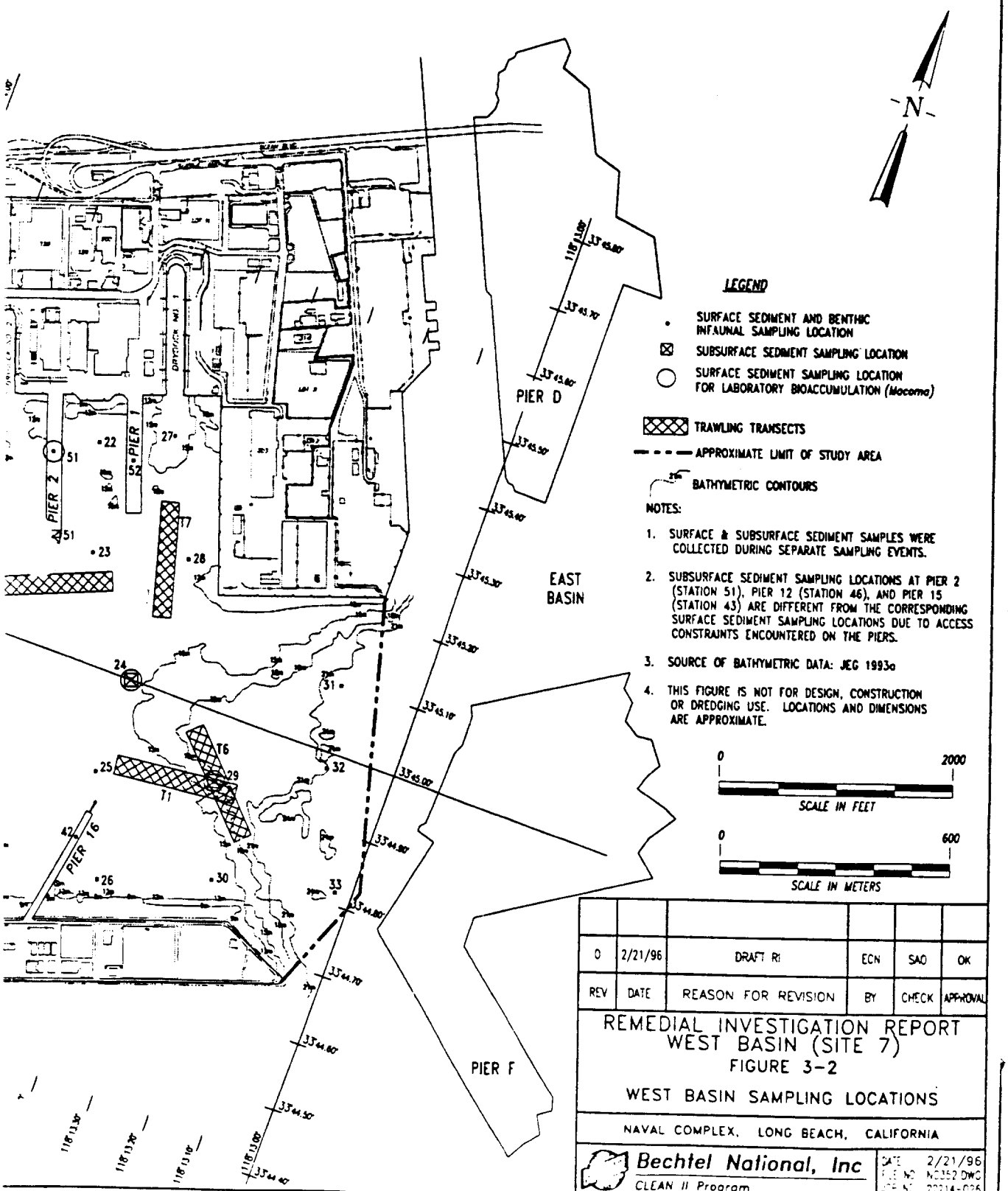


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# REMEDIAL INVESTIGATION REPORT
# WEST BASIN (SITE 7)
## FIGURE 3-2
## WEST BASIN SAMPLING LOCATIONS

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

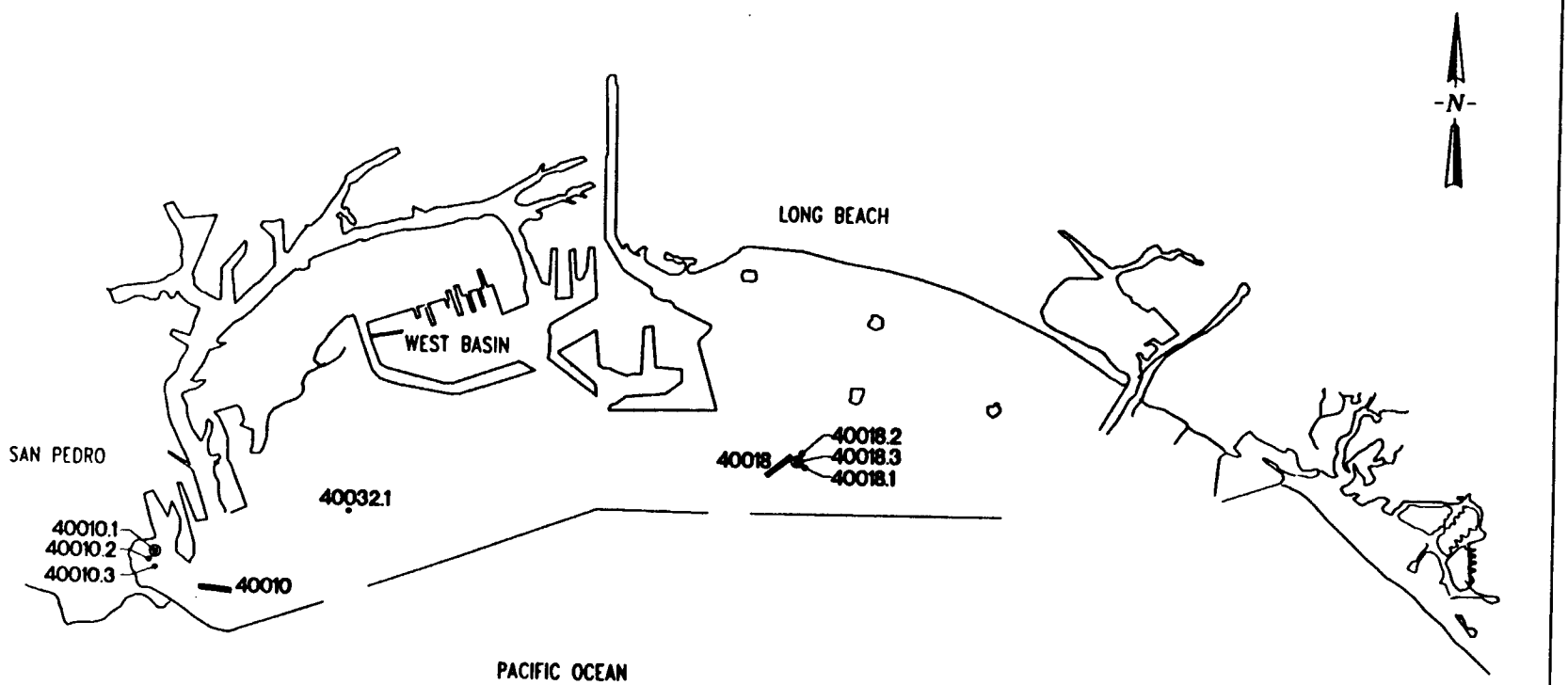
Bechtel National, Inc
CLEAN II Program

DATE 2/21/96
FILE NO. N0352.DWG
JOB NO. 22214-026

VOL 18

0216

R0062885




| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/20/96 | DRAFT RI | | | |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 3-3
REFERENCE STATION SAMPLING LOCATIONS
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/20/96
FILE NO.: NC087.DWG
JOB NO.: 22214-026

*LEGEND*

- APPROXIMATE LOCATION OF TRAWLING TRANSECT
- • SURFACE SEDIMENT SAMPLING STATION
- O SUBSURFACE SEDIMENT SAMPLING STATION

R0062886

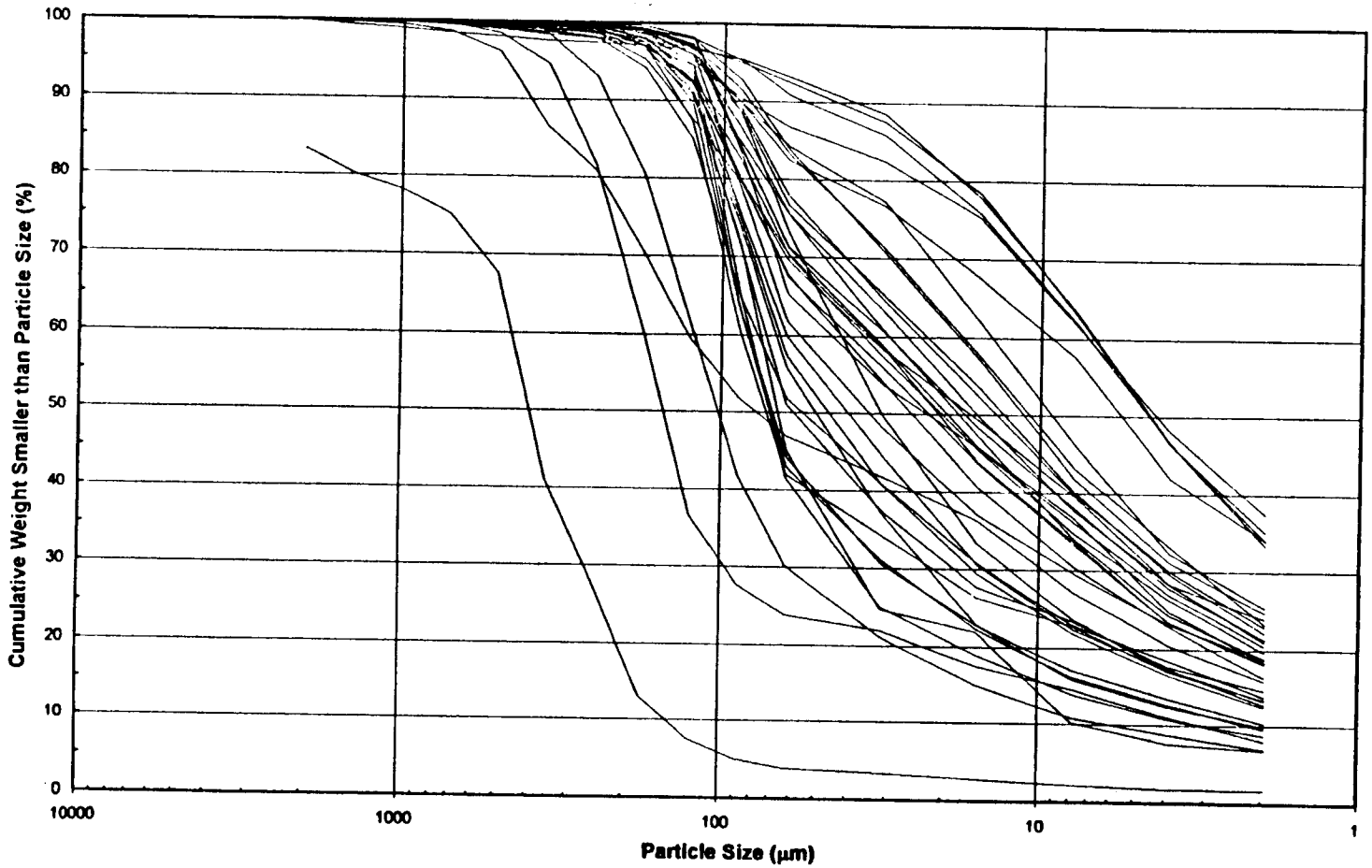



**Figure 4-1**
**Particle Size Distribution Curves for Basin Stations (not including Pier Stations)**

3/21/98 2:43 PM L:\CTO26\RR\DRAFT\SEC4\FIG4-1.XLS

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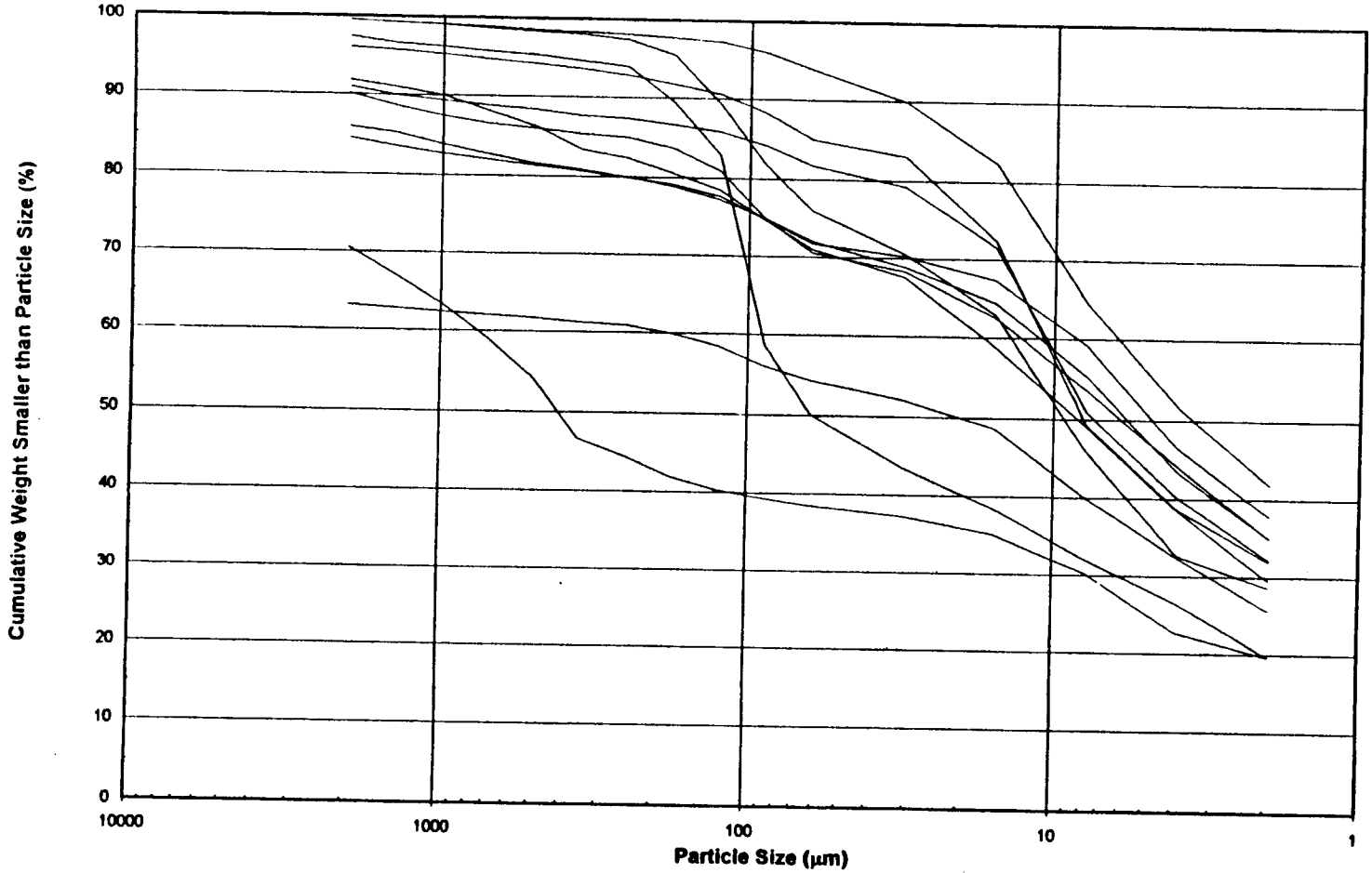


**Figure 4-2**
**Particle Size Distribution Curves for West Basin Pier Stations**

2/21/98 2:45 PM L:\CTO26\RI\DRAFT\SEC4\FIG4-2.XLS

R0062888

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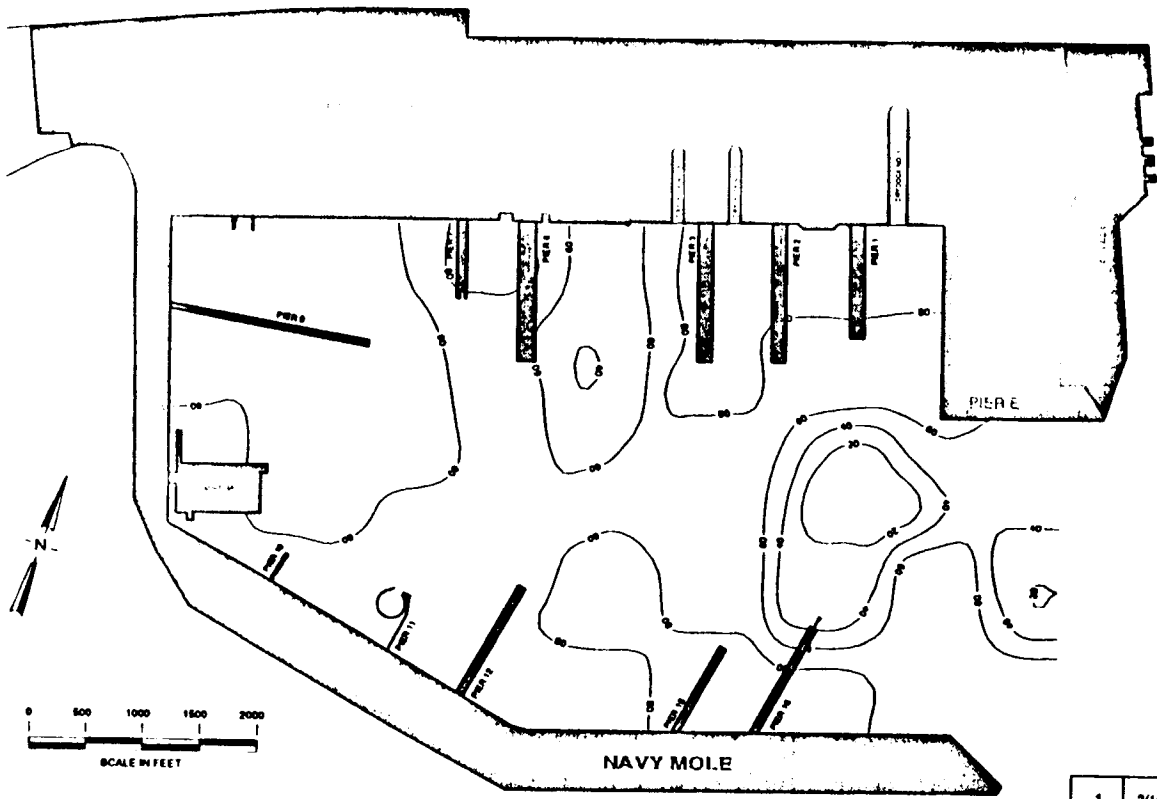


**LEGEND**

70 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY; PIER STATION DATA NOT INCLUDED.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 1 | 2/1/96 | DRAFT RI | ECN | TRM | OK |
| 0 | 12/15/95 | PREDRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-3
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF PERCENT FINES WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
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FILE NO: S001.SRF
JOB NO: 22214-026

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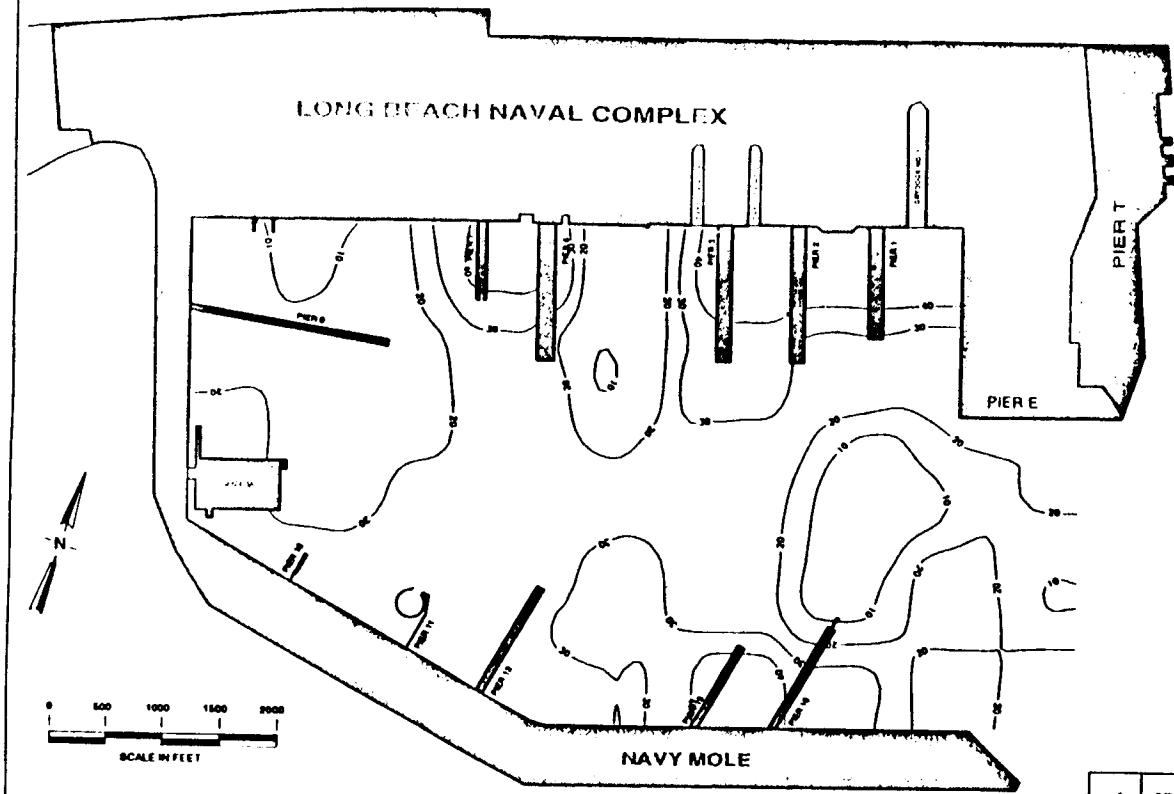


**LEGEND**

20 CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 1 | 2/21/96 | DRAFT RI | ECN | TRM | OK |
| 0 | 12/15/95 | PREDRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-4
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF PERCENT CLAY WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
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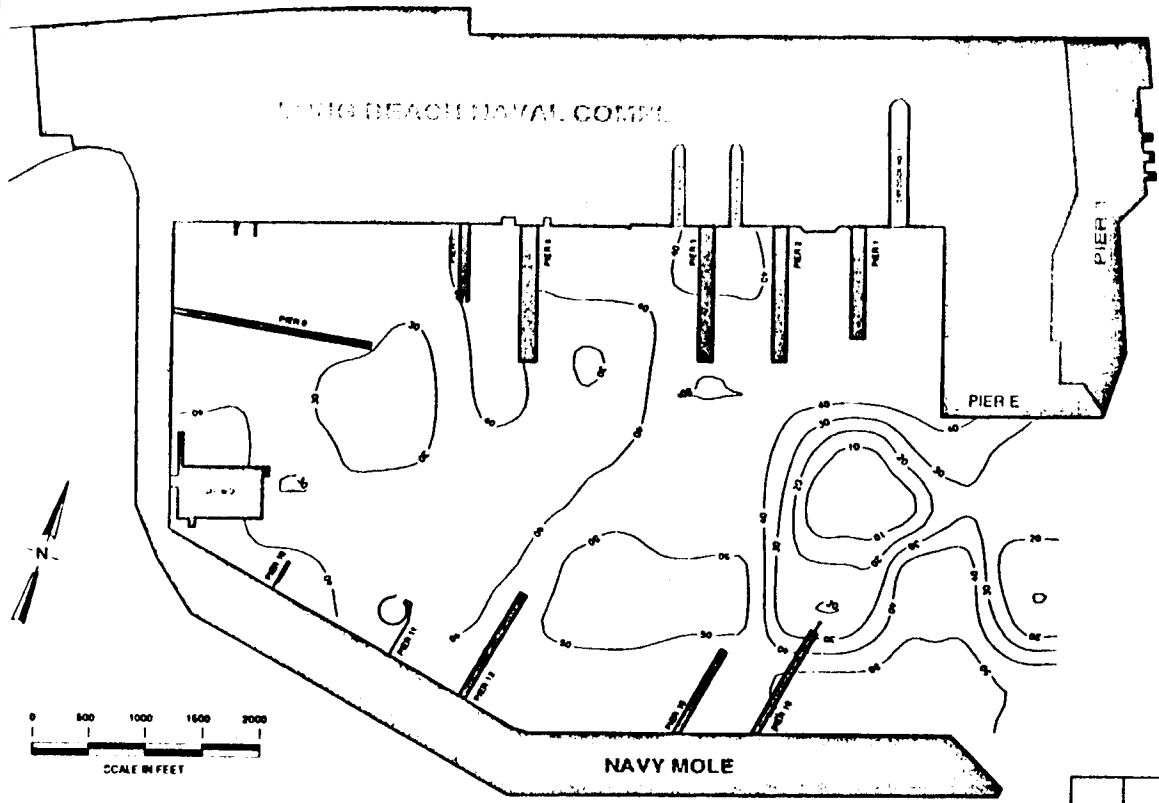


**LEGEND**

70 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY; PIER STATION DATA NOT INCLUDED.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-5
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF PERCENT SILT WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S003.SRF
JOB NO: 22214-026

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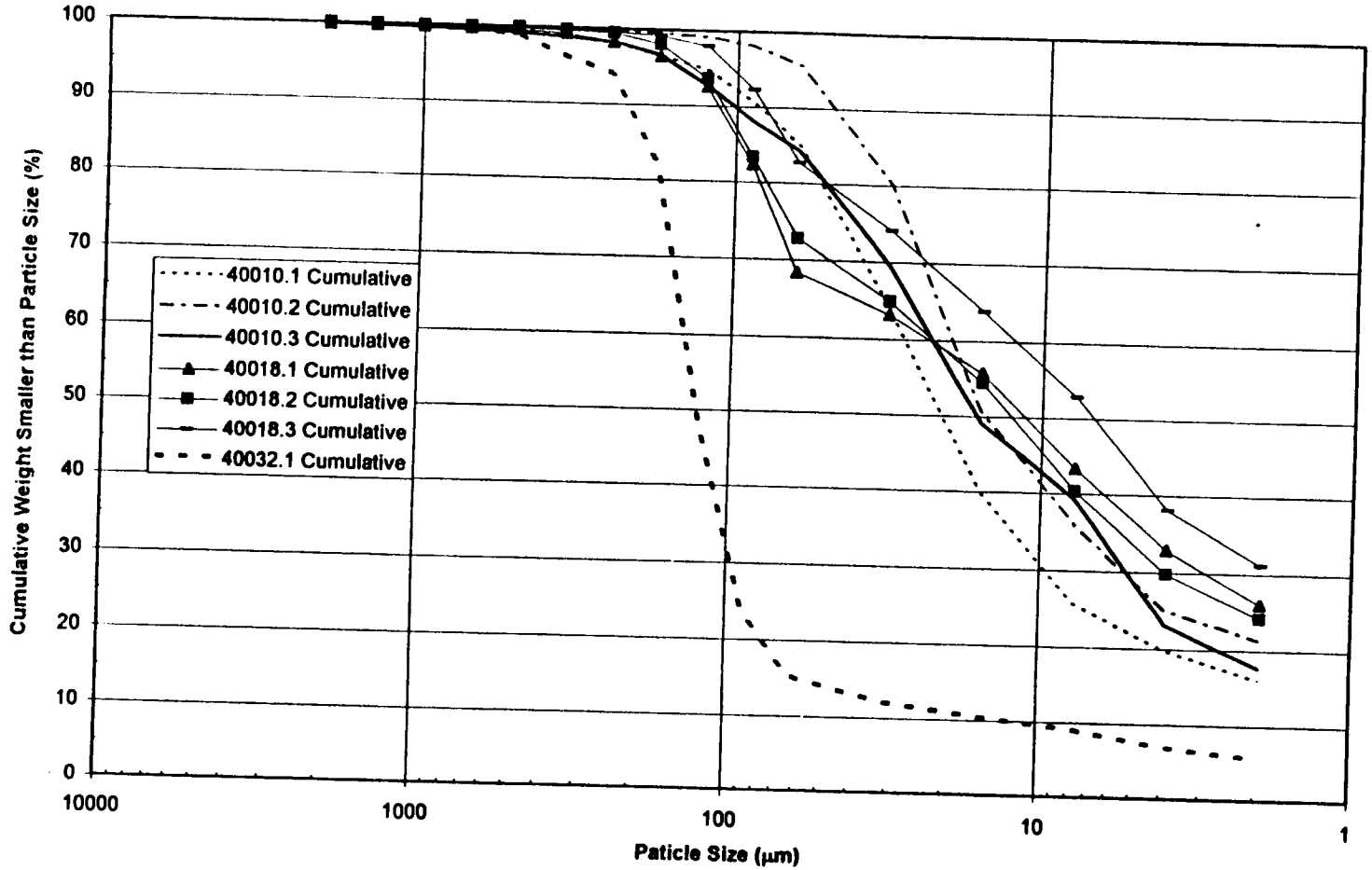


**Figure 4-6**
**Particle Size Distribution Curves for Reference Stations**

2/21/96 2 48 PM L \CTO26\R\DRAFT\SEC4\FIG4-6 XLS

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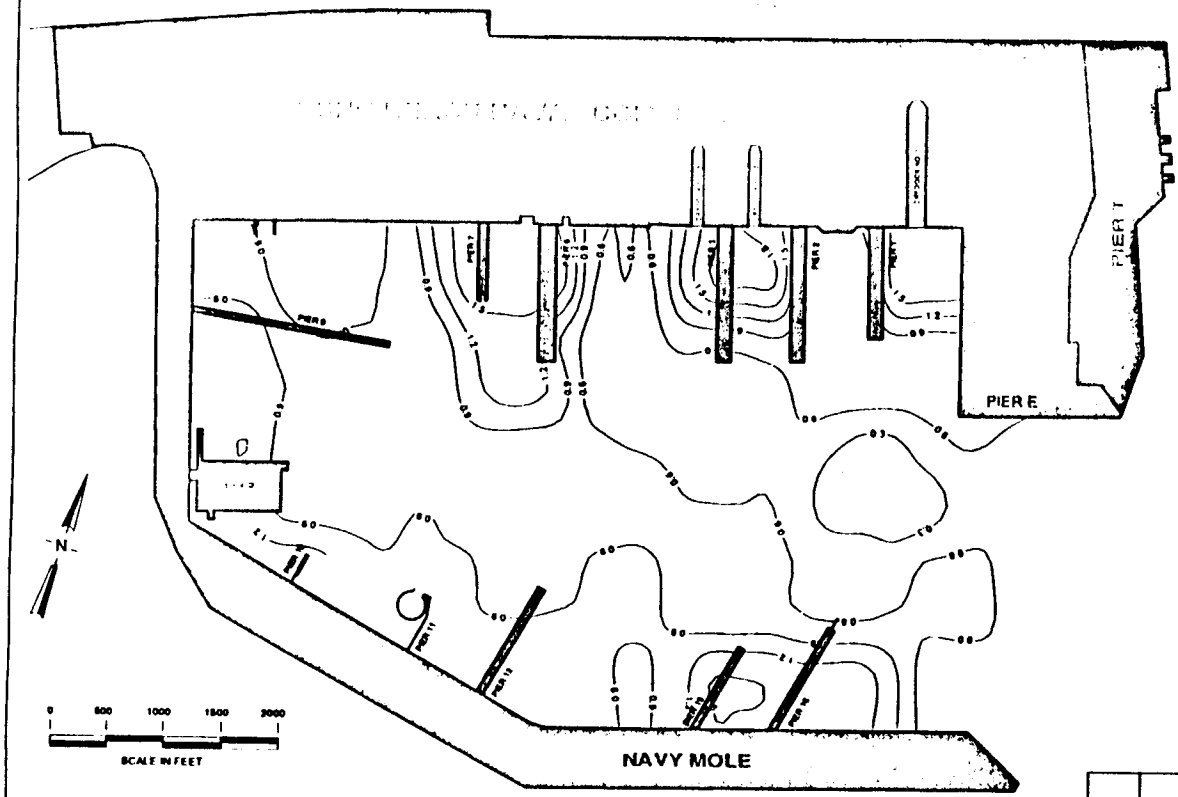


**LEGEND**

0.6 CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY; PIER STATION DATA NOT INCLUDED.

| | | | | | |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-7
SURFACE SEDIMENT SPATIAL DISTRIBUTION
OF TOTAL ORGANIC CARBON (PERCENT) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO S004.SRF
JOB NO 22214-026

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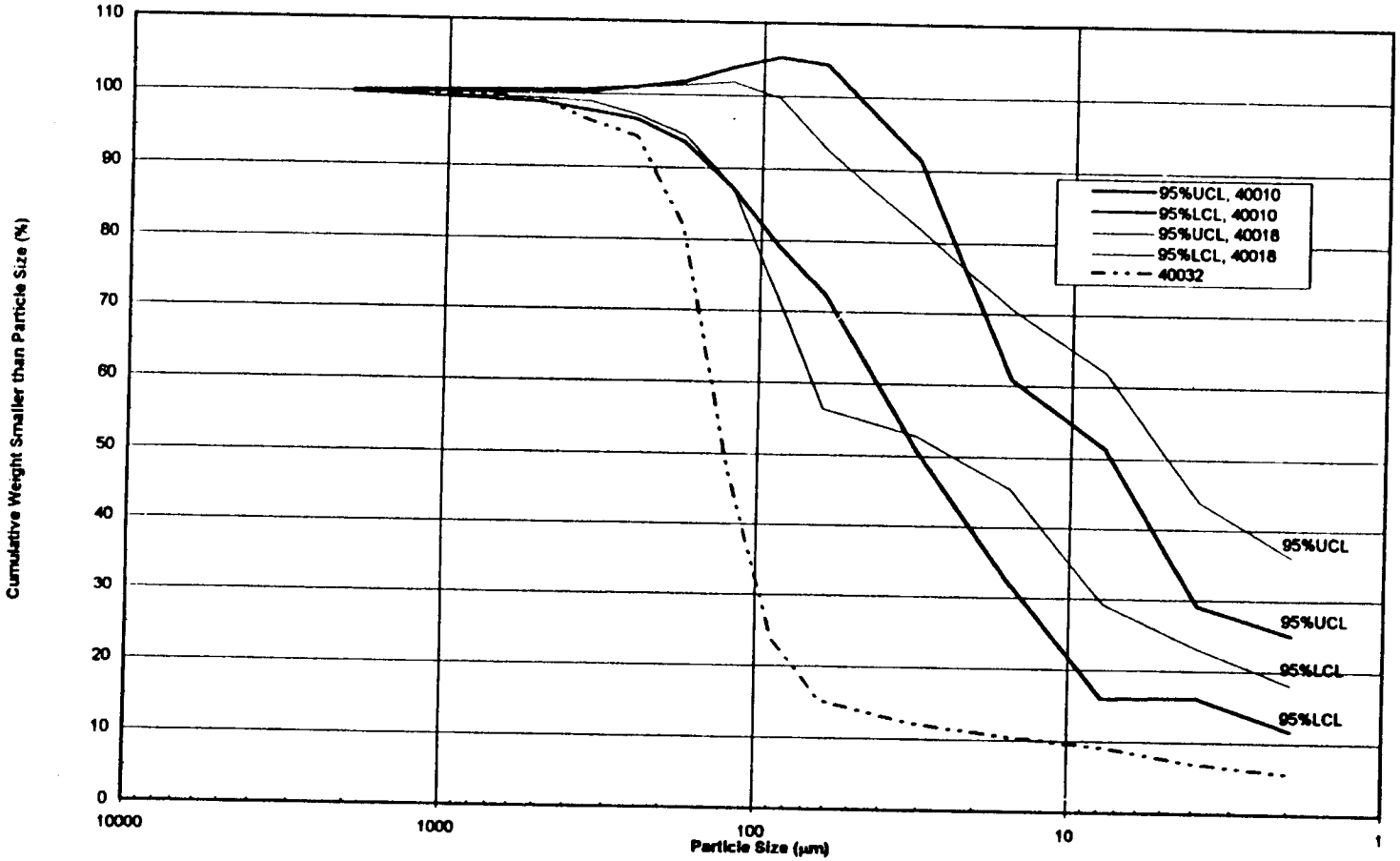


**Figure 4-8**
**Confidence Intervals of Particle Size Distribution Curves for Reference Stations**

2/21/96 2:52 PM L:\CTO26\R\NDRAFT\SEC4\FIG4-8.XLS

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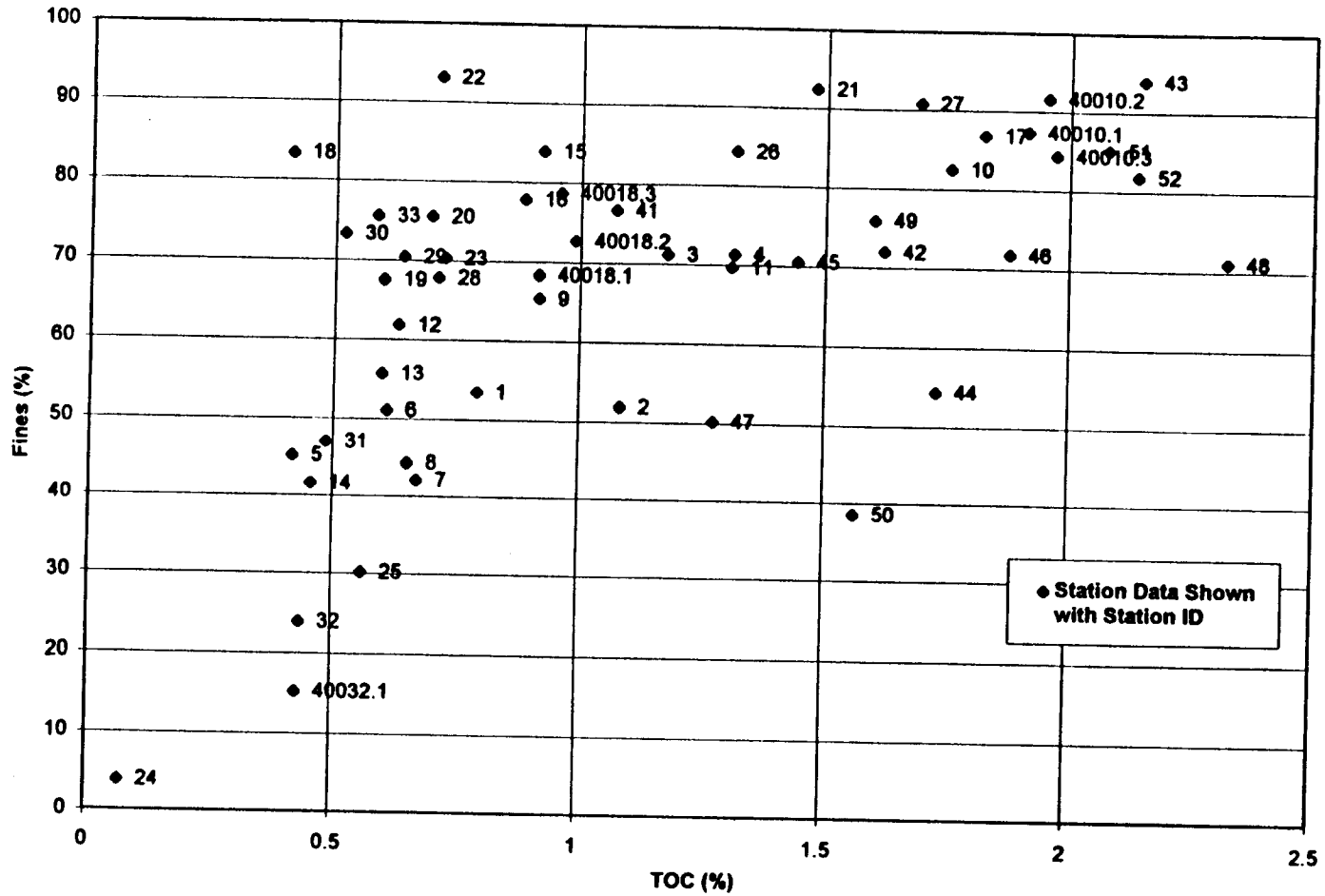


**Figure 4-9**
**Scatter Diagram of Sediment Fine Grains and TOC for West Basin and Project Reference Stations**

2/21/08 2:54 PM L:\CTO26\RR\DRAFT\SEC4\FIG4-5m.XLS

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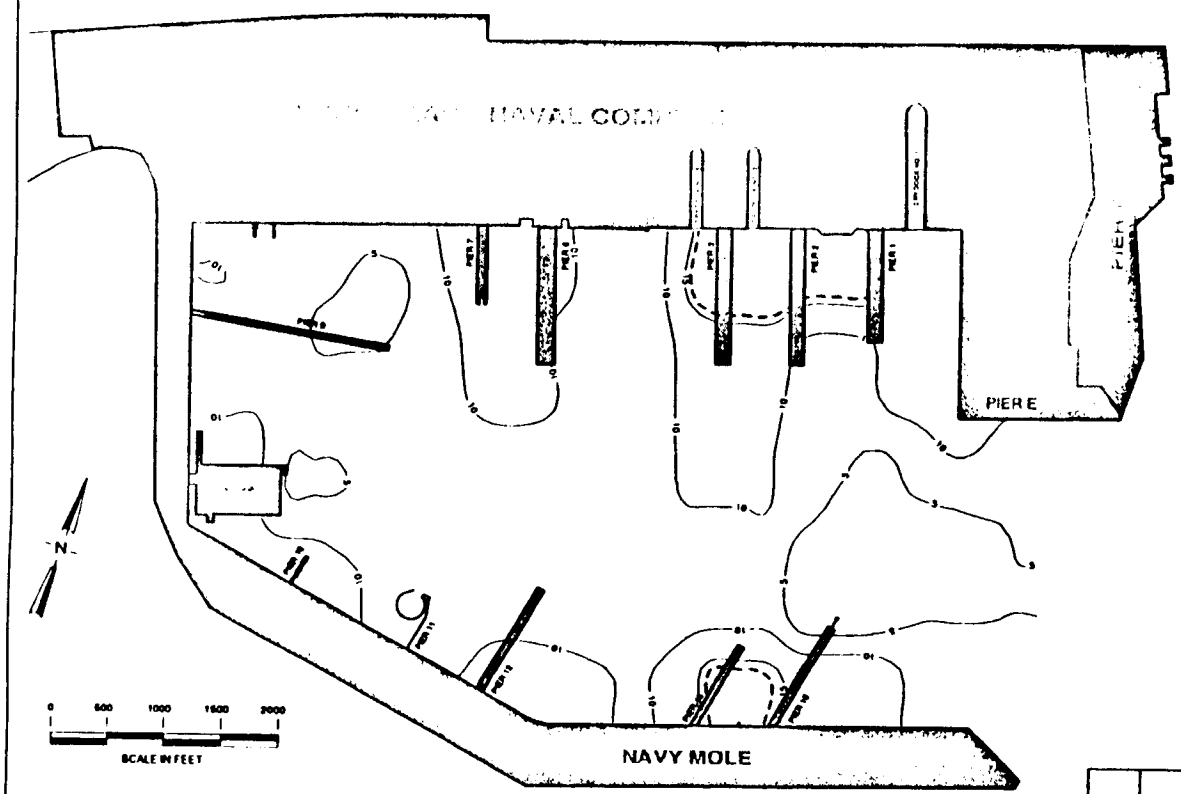



**LEGEND**

CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 16 mg/kg

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

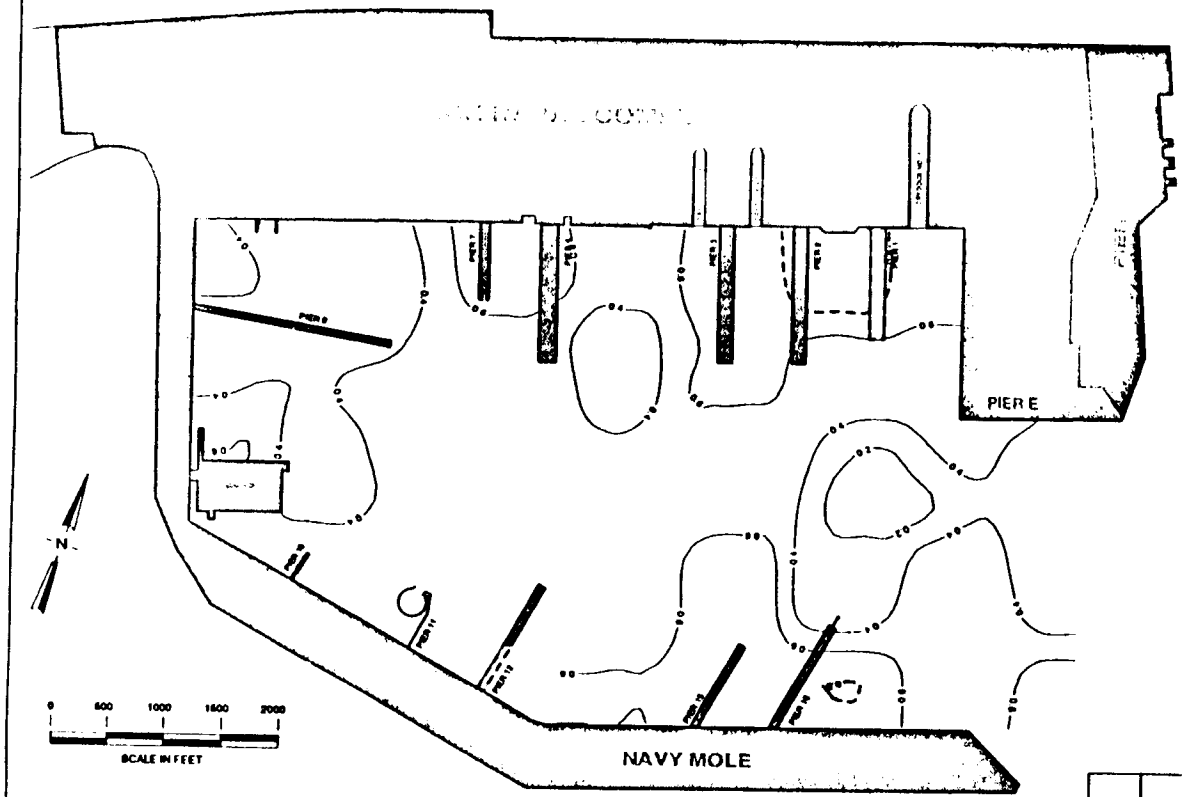
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-10
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL ARSENIC (mg/kg) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S041.SRF
JOB NO: 22214-026

R0062896




## LEGEND

CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCETRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 0.80 mg/kg

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-11
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL BERYLLIUM (mg/kg) WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

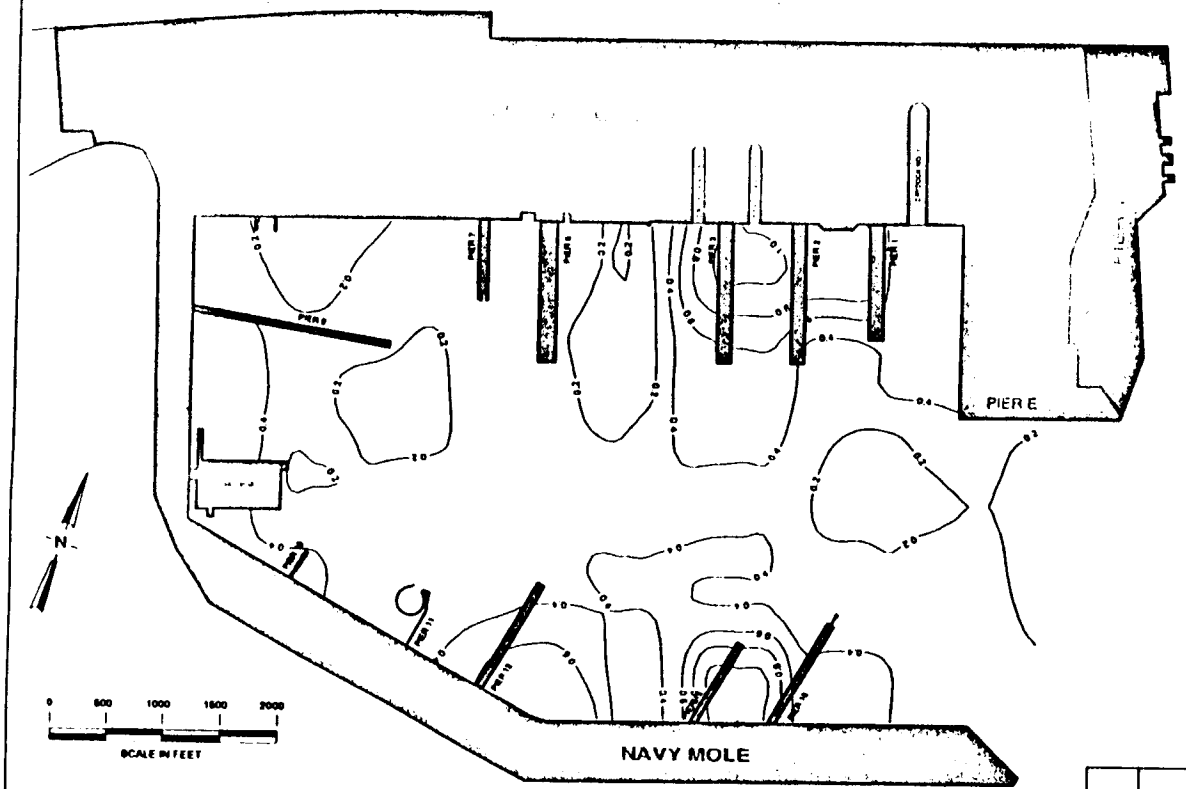
Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S060.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062897

VOL 18




**LEGEND**

CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 2.7 mg/kg

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-12
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL CADMIUM (mg/kg) WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

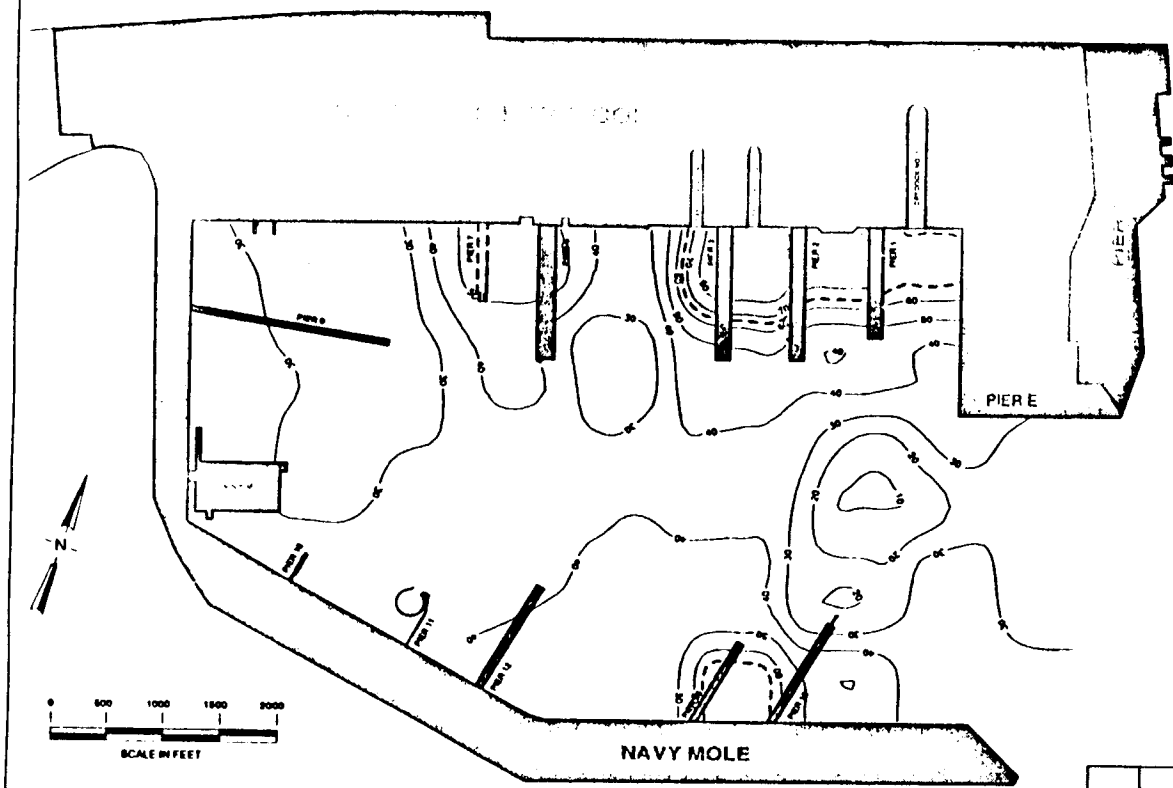
Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S042.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062898

VOL 18




**LEGEND**

CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 65 mg/kg

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 1 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

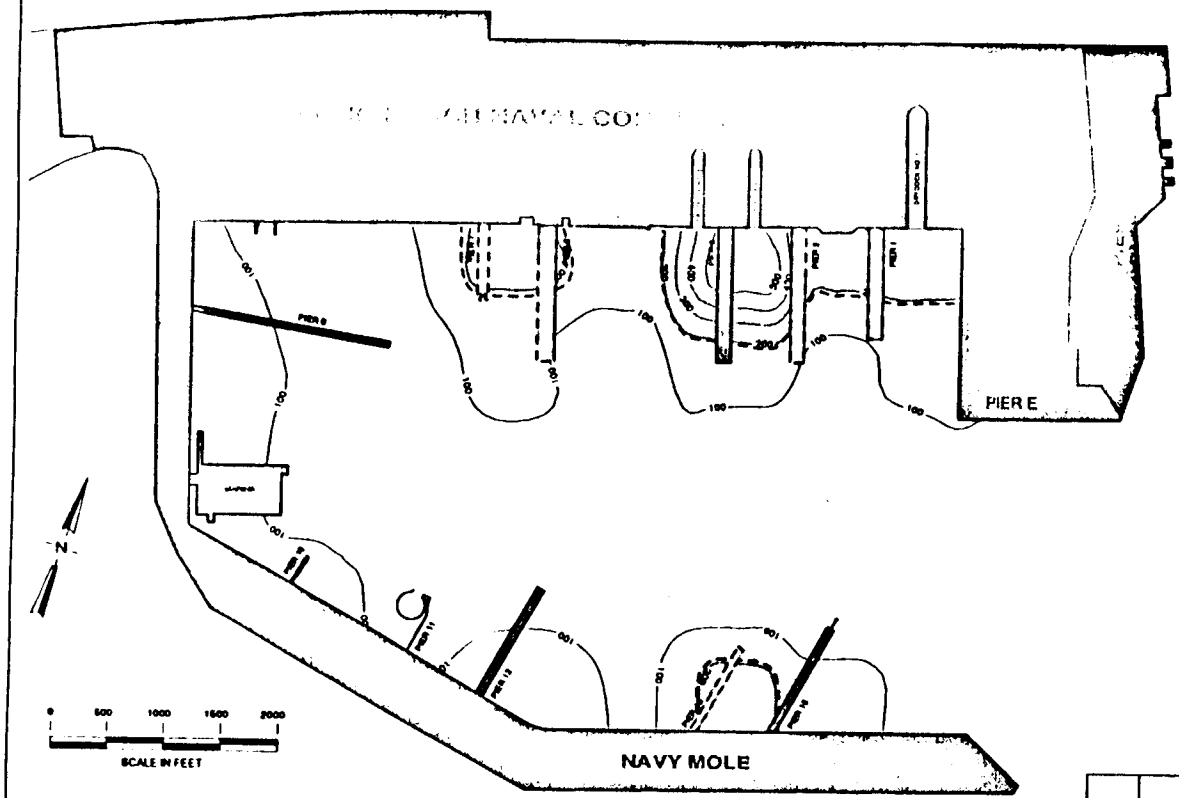
REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-13
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL CHROMIUM (mg/kg) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S043.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062899




**LEGEND**

200 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 191 mg/kg

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| | | | | | |
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-14
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL COPPER (mg/kg) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

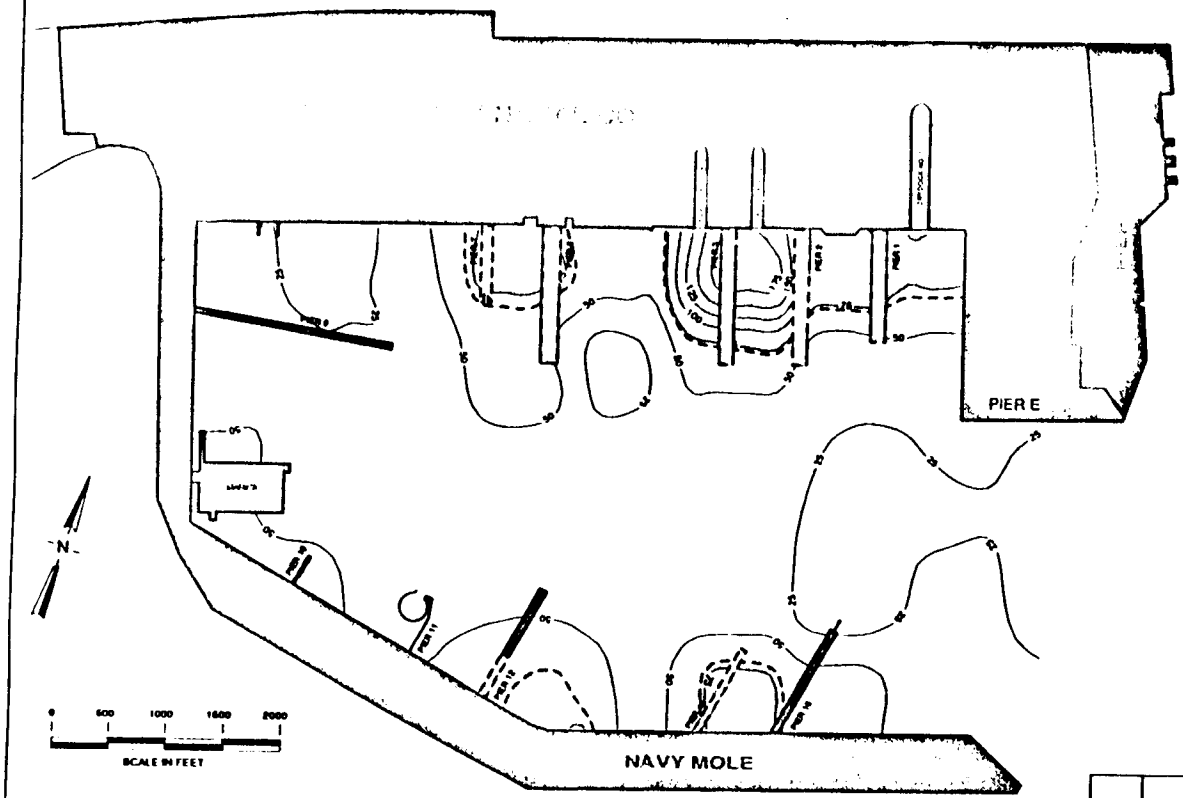
Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S044.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062900

VOL 18




**LEGEND**

CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 71 mg/kg

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

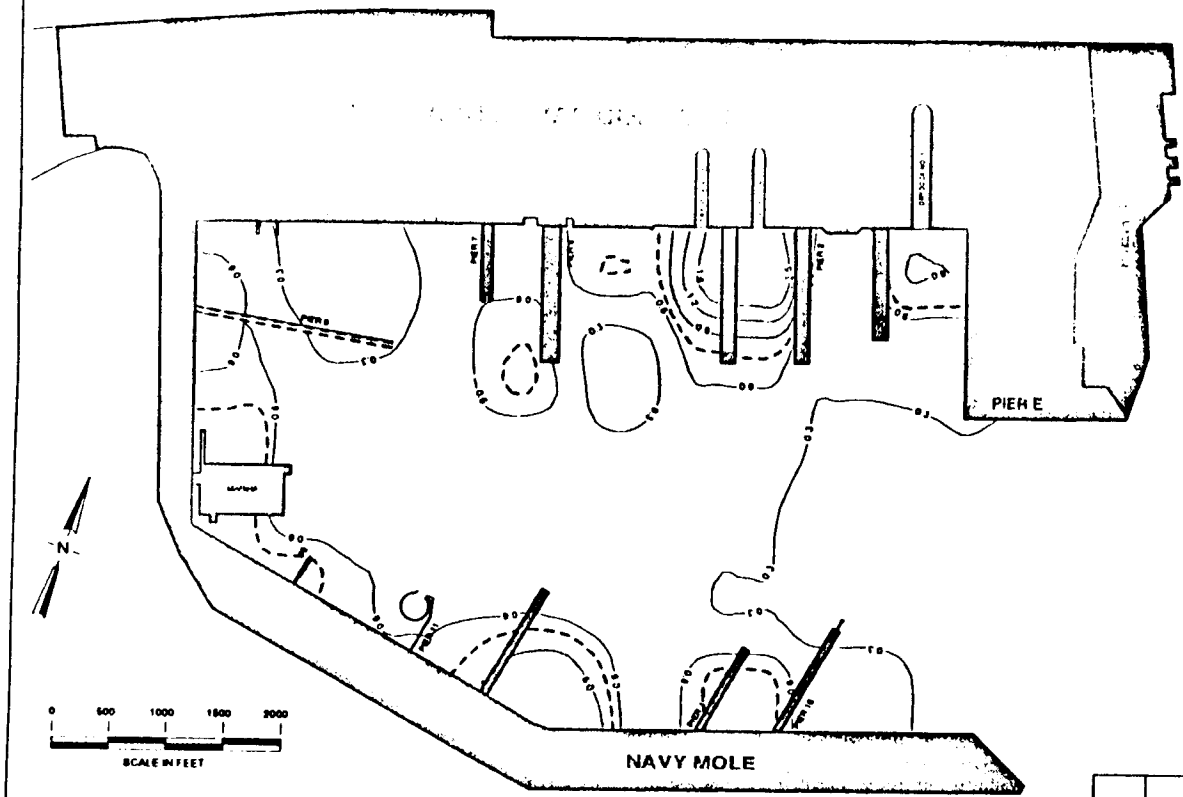
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-15
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL LEAD (mg/kg) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S045.SRF
JOB NO: 22214-026

R0062901




**LEGEND**

CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 0.71 mg/kg

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-16
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL MERCURY (mg/kg) WITHIN WEST BASIN

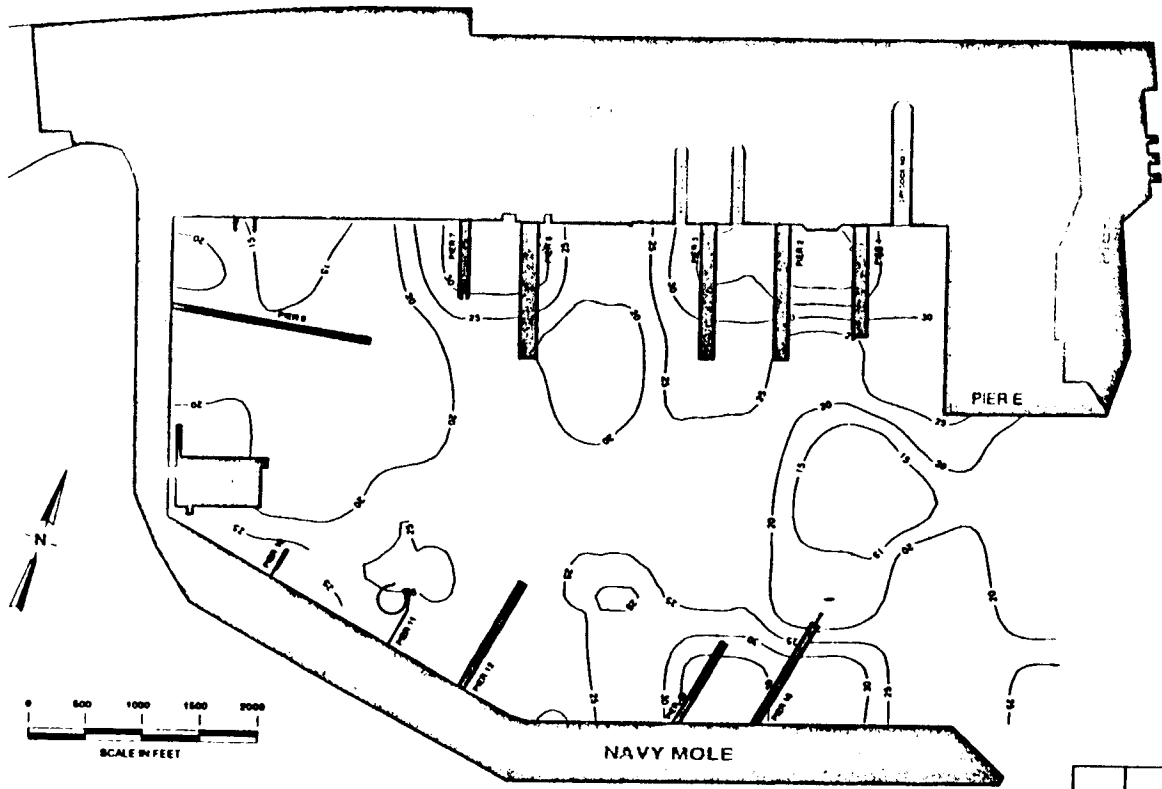
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S046.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062902




**LEGEND**

70 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 46 mg/kg

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | PREDRAFT RI | ECN | TRM | OK |

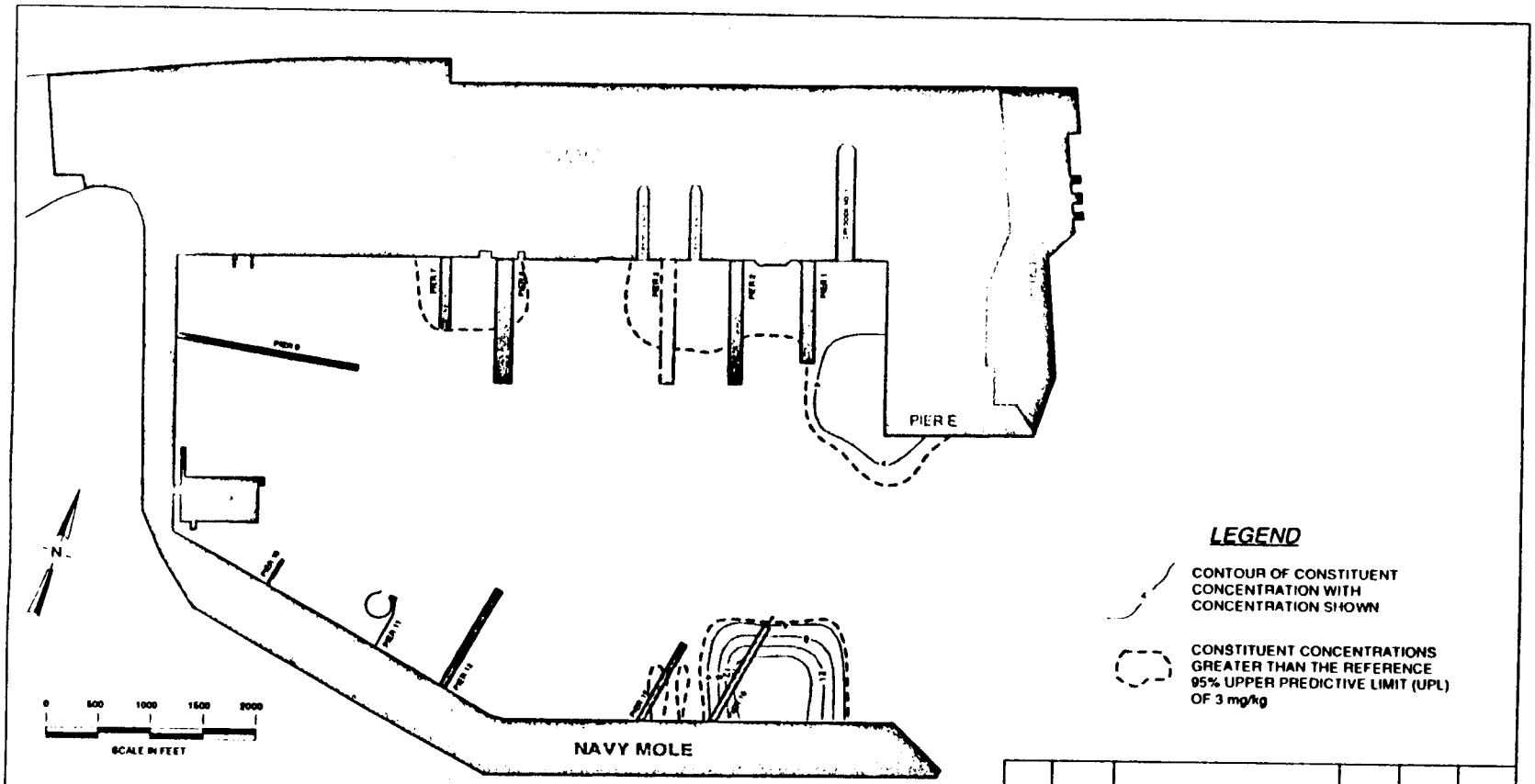
REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-17
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL NICKEL (mg/kg) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S047.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062903




**LEGEND**

CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 3 mg/kg

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

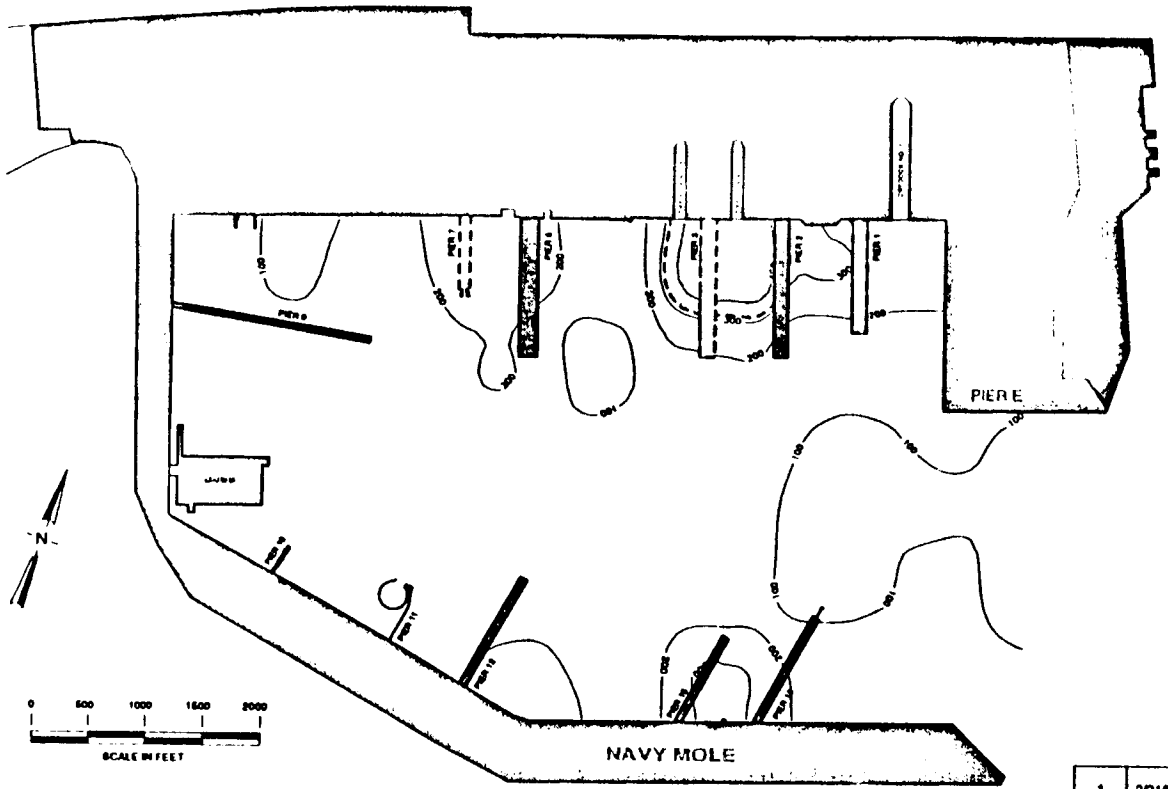
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| | | | | | |
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-18
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL SILVER (mg/kg) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S048.SRF
JOB NO: 22214-026

R0062904




*LEGEND*

100 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 324 mg/kg

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 1 | 2/21/96 | DRAFT RI | ECN | TRM | OK |
| 0 | 12/15/95 | PREDRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-19
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL ZINC (mg/kg) WITHIN WEST BASIN

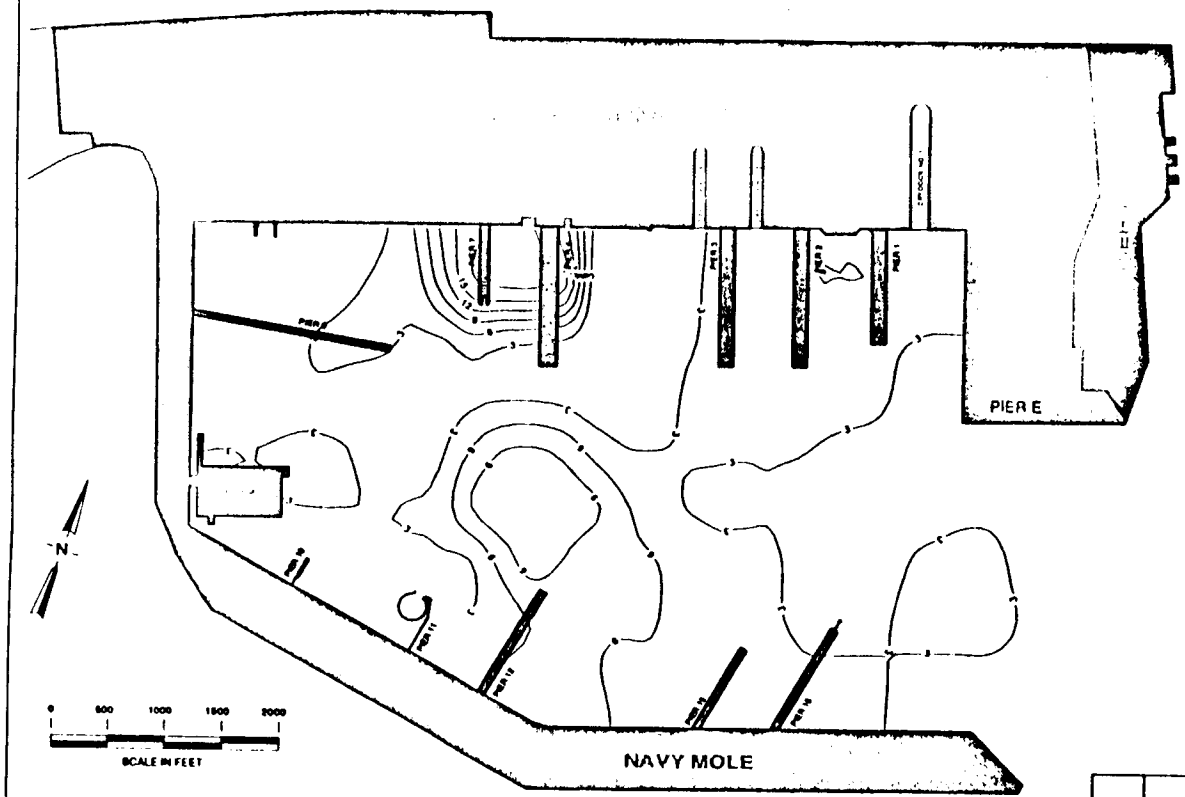
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S049.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062905




**LEGEND**

CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-20
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF AVS (umol/g) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

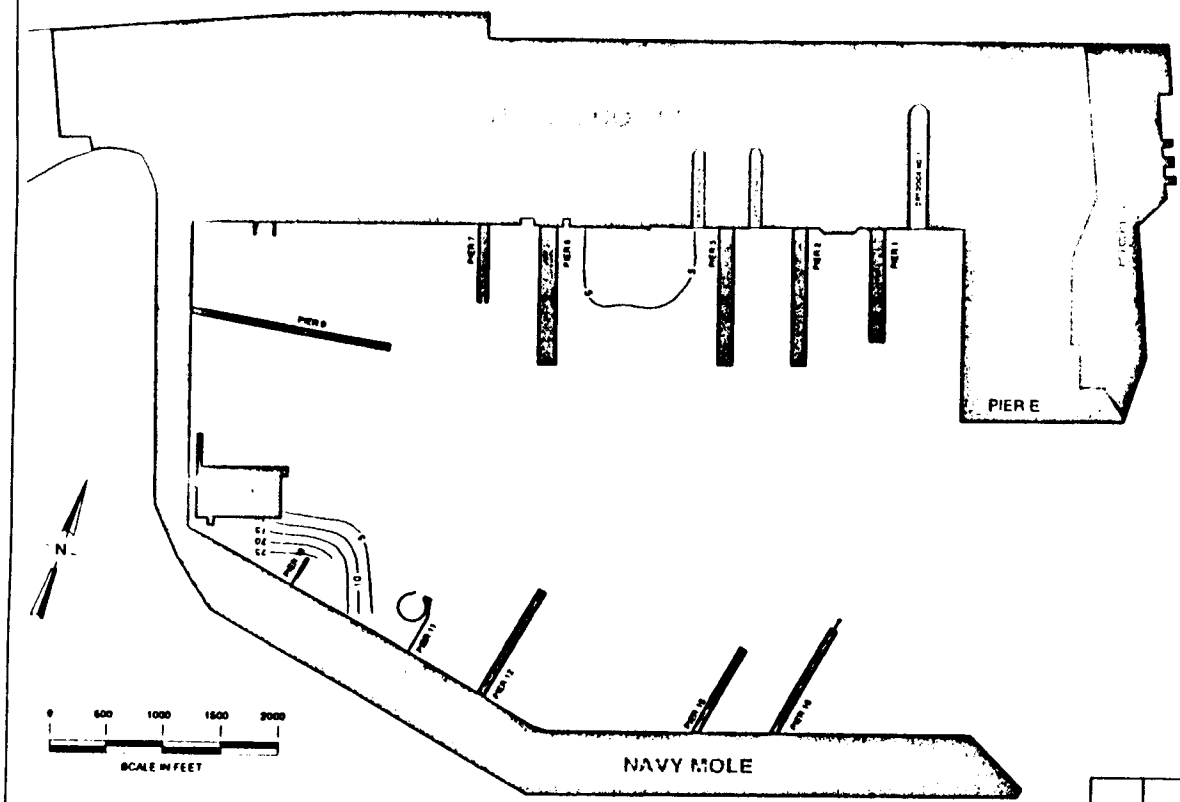
Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S015.SRF
JOB NO: 22214-026

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY; PIER STATION DATA NOT INCLUDED.

AVS - ACID VOLATILE SULFIDE

R0062906




**LEGEND**

20 CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-21
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF SEM/AVS WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

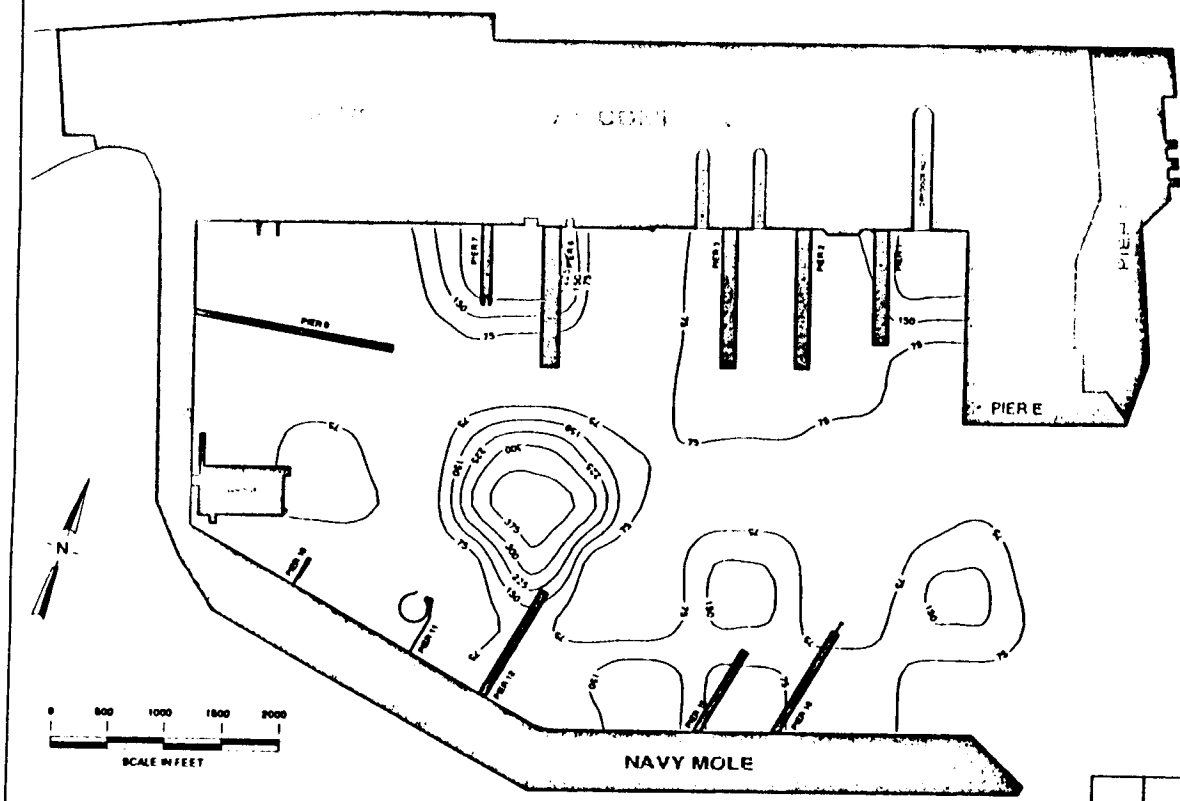
Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S016.SRF
JOB NO: 22214-026

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY; PIER STATION DATA NOT INCLUDED.

AVS/SEM - ACID VOLATILE SULFIDE/SIMULTANEOUSLY EXTRACTED METALS

R0062907




**LEGEND**

75 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-22
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL SULFIDE (mg/kg) WITHIN WEST BASIN

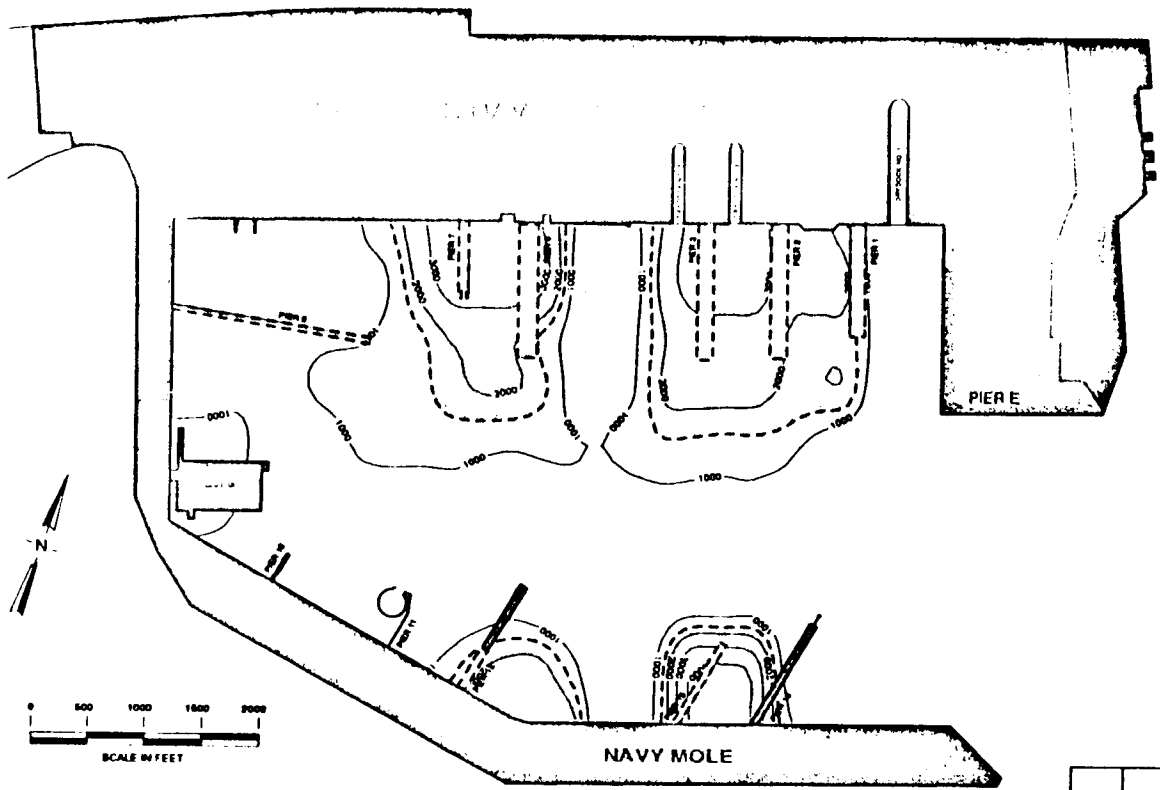
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S017.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY; PIER STATION DATA NOT INCLUDED.

R0062908




**LEGEND**

1000 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 1510 ug/kg

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

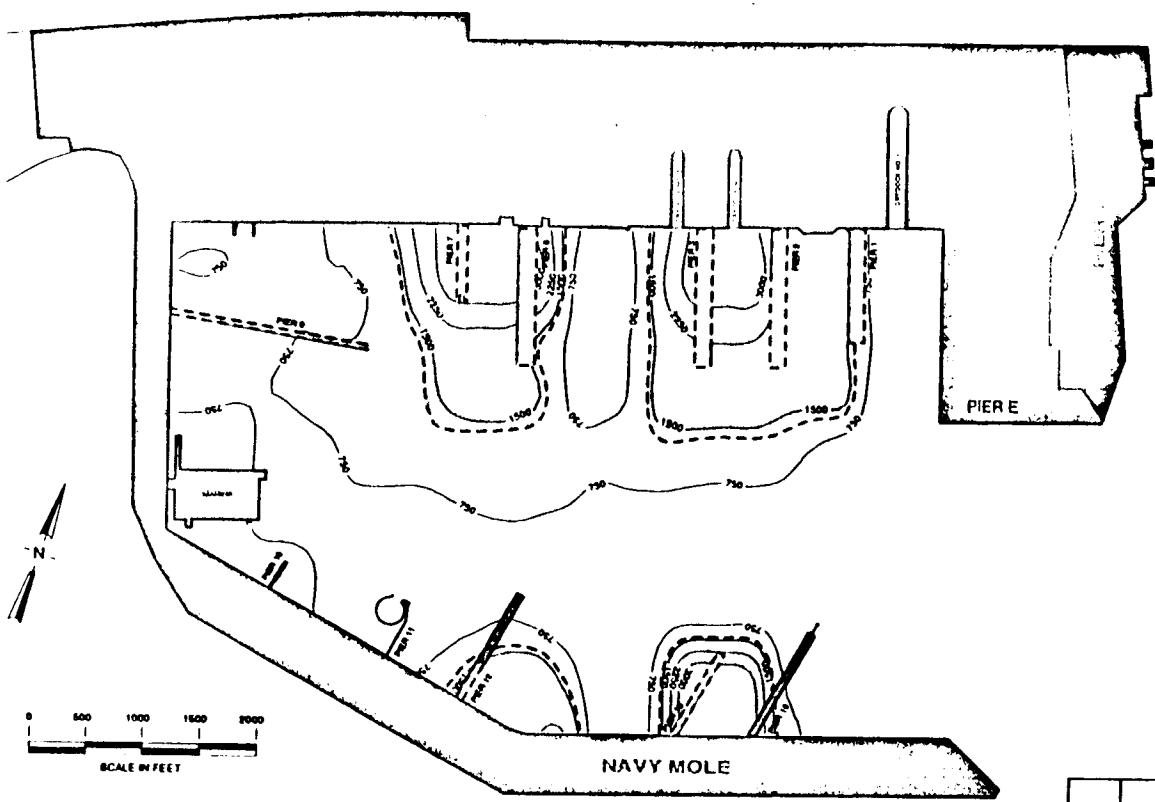
REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-23
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF PAH (ug/kg) WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S052.SRF
JOB NO: 22214-026

R0062909




## LEGEND

750 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 1311 ug/kg

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-24
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF HPAH (ug/kg) WITHIN WEST BASIN

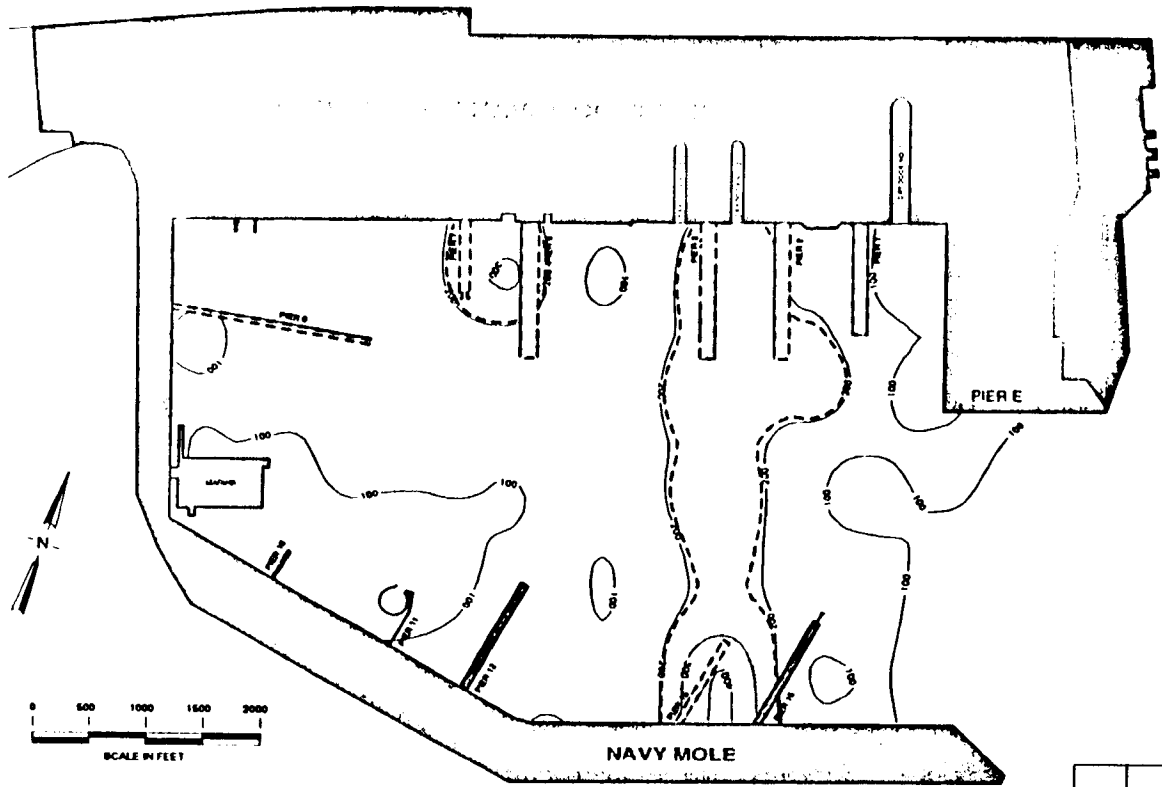
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S051.SRF
JOB NO: 22214-026

R0062910

VOL 18




**LEGEND**

700 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 206 ug/kg

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| | | | | | |
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-25
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF LPAH (ug/kg) WITHIN WEST BASIN

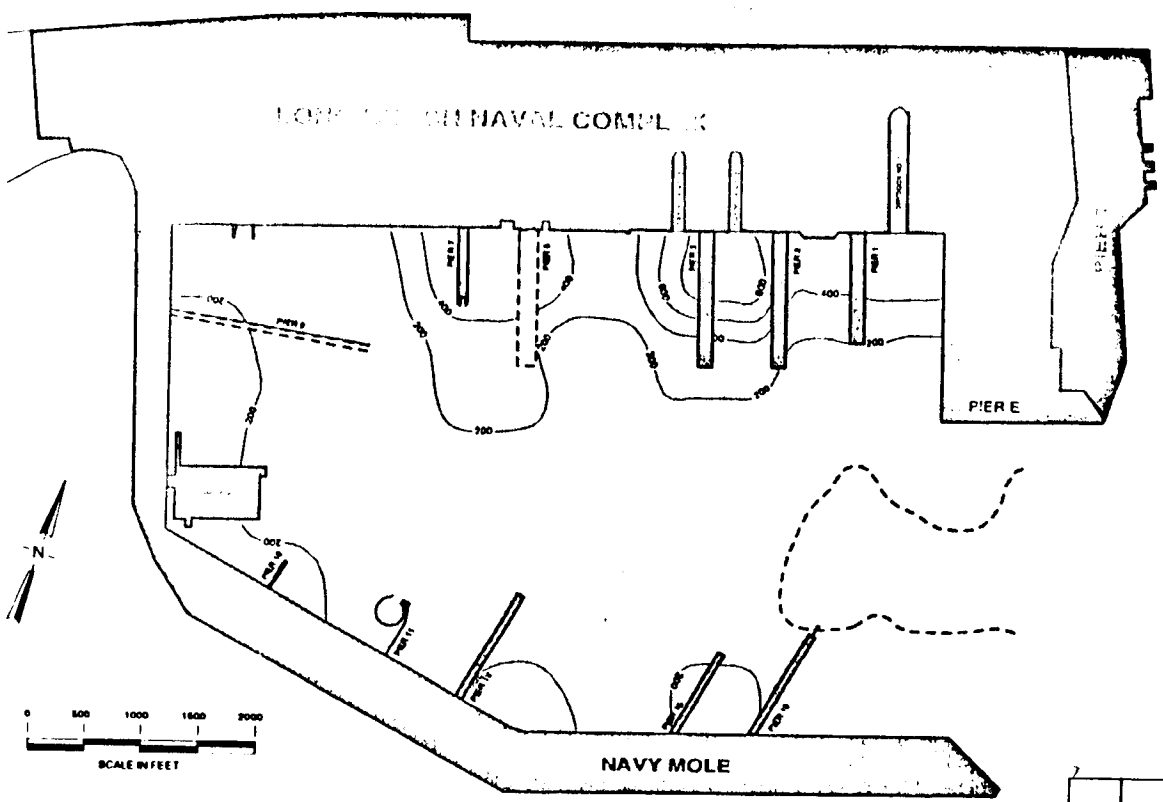
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S050.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062911




**LEGEND**

700 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 13 2 ug/kg

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

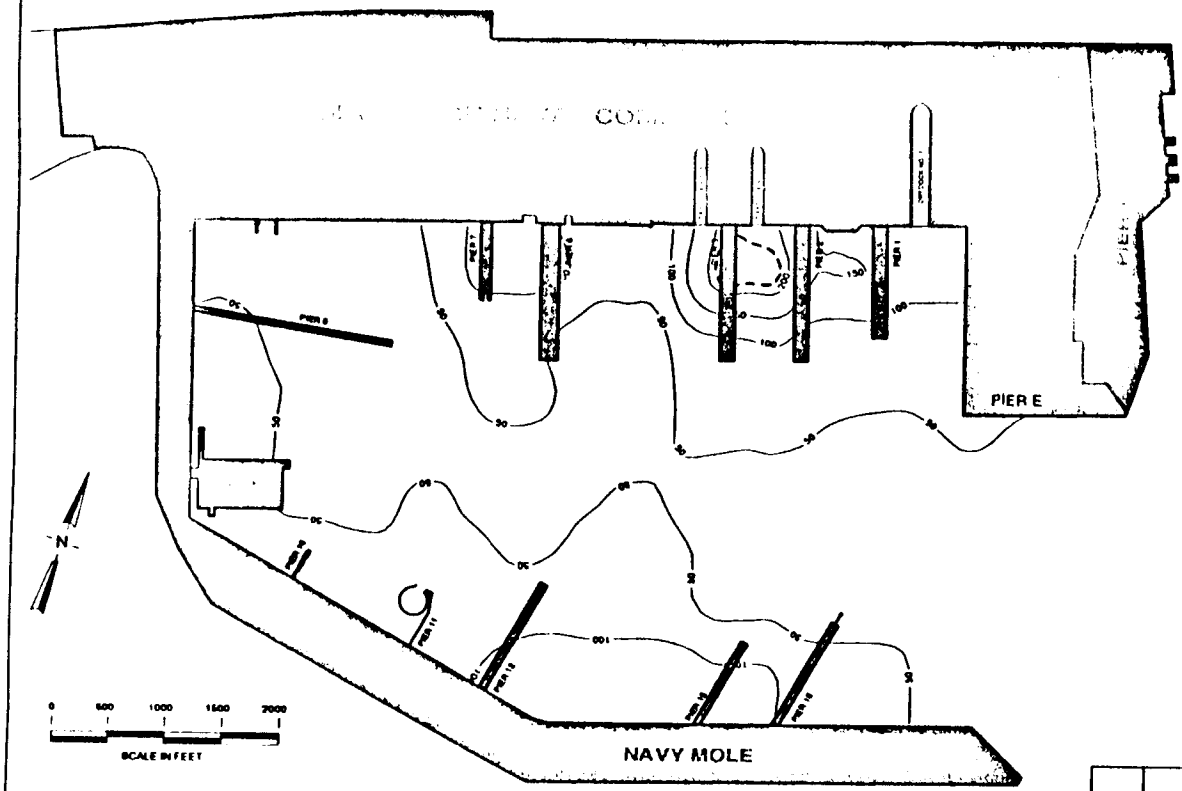
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-26
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF PCB AROCLOR 1260 (ug/kg) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S054 SRF
JOB NO: 22214-026

R0062912




**LEGEND**

50 — CONTOUR OF CONSTITUENT CONCENTRATION WITH CONCENTRATION SHOWN

CONSTITUENT CONCENTRATIONS GREATER THAN THE REFERENCE 95% UPPER PREDICTIVE LIMIT (UPL) OF 214 ug/kg

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

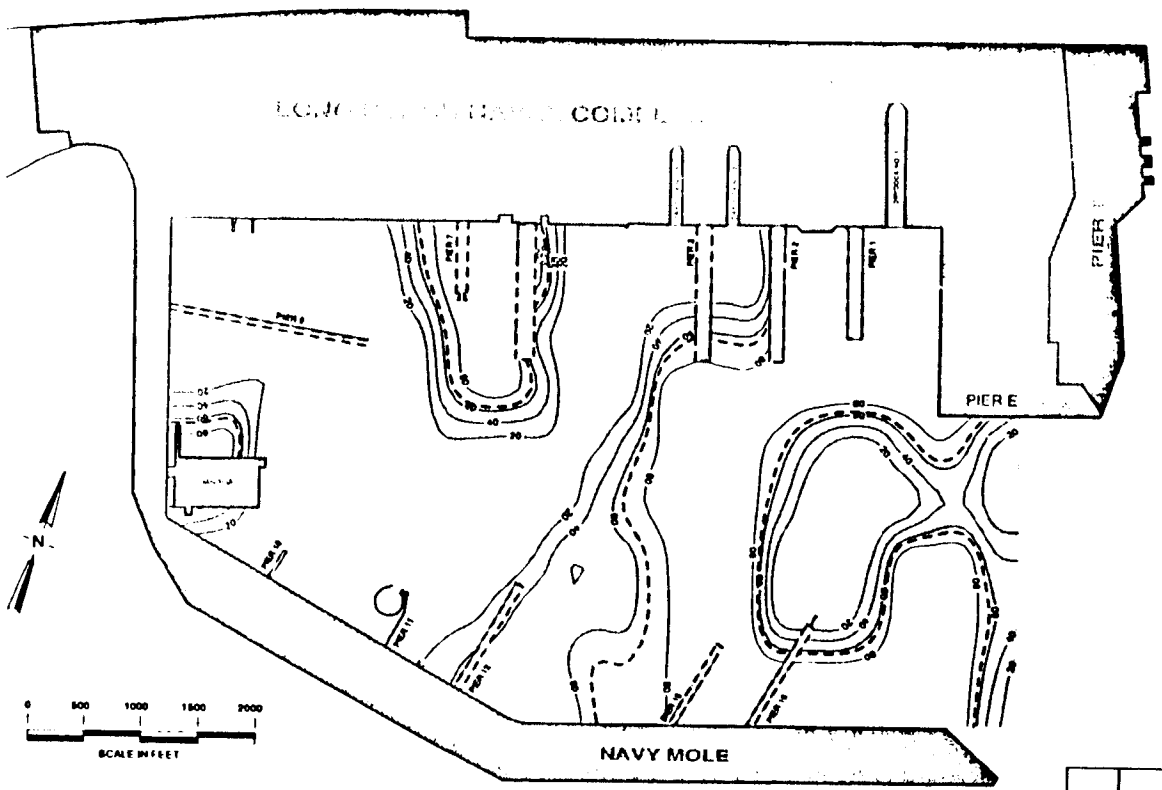
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-27
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF TOTAL DDT (ug/kg) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S053 SRF
JOB NO: 22214-026

R0062913




**LEGEND**

CONTOUR OF PERCENT NORMAL DEVELOPMENT

ECHINODERM NORMAL DEVELOPMENT "HITS"

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

"HIT" IS DEFINED AS ECHINODERM NORMAL DEVELOPMENT LESS THAN BOTH THE REFERENCE 95% LOWER PREDICTIVE LIMIT (LPL) OF 78% AND THE RELATIVE PERCENT DIFFERENCE CUTOFF OF 67%.

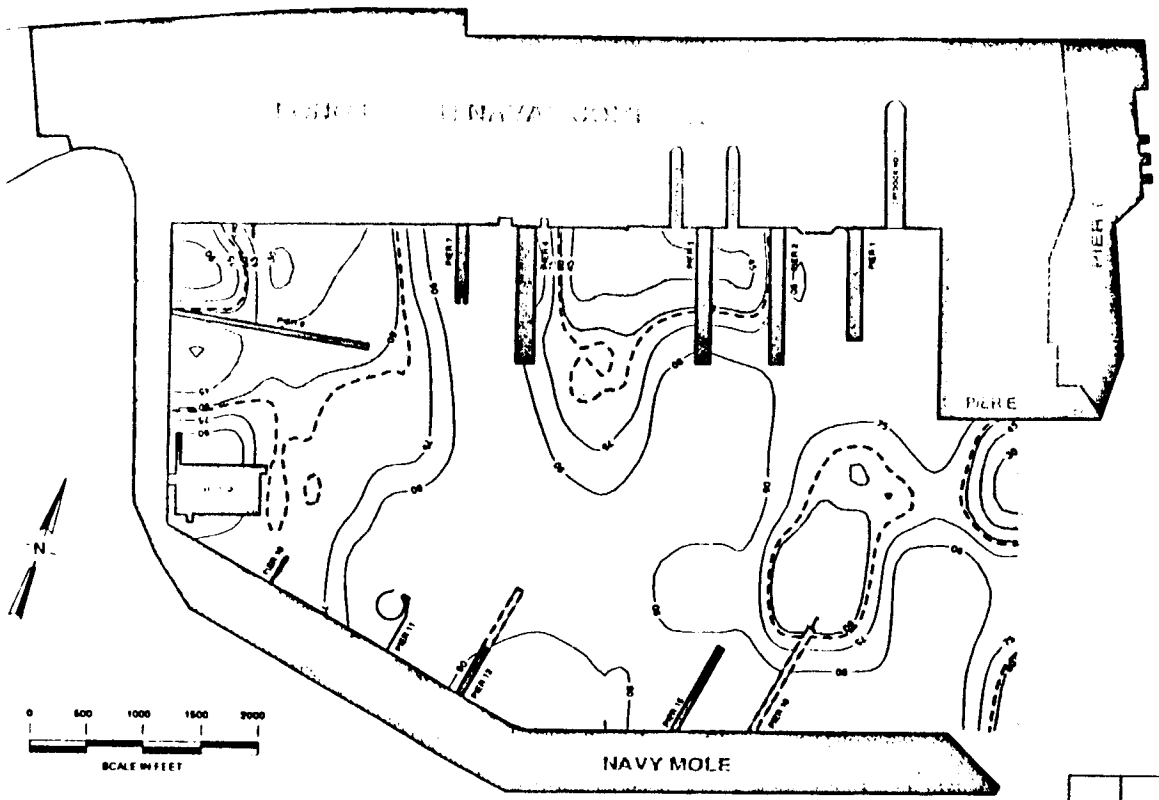
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | SAO | OK |

**REMEDIAL INVESTIGATION REPORT**
**WEST BASIN (SITE 7)**
**FIGURE 4-28**
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF ECHINODERM NORMAL DEVELOPMENT (PERCENT) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S024.SRF
JOB NO: 22214-026

R0062914




**LEGEND**

90 CONTOUR OF PERCENT SURVIVAL

ECHINODERM SURVIVAL "HITS"

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | SAO | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-29
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF ECHINODERM SURVIVAL(PERCENT) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

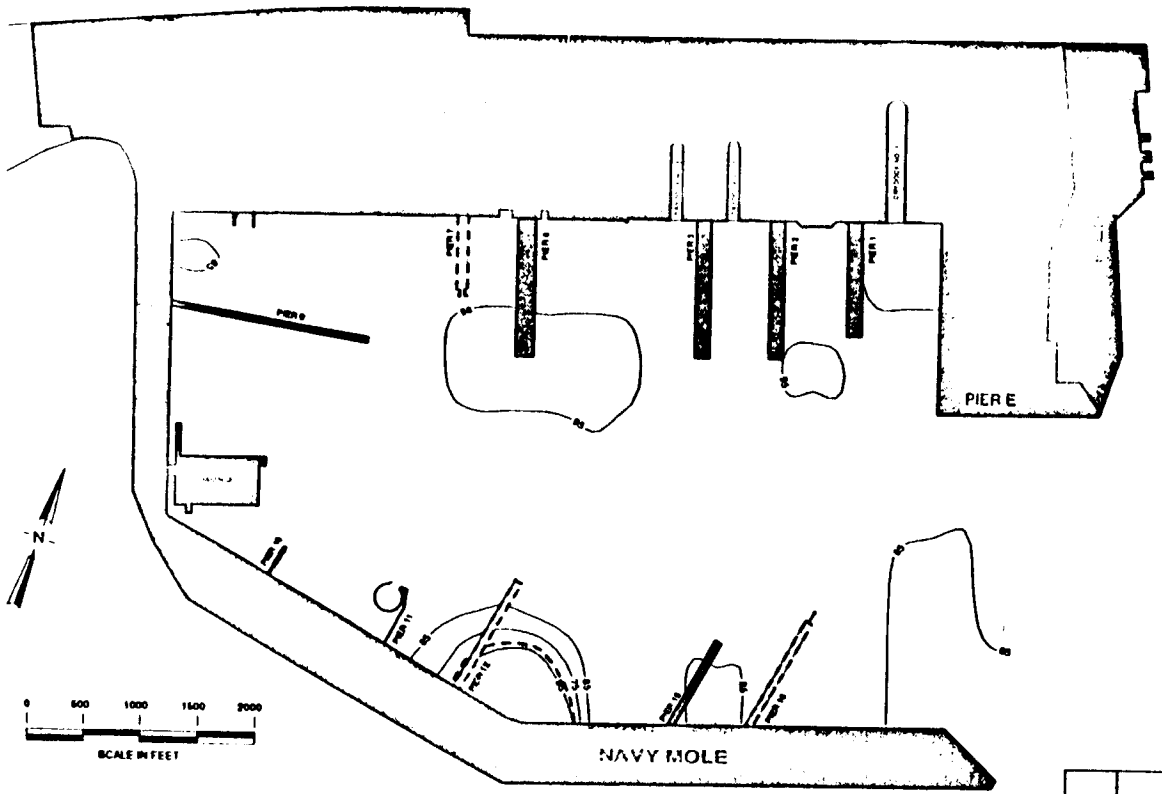
Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S022.SRF
JOB NO: 22214-026

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

"HIT" IS DEFINED AS ECHINODERM SURVIVAL LESS THAN BOTH THE REFERENCE 95% LOWER PREDICTIVE LIMIT (LPL) OF 64% AND THE RELATIVE PERCENT DIFFERENCE CUTOFF OF 68%.

R0062915




**LEGEND**

CONTOUR OF PERCENT SURVIVAL

AMPHIPOD SURVIVAL "HITS"

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

"HIT" IS DEFINED AS AMPHIPOD SURVIVAL LESS THAN BOTH THE REFERENCE 95% LOWER PREDICTIVE LIMIT (LPL) OF 77% AND THE RELATIVE PERCENT DIFFERENCE CUTOFF OF 68%.

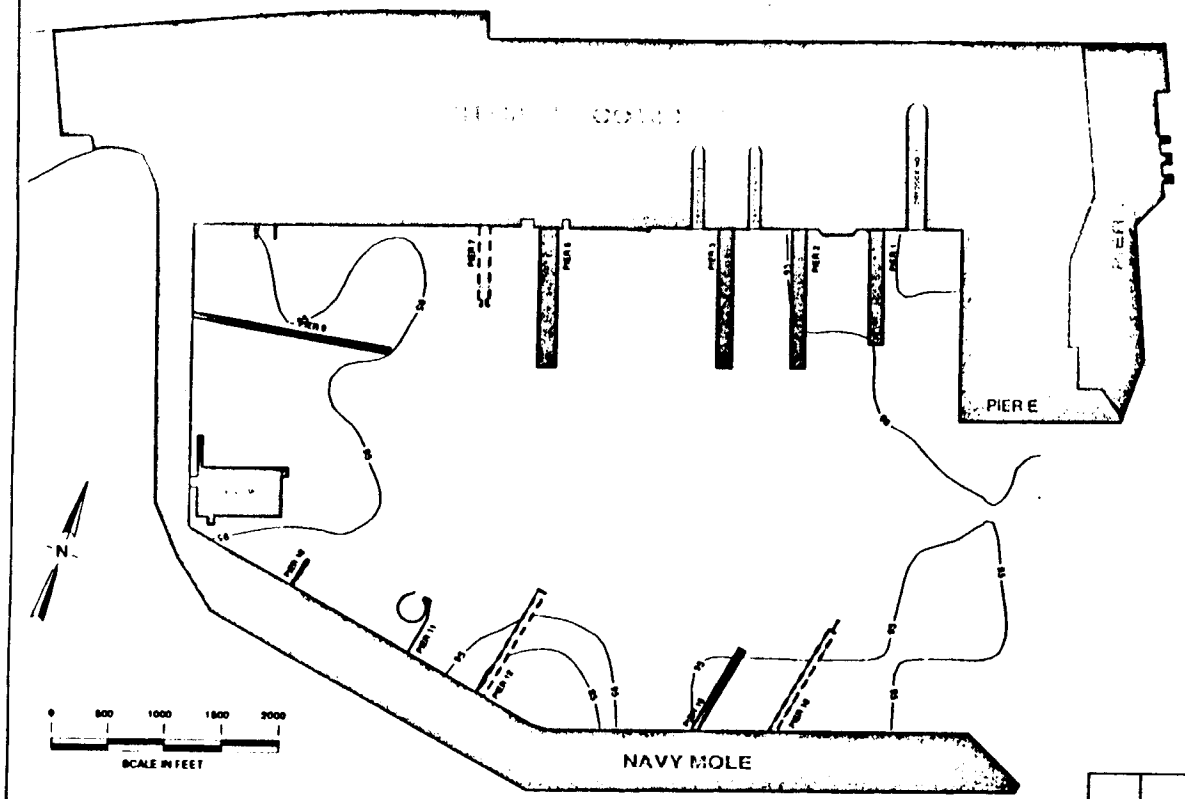
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | SAO | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-30
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF AMPHIPOD SURVIVAL (PERCENT) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S025.SRF
JOB NO: 22214-026

R0062916




**LEGEND**

- CONTOUR OF PERCENT REBURIAL
- AMPHIPOD REBURIAL "HITS"

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

"HIT" IS DEFINED AS AMPHIPOD REBURIAL LESS THAN BOTH THE REFERENCE 95% LOWER PREDICTIVE LIMIT (LPL) OF 93% AND THE RELATIVE PERCENT DIFFERENCE CUTOFF OF 77%.

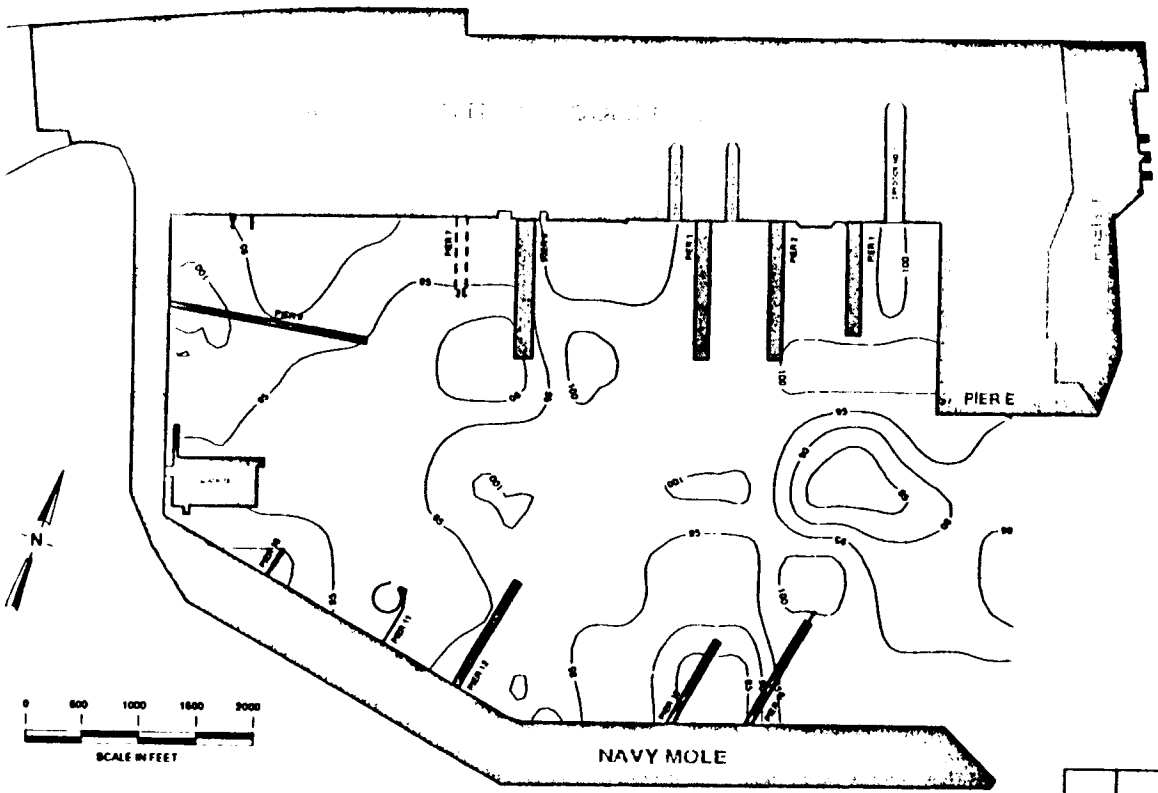
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | SAO | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-31
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF AMPHIPOD REBURIAL (PERCENT) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S026.SRF
JOB NO: 22214-026

R0062917




**LEGEND**

85 CONTOUR OF PERCENT SURVIVAL

POLYCHAETE SURVIVAL "HITS"

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

"HIT" IS DEFINED AS POLYCHAETE SURVIVAL LESS THAN BOTH THE REFERENCE 95% LOWER PREDICTIVE LIMIT (LPL) OF 91% AND THE RELATIVE PERCENT DIFFERENCE CUTOFF OF 77%.

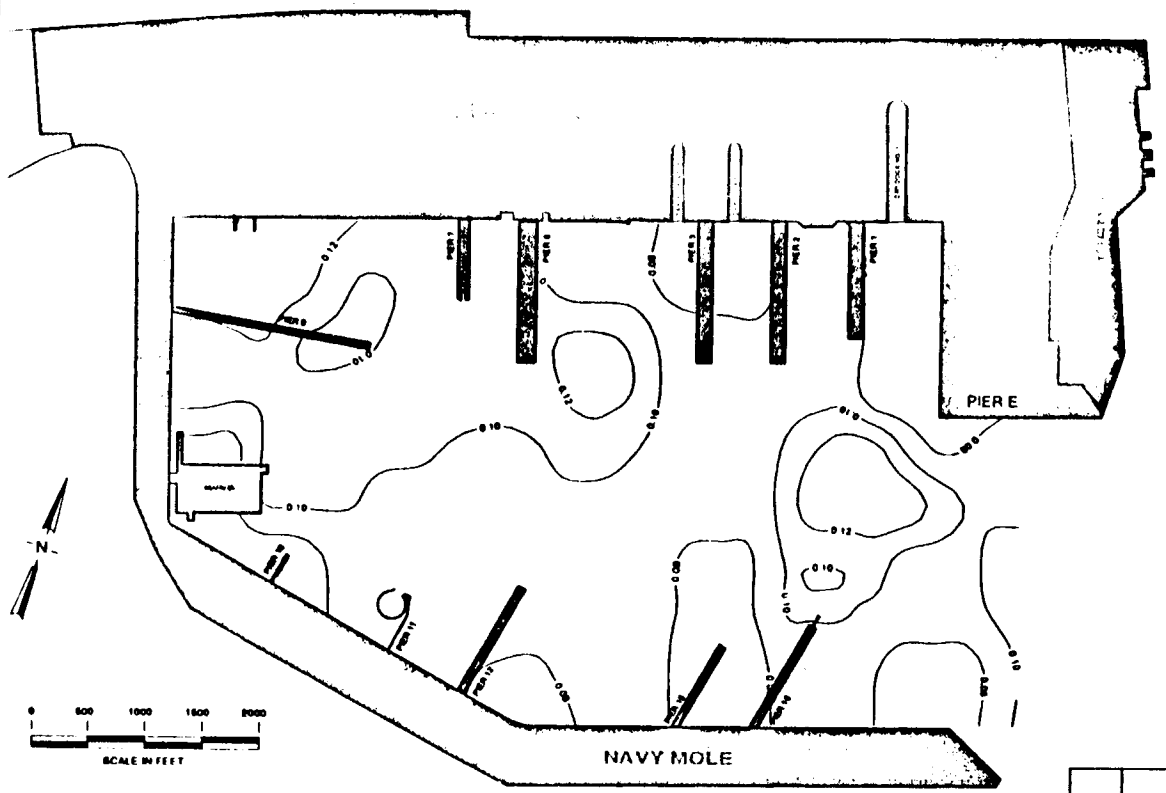
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | SAO | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-32
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF POLYCHAETE SURVIVAL (PERCENT) WITHIN WEST BASIN
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S027.SRF
JOB NO: 22214-026

R0062918




**LEGEND**

CONTOUR OF GROWTH (mg/day)

0.10

POLYCHAETE GROWTH "HITS"

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

"HIT" IS DEFINED AS POLYCHAETE GROWTH LESS THAN BOTH THE REFERENCE 95% LOWER PREDICTIVE LIMIT (LPL) OF 0.048 mg/day AND THE RELATIVE PERCENT DIFFERENCE CUTOFF OF 0.062 mg/day.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | SAO | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-33
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF POLYCHAETE GROWTH (mg/day) WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S028 SRF
JOB NO: 22214-026

R0062919

C3--4C3

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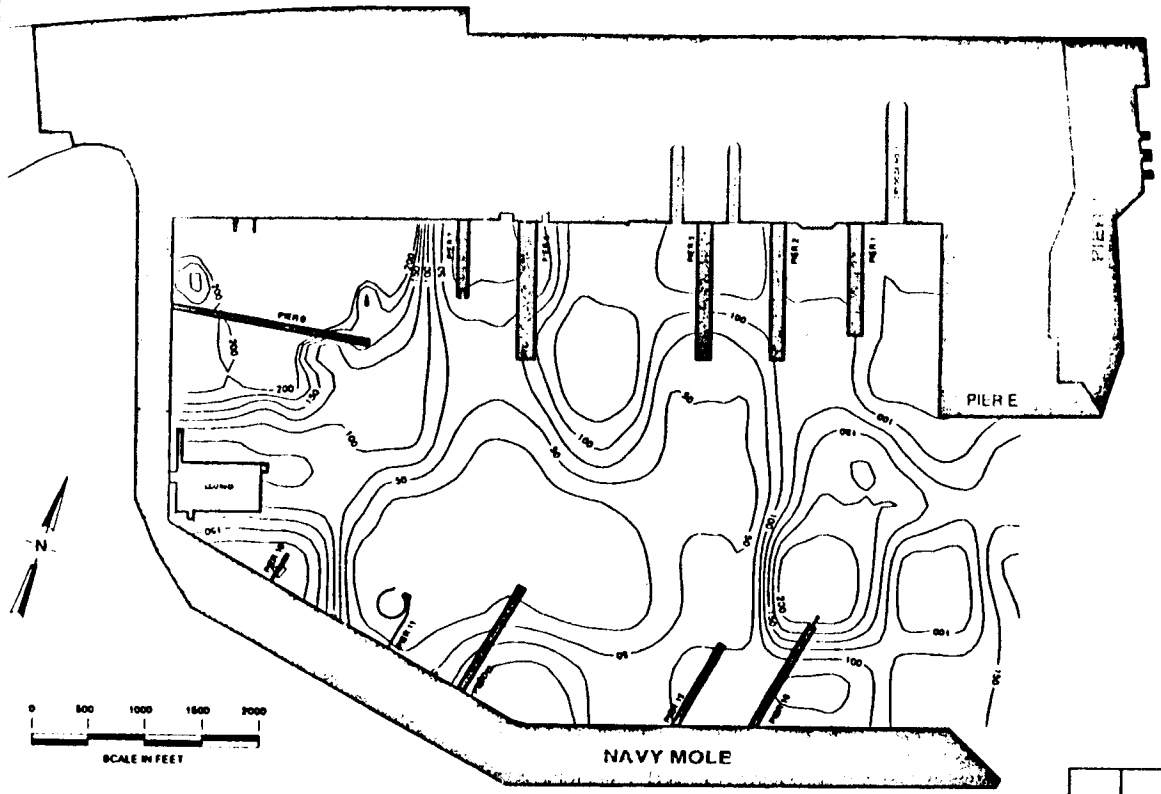



**LEGEND**

100 CONTOUR OF BENTHIC INFAUNAL TOTAL ABUNDANCE WITH ABUNDANCE SHOWN

| | | | | | |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-34
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF BENTHIC INFAUNAL TOTAL ABUNDANCE WITHIN WEST BASIN

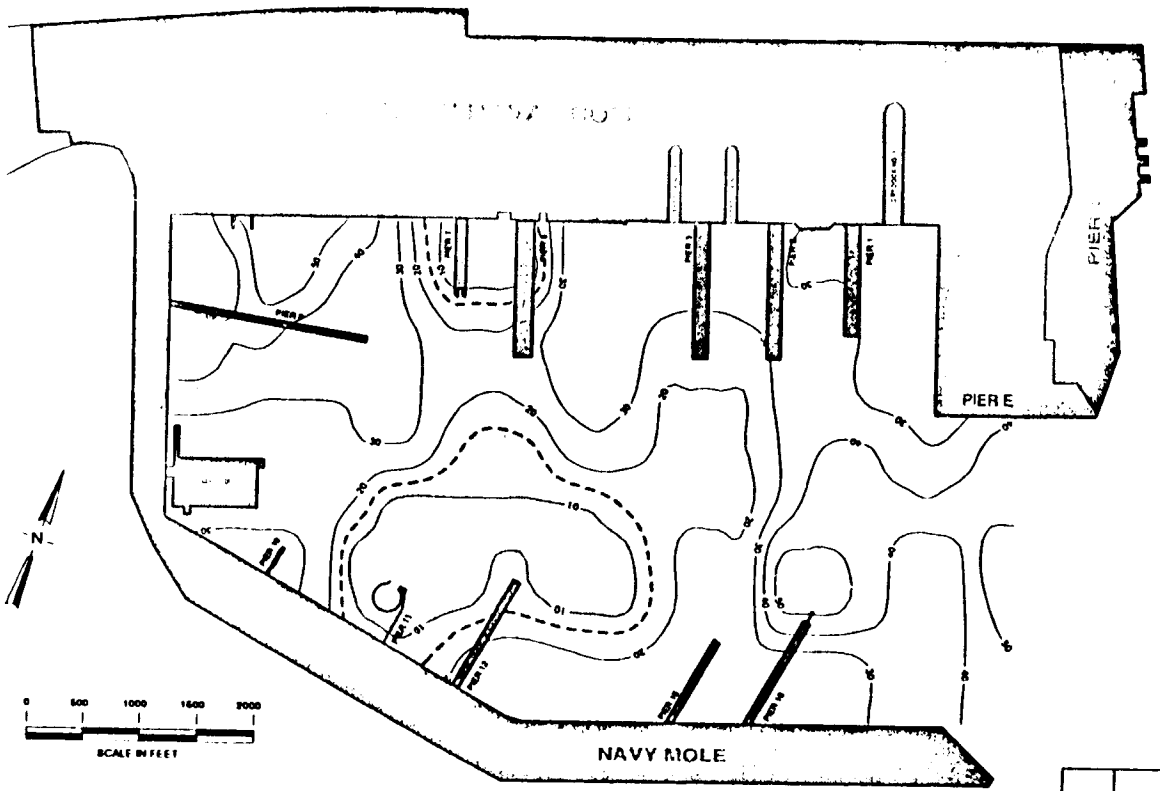
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S034 SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062920




**LEGEND**

10 — CONTOUR OF NUMBER OF BENTHIC INFAUNAL COMMUNITY SPECIES WITH NUMBER OF SPECIES SHOWN

NUMBER OF INFAUNAL COMMUNITY SPECIES LESS THAN 13.9

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-35
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF THE NUMBER OF BENTHIC INFAUNAL COMMUNITY SPECIES WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

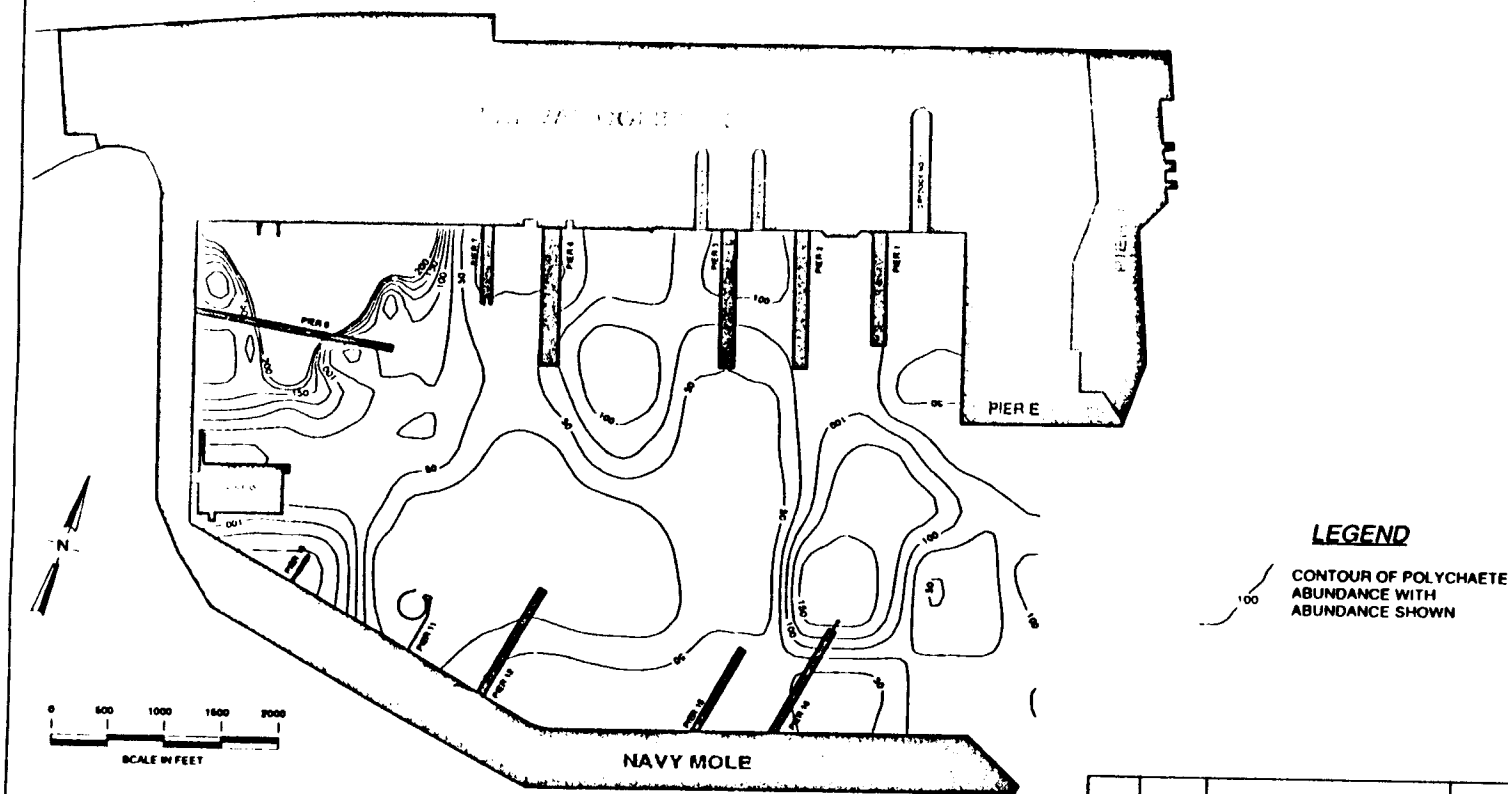
Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S033 SRF
JOB NO: 22214-026

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

13.9 INFAUNAL COMMUNITY SPECIES IS EQUAL TO THE 95% LOWER PREDICTIVE LIMIT (LPL).

R0062921




| | | | | | |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |
| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-36
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF POLYCHAETE ABUNDANCE WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S036.SRF
JOB NO: 22214-026

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

R0062922

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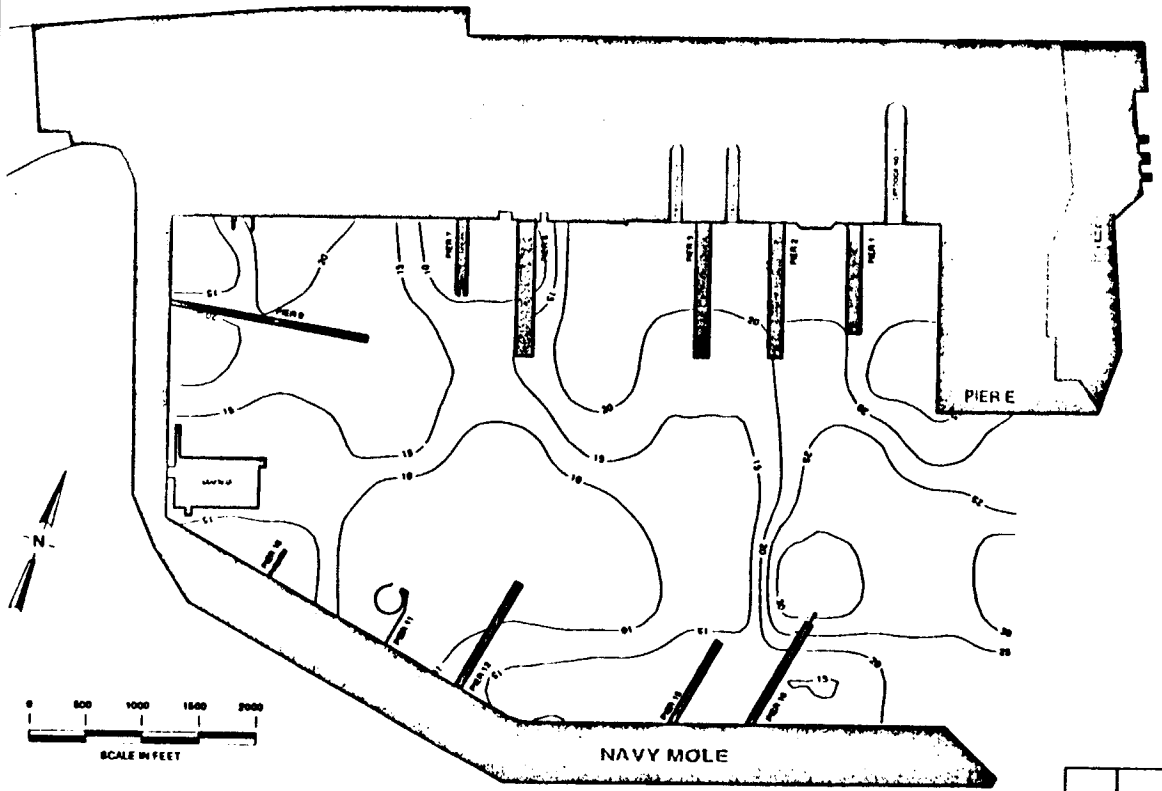


**LEGEND**

CONTOUR OF NUMBER OF POLYCHAETE SPECIES WITH NUMBER OF SPECIES SHOWN

NUMBER OF POLYCHAETE SPECIES LESS THAN 2.8

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-37
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF THE NUMBER OF POLYCHAETE SPECIES WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S035.SRF
JOB NO: 22214-026

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

2.8 POLYCHAETE SPECIES IS EQUAL TO THE 95% LOWER PREDICTIVE LIMIT (LPL).

R0062923

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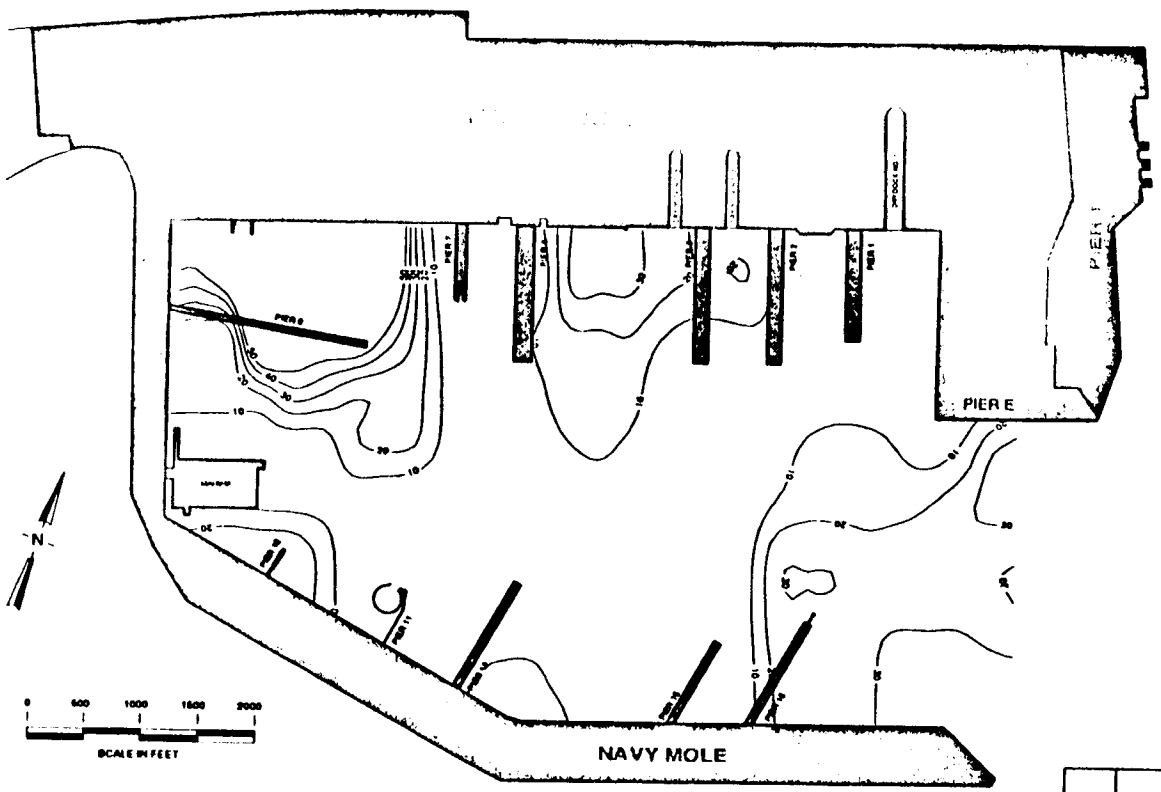


**LEGEND**

50 — CONTOUR OF CRUSTACEAN ABUNDANCE WITH ABUNDANCE SHOWN

NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-38
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF CRUSTACEAN ABUNDANCE WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S038.SRF
JOB NO: 22214-026

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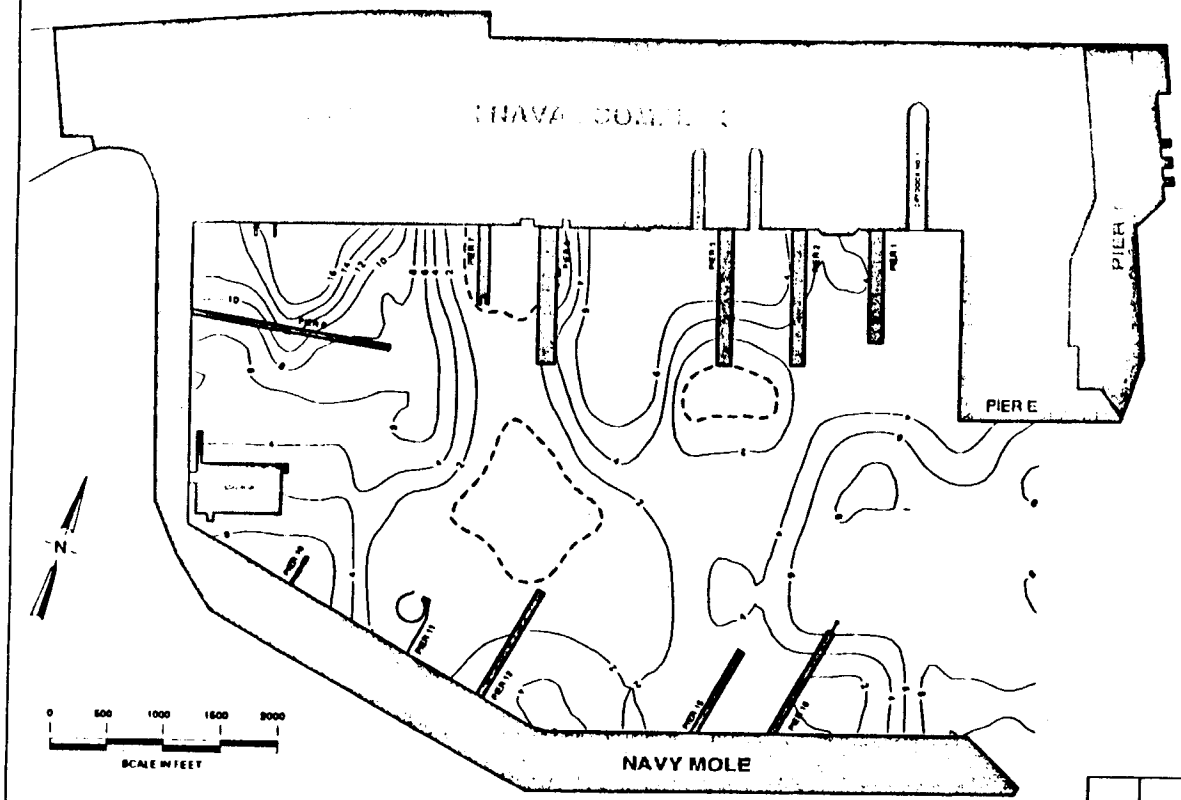


**LEGEND**

CONTOUR OF NUMBER OF CRUSTACEAN SPECIES WITH NUMBER OF SPECIES SHOWN

NUMBER OF CRUSTACEAN SPECIES LESS THAN 0.5

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-39
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF THE NUMBER OF CRUSTACEAN SPECIES WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S037.SRF
JOB NO: 22214-026

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

0.5 CRUSTACEAN SPECIES IS EQUAL TO THE 95% LOWER PREDICTIVE LIMIT (LPL).

R0062925

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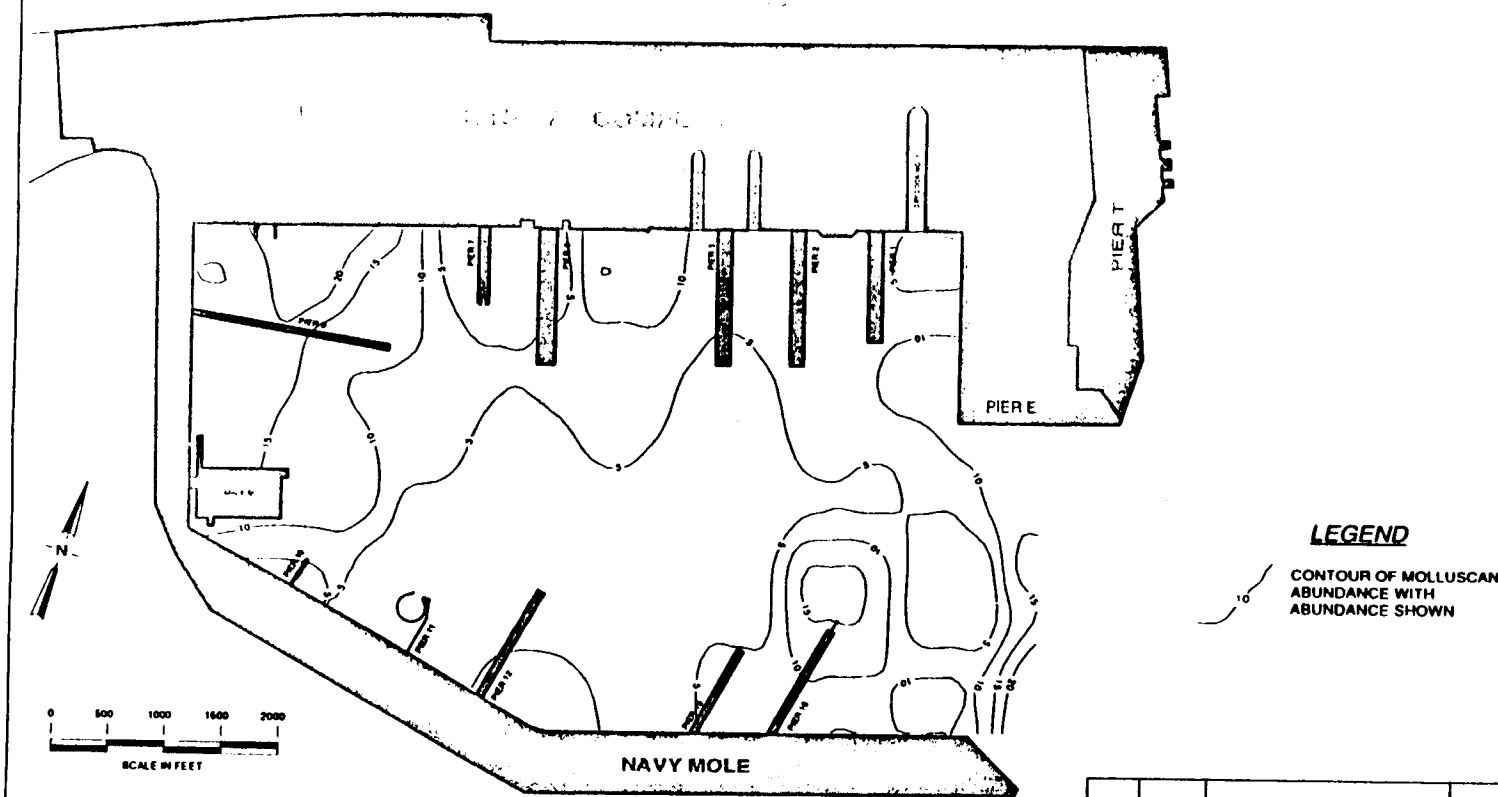


NOTE: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-40
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF MOLLUSCAN ABUNDANCE WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
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DATE: 2/21/96
FILE NO: S040.SRF
JOB NO: 22214-026

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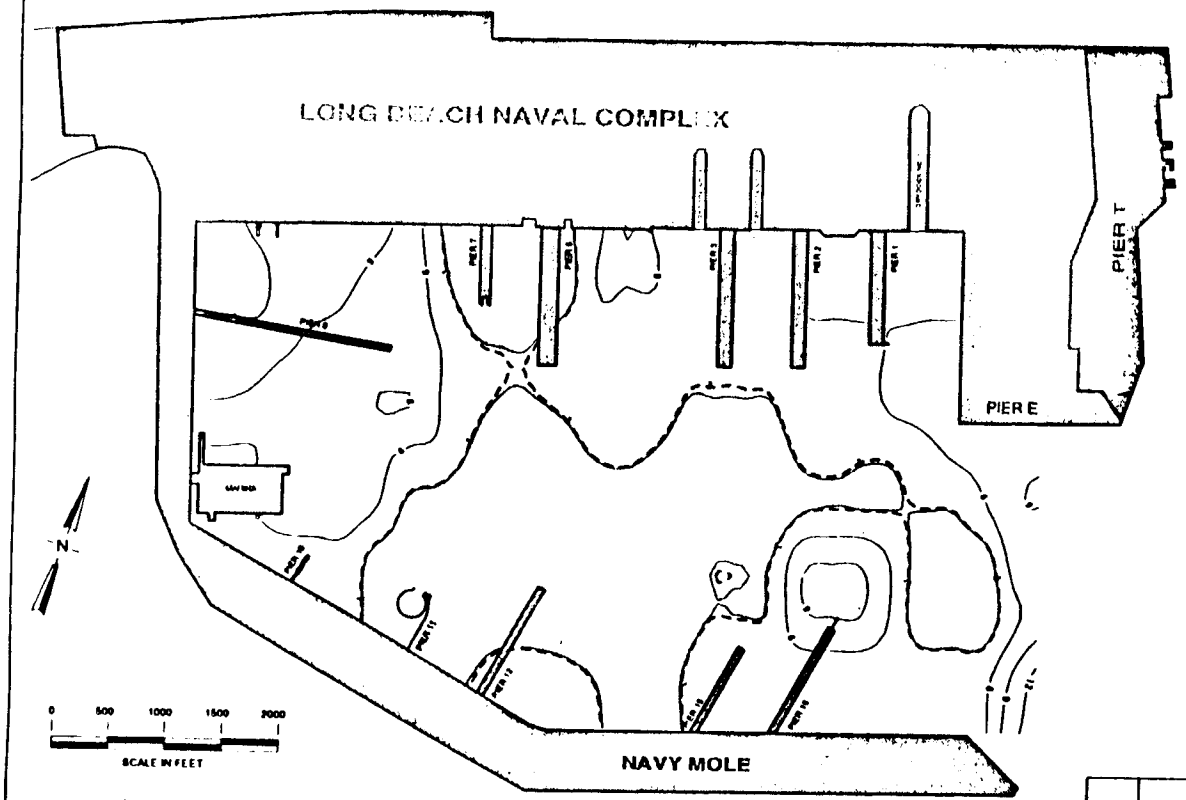


**LEGEND**

CONTOUR OF NUMBER OF MOLLUSCAN SPECIES WITH NUMBER OF SPECIES SHOWN

NUMBER OF MOLLUSCAN SPECIES LESS THAN 3.1

NOTES: CONTOUR LINES ARE BASED ON BASIN STATION DATA ONLY.

3.1 MOLLUSCAN SPECIES IS EQUAL TO THE 95% LOWER PREDICTIVE LIMIT (LPL).

| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | TRM | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-41
SURFACE SEDIMENT SPATIAL DISTRIBUTION OF THE NUMBER OF MOLLUSCAN SPECIES WITHIN WEST BASIN

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO: S039.SRF
JOB NO: 22214-026

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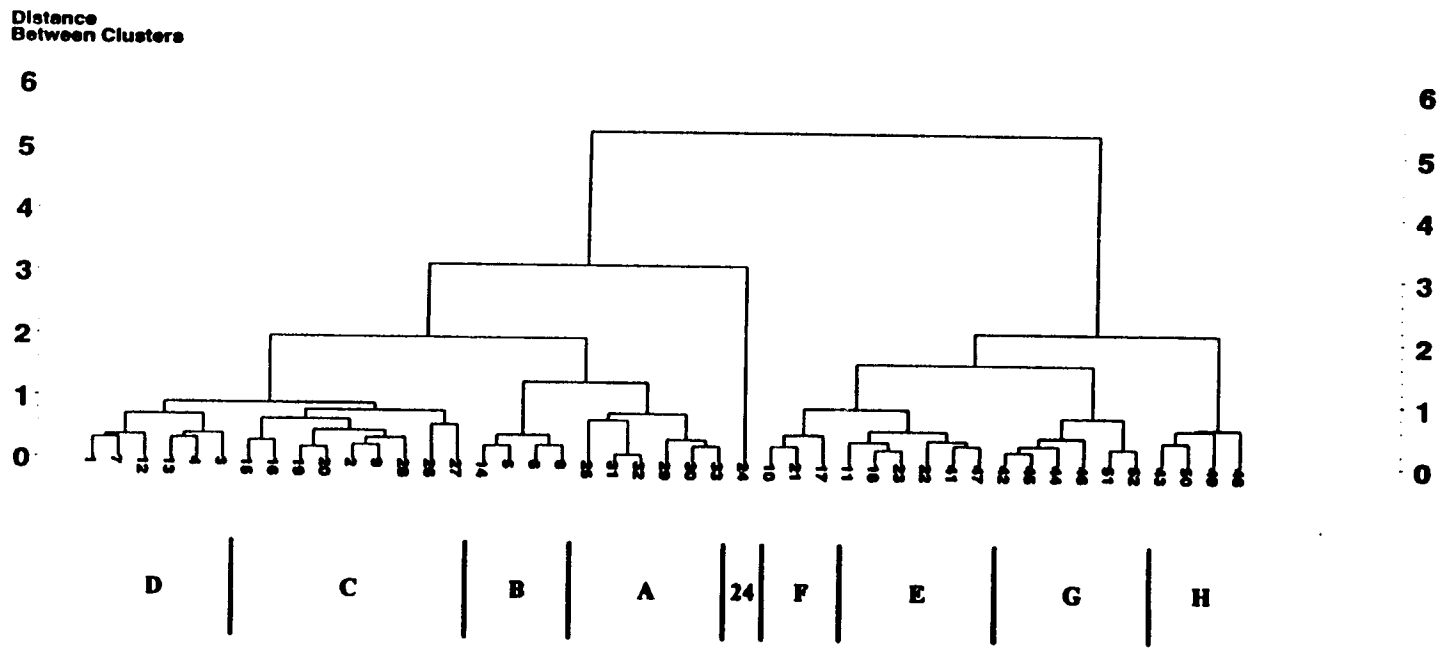
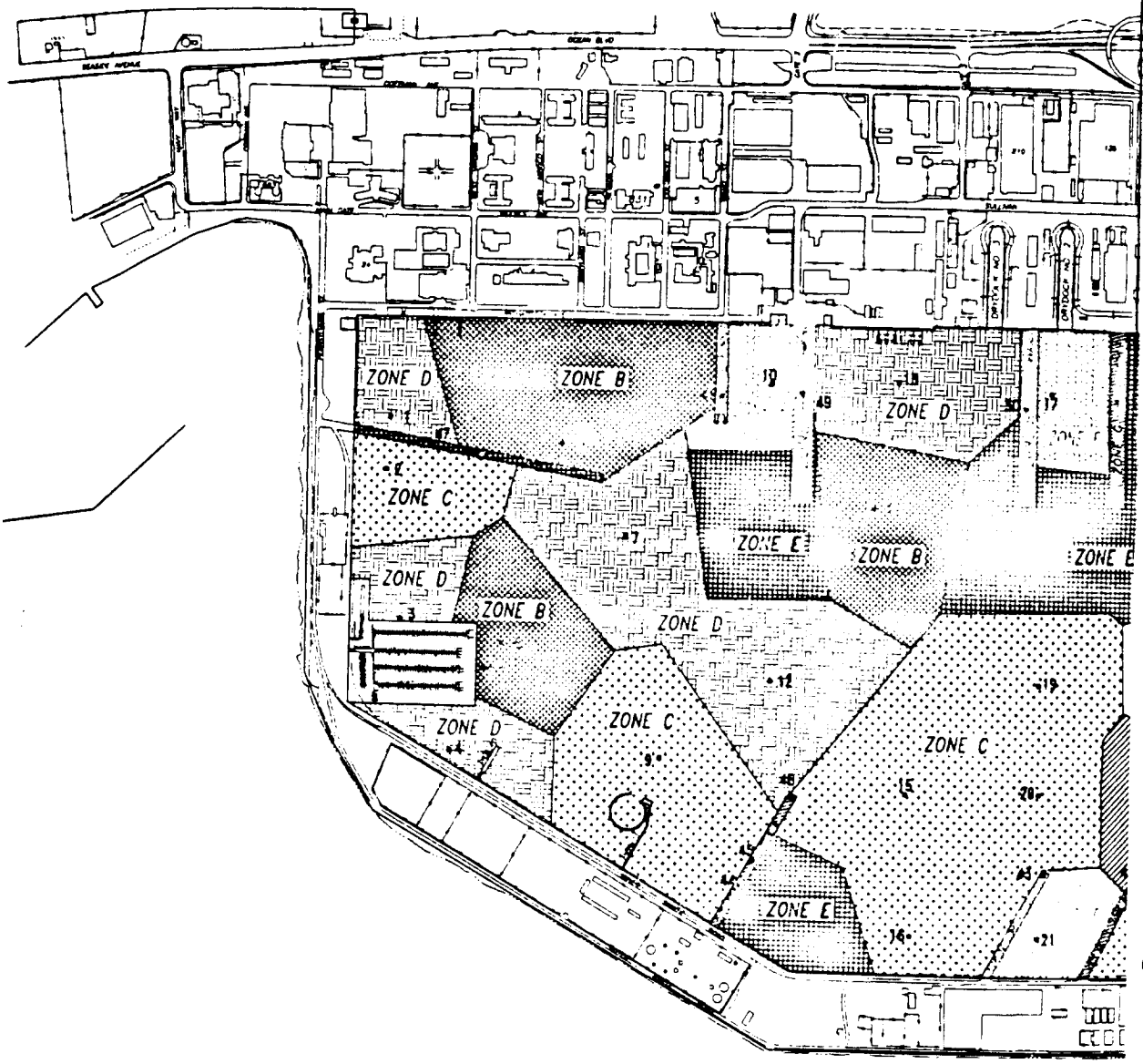



Figure 4-42
Dendrogram Results of Cluster Analysis of West Basin Stations

R0062928

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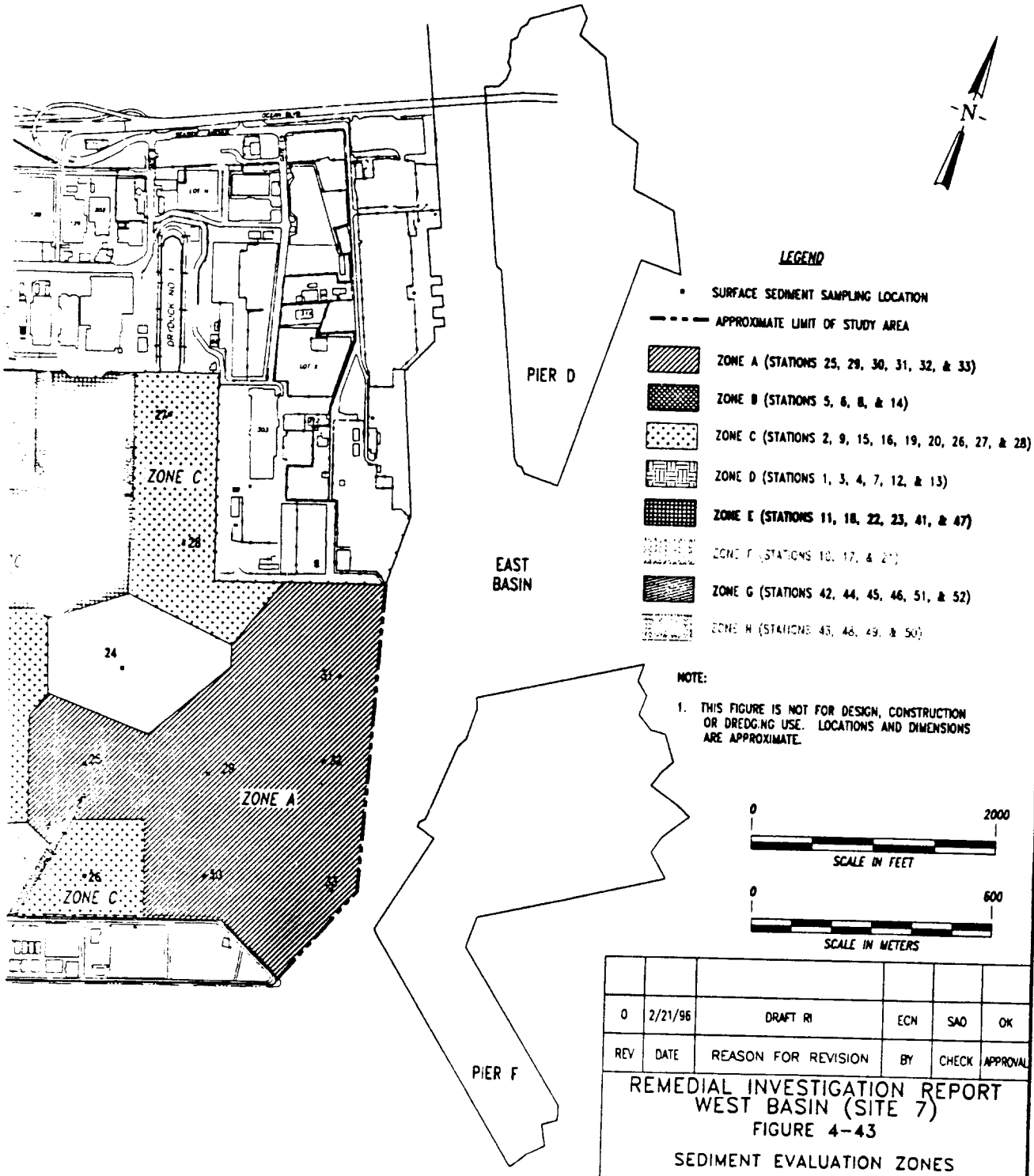


| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 2/21/96 | DRAFT RI | ECN | SAO | OK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-43
SEDIMENT EVALUATION ZONES

NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE 2/21/96
FILE NO NC573.DWG
JOB NO 22214-026

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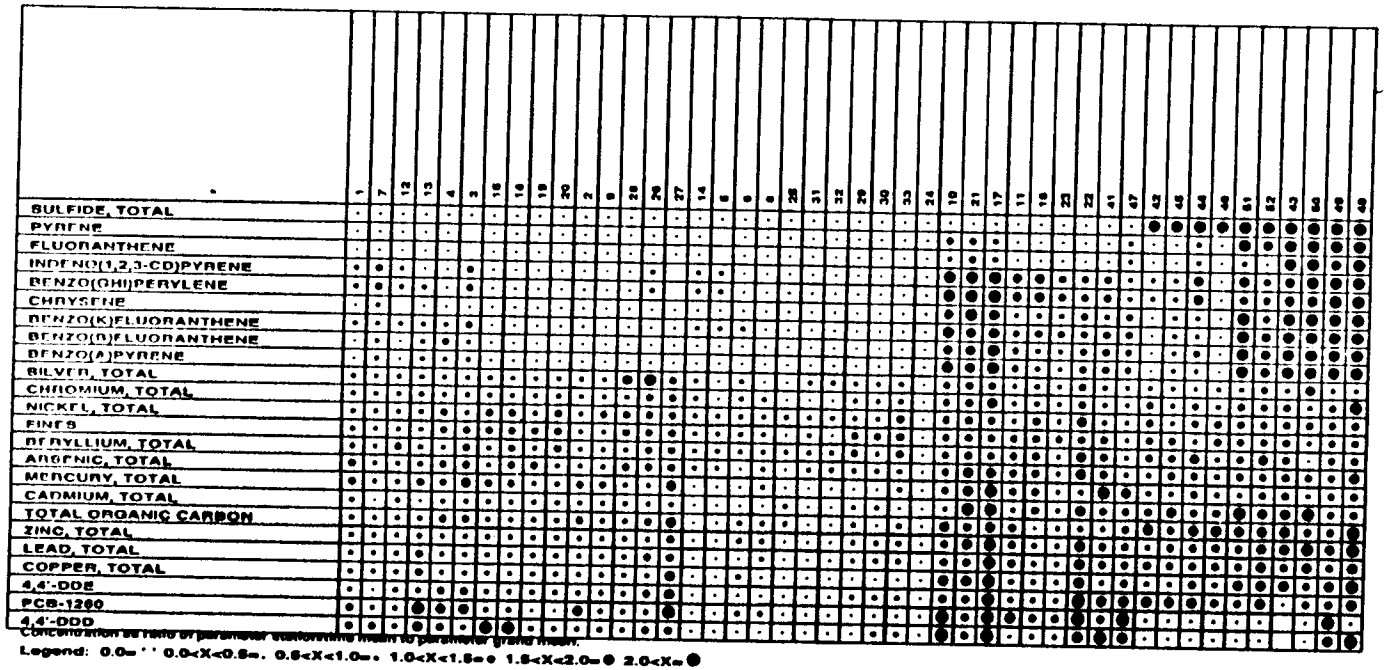



**Figure 4-44**
**Two-way Table Results of Cluster Analysis of West Basin Stations**

2/21/96 2 59 PM L \CTO26\RNDRAFT\SEC4\FIG4-32 XLS

R0062931




Figure 4-45
Dendrogram Results of Cluster Analysis of West Basin Stations and Project Reference Stations

2/21/96 2:59 PM L:\CTO26\RRDRAFT\SEC4\FIG4-33.XLS

R0062932

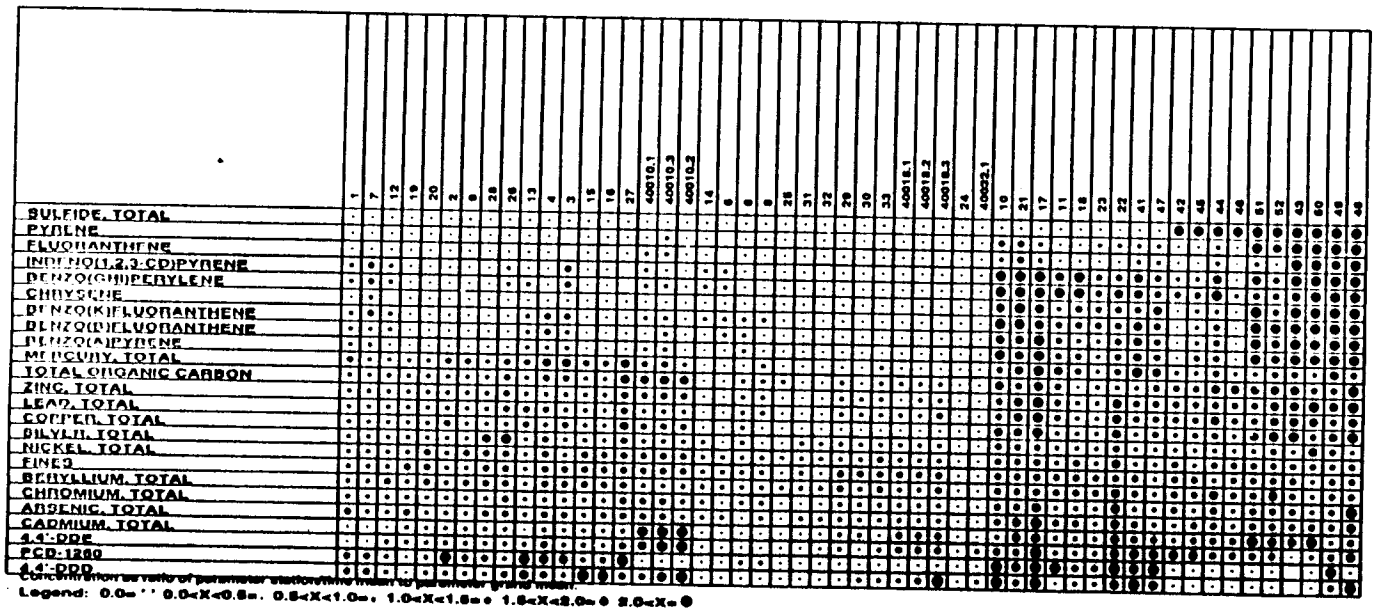
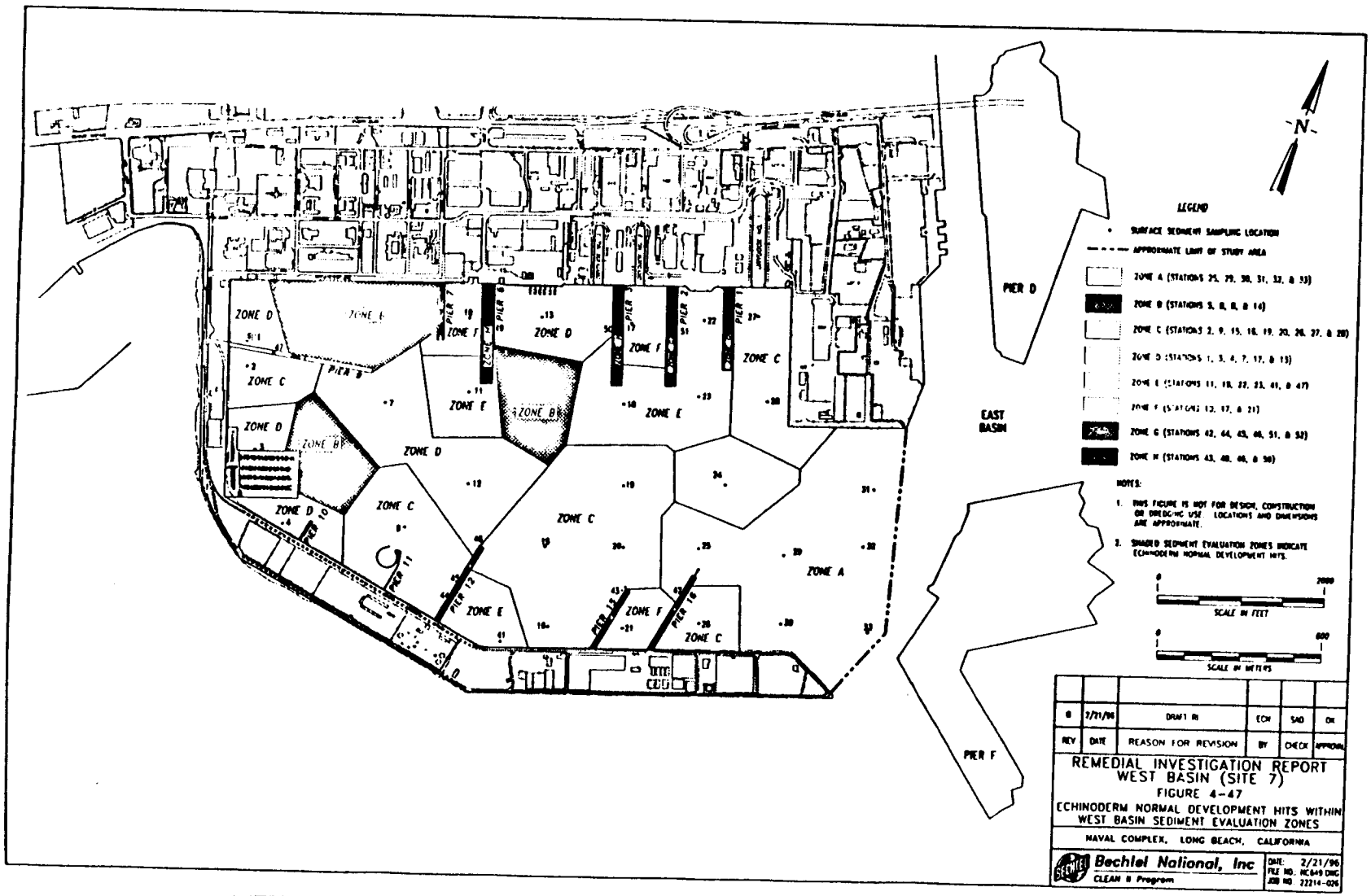



**Figure 4-46**
**Two-way Table Results of Cluster Analysis of West Basin Stations and Project Reference Stations**

2/21/08 3:01 PM L:\CTO26\RNDRAFT\SEC4\FIG4-34.XLS

R0062933




| REV | DATE | REASON FOR REVISION | BY | CHECK | APPROVAL |
|---|---|---|---|---|---|
| 0 | 7/21/95 | DRAFT RI | ECH | SAD | DK |

REMEDIAL INVESTIGATION REPORT
WEST BASIN (SITE 7)
FIGURE 4-47
ECHINODERM NORMAL DEVELOPMENT HITS WITHIN WEST BASIN SEDIMENT EVALUATION ZONES
NAVAL COMPLEX, LONG BEACH, CALIFORNIA

Bechtel National, Inc
CLEAN II Program

DATE: 2/21/96
FILE NO. RC649.DWG
JOB NO. 22214-026

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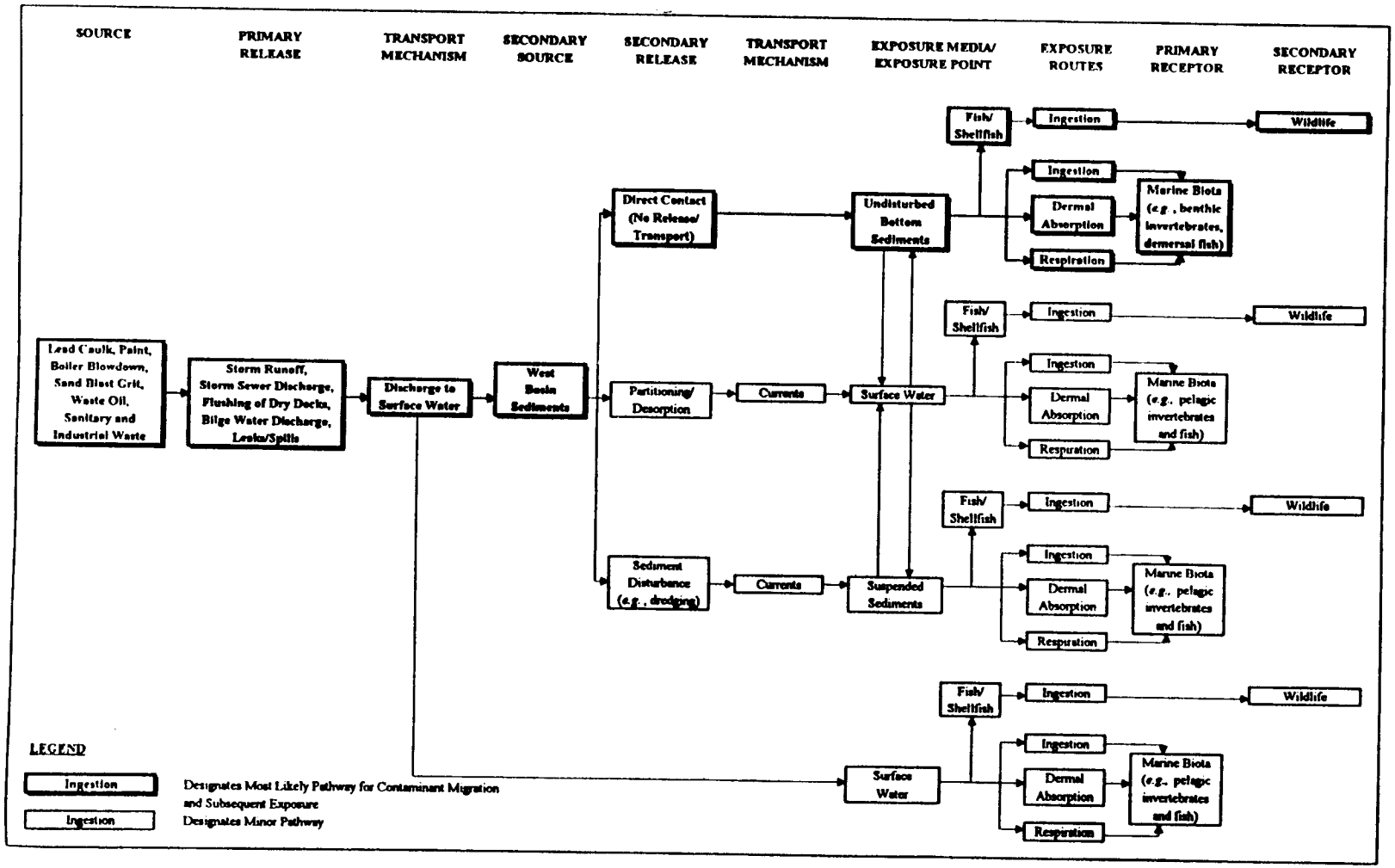


**Figure 6-1**
**Conceptual Site Model for Potential Ecological Receptor Exposure**

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# TABLES

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## Table 2-1
## 1994 NPDES Sediment Sample Analysis

| Analyte Name | Detection Limit | NPDES[a] Sampling Location | | | | |
|---|---|---|---|---|---|---|
| | | R1 | R2 | R3 | R4 | R5 |
| **Physical Parameters** | | | | | | |
| Total Organic Carbon, mg/kg[b] | 10 | 5,800 | 24,000 | 8,600 | 4,200 | 22,000 |
| Turbidity, NTU[c] | 5 | —[d] | — | 9,600 | 6,100 | 57 |
| **Inorganic, mg/kg** | | | | | | |
| Total Chlorine Residual | 0 | — | — | 41 | 39 | 0 |
| **Hydrocarbons, mg/kg** | | | | | | |
| Extractable Fuel Hydrocarbon (EPA Method 8015m) | 8 | 33 | 23 | ND[e] | ND | ND |
| Oil & Grease | 8 | — | — | 14 | 61 | 22 |
| **Metals, mg/kg** | | | | | | |
| Arsenic | 0.1-1.0 | 4 | 15 | 6 | 3 | < 1.0 |
| Cadmium | 0.01-0.1 | < 0.01 | < 0.01 | < 0.1 | < 0.1 | < 0.1 |
| Chromium Total | 0.01-1.0 | 26 | 22 | 75 | 46 | 8 |
| Copper | 0.01-0.05 | 210 | 230 | 49 | 40 | 5 |
| Lead | 0.01-0.1 | 29 | 53 | 240 | 240 | 38 |
| Nickel | 0.01-0.1 | 7 | 16 | 450 | 230 | 29 |
| Silver | 0 | ND | ND | ND | ND | ND |
| Zinc | 0.01-0.5 | 120 | 270 | 21 | 13 | 2 |
| **Butyltin, µg/kg[f]** | | | | | | |
| Tributyltin | 1 | ND | ND | ND | — | ND |
| **HPAH, µg/kg** | | | | | | |
| Benzo(a)anthracene | 25 | ND | 1,500 | 380 | 240 | ND |
| Benzo(a)pyrene | 25 | ND | 1,400 | 600 | 510 | ND |
| Benzo(b)fluoranthene | 25 | ND | 2,400 | 1,600 | 880 | 120 |
| Benzo(ghi)perylene | 25 | ND | ND | ND | ND | ND |
| Benzo(j)fluoranthene | 125 | ND | ND | ND | ND | ND |
| Benzo(k)fluoranthene | 25 | ND | 2,300 | 1,600 | 830 | 120 |
| Chrysene | 25 | 1,200 | 1,300 | 810 | 740 | ND |
| Dibenzo(a,h)anthracene | 25 | ND | ND | ND | ND | ND |
| Fluoranthene | 25 | 2,800 | 7,500 | ND | ND | ND |
| Indeno(1,2,3-cd)pyrene | 25 | ND | 1,100 | ND | ND | ND |
| Pyrene | 25 | 3,800 | ND | ND | 670 | ND |
| **LPAH, µg/kg** | | | | | | |
| Acenaphthene | 25 | 230 | 790 | ND | ND | ND |
| Acenaphthalene | 25 | ND | 260 | ND | ND | ND |
| Anthracene | 25 | 280 | 4,900 | 400 | ND | ND |
| Fluorene | 25 | ND | 600 | ND | ND | ND |
| Naphthalene | 25 | ND | 380 | ND | ND | ND |
| Phenanthrene | 25 | 1,400 | 5,100 | 820 | 140 | ND |
| **PCB, µg/kg** | | | | | | |
| Aroclor 1016 | 50 | ND | ND | ND | ND | ND |
| Aroclor 1221 | 50 | ND | ND | ND | ND | ND |
| Aroclor 1232 | 50 | ND | ND | ND | ND | ND |
| Aroclor 1242 | 50 | ND | ND | ND | ND | ND |
| Aroclor 1248 | 50 | ND | ND | ND | ND | ND |
| Aroclor 1254 | 50 | ND | ND | ND | ND | ND |
| Aroclor 1260 | 50 | ND | 770 | ND | ND | ND |
| **Pesticide, µg/kg** | | | | | | |
| 4,4'-DDT | 10 | ND | ND | ND | ND | ND |

Notes:

[a] NPDES - National Pollutant Discharge Elimination System
[b] mg/kg - milligram per kilogram
[c] NTU - nephelometric turbidity units
[d] — - not available
[e] ND - not detected
[f] µg/kg - microgram per kilogram



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## Table 3-1
## Data Quality Objectives

| Objectives | Activities | Data Uses | Data Quality/ Analytical Level |
|---|---|---|---|
| Characterize the toxicity of surface sediments within West Basin. | Collection of surface sediment samples from randomly chosen locations within West Basin; chemical analysis for SVOCs[a], pesticides, PCBs[b], organotins, metals, and general physical/chemical parameters; performed bioassay/bioaccumulation testing; and BCA[c]. | Ecological Risk Assessment | Validated laboratory analysis (Level III) for sediment chemical testing. Special analytical methods (Level V) for organotins, bioassay/ bioaccumulation testing, and BCA. |
| Characterize contaminant levels in deeper sediments within West Basin. | Collection of sediment core samples from a subset of the surface sediment sampling locations; and analysis for SVOCs, pesticides, PCBs, organotins, metals, and other physical/chemical parameters. | Remedial Alternatives Evaluation | Validated laboratory analysis (Level III). Special analytical methods (Level V) for organotins. |
| Characterize contaminant levels in fish captured within West Basin. | Collection of demersal fish from transects located within West Basin; chemical analysis of whole body and fillet tissue for PAHs[d], pesticides, PCBs, organotins, and metals; and chemical analysis of bile for PAH parent compounds and metabolites. | Human Health and Ecological Risk Assessment | Special analytical methods (Level V) for tissue and bile chemical testing. |

Notes:

[a] SVOC - semivolatile organic compound
[b] PCB - polychlorinated biphenyl
[c] BCA - benthic community analysis
[d] PAH - polynuclear aromatic hydrocarbon

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**Table 3-2**
**Latitudes and Longitudes of West Basin and Reference Sediment Sampling Stations**

| Station | Latitude North | Longitude West |
|---|---|---|
| 1 | 33° 44.96' | 118° 14.67' |
| 2 | 33° 44.90' | 118° 14.65' |
| 3 | 33° 44.74' | 118° 14.56' |
| 4 | 33° 44.62' | 118° 14.43' |
| 5 | 33° 45.04' | 118° 14.54' |
| 6* | 33° 45.00' | 118° 14.43' |
| 7 | 33° 44.92' | 118° 14.31' |
| 8* | 33° 44.76' | 118° 14.58' |
| 9 | 33° 44.70' | 118° 14.16' |
| 10 | 33° 45.15' | 118° 14.19' |
| 11 | 33° 45.01' | 118° 14.13' |
| 12 | 33° 44.83' | 118° 14.05' |
| 13 | 33° 45.20' | 118° 14.03' |
| 14* | 33° 45.05' | 118° 13.96' |
| 15 | 33° 44.76' | 118° 13.83' |
| 16 | 33° 44.61' | 118° 13.75' |
| 17 | 33° 45.25' | 118° 13.82' |
| 18 | 33° 45.08' | 118° 13.77' |
| 19 | 33° 44.93' | 118° 13.70' |
| 20 | 33° 44.81' | 118° 13.65' |
| 21 | 33° 44.66' | 118° 13.58' |
| 22 | 33° 45.30' | 118° 13.66' |
| 23 | 33° 45.15' | 118° 13.61' |
| 24* | 33° 45.00' | 118° 13.47' |
| 25 | 33° 44.86' | 118° 13.48' |
| 26 | 33° 44.98' | 118° 13.11' |
| 27 | 33° 45.35' | 118° 13.54' |
| 28 | 33° 45.19' | 118° 13.45' |
| 29* | 33° 44.91' | 118° 13.28' |
| 30 | 33° 44.78' | 118° 13.23' |
| 31 | 33° 45.09' | 118° 13.14' |
| 32 | 33° 44.98' | 118° 13.11' |
| 33 | 33° 44.82' | 118° 13.03' |
| 41 | 33° 44.55' | 118° 14.85' |
| 40010.1* | 33° 42.88' | 118° 16.83' |
| 40010.2 | 33° 42.85' | 118° 16.87' |
| 40010.3 | 33° 42.83' | 118° 16.84' |
| 40018.1 | 33° 43.80' | 118° 10.01' |
| 40018.2 | 33° 43.88' | 118° 10.05' |
| 40018.3* | 33° 43.87' | 118° 09.97' |
| 40032.1 | 33° 43.38' | 118° 14.85' |
| 40032.2 | 33° 43.35' | 118° 14.73' |
| 40032.3 | 33° 43.36' | 118° 14.75' |

* Stations sampled for surface and subsurface sediment

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## Table 3-3
## Target Fish Species for Collection, Listed by Data Use and Relative Priority

| Common Name | Advantages | Disadvantages |
|---|---|---|
| | **Human Health Only** | |
| Barred sand bass<br>*Paralabrax nebulifer* | Abundant<br>Predatory benthic and pelagic feeder<br>Nonmigratory local species<br>Frequently caught<br>Well documented in similar studies<br>High lipid content | Low catch frequency by trawl |
| Rubberlip surfperch<br>*Rhacochilus toxotes* | Abundant in harbors, bays and around piers<br>Nonmigratory local species<br>Frequently caught | Pelagic feeder<br>Not well studied |
| Kelp bass<br>*Paralabrax clathratus* | Abundant<br>Frequently caught<br>Nonmigratory local species<br>Well studied l<br>Recommend for contaminant studies<br>High lipid con | Predatory pelagic feeder<br>Seldom caught/observed away from kelp beds |
| Opaleye<br>*Girella nigricans* | Abundant in water depths of about 20 feet<br>Frequently caught | Omnivorous pelagic feeder, especially feeds on seaweeds and the animals that live on them |
| Queenfish<br>*Seriphus politus* | Caught locally<br>Nonmigratory local species | Water column feeder<br>Not well studied |
| Barred surfperch<br>*Amphistichus argenteus* | Occasionally caught in Long Beach Harbor<br>Recommended by EPA for contaminant studies<br>Predatory benthic feeder<br>Nonmigratory local species | Most abundant in breaking surf along sandy beaches |
| | **Ecological Only** | |
| Hornyhead turbot<br>*Pleuronichthys verticalis* | Abundant<br>Predatory benthic feeder<br>Nonmigratory local species<br>Life history well understood<br>Probably common prey species | Not frequently caught by fishermen |
| Spotted turbot<br>*Pleuronichtys ritteri* | Predatory benthic feeder<br>Nonmigratory local species<br>Probably common prey species | Not frequently caught by fishermen |

(table continues)

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**Table 3-3** (continued)

| Common Name | Advantages | Disadvantages |
|---|---|---|
| | **Ecological Only** | |
| Diamond turbot<br>*Hypsopsetta guttulata* | Predatory benthic feeder<br>Nonmigratory local species<br>Probably common prey species | Not frequently caught by fishermen |
| Speckle-finned sanddab<br>*Citharichthys stigmaeus* | More abundant than turbot<br>Predatory bottom-feeder<br>Prey to large fish, diving birds, and marine mammals | Not frequently caught by fishermen |
| Blue rockfish<br>*Sebastes mystinus* | Recommended by EPA for contaminant studies<br>Abundant in shallow water in and around rocky areas<br>Benthic and pelagic feeder | Low catch frequency in Long Beach Harbor, but occasionally caught |
| | **Human Health and Ecological** | |
| California halibut<br>*Paralichthys californicus* | Abundant on sandy bottoms in water shallower than 60 feet<br>Benthic dweller<br>Used by State of California for major contaminant study<br>Frequently caught<br>Prey to sharks, rays, and marine mammals<br>Desirable game fish | Pelagic feeder<br>May migrate as adults |
| Fantail sole<br>*Xystreurys liolepis* | Occasionally caught locally<br>Benthic feeder<br>Common prey species | Not well studied<br>Locally migratory |
| Dover sole<br>*Microstomus pacificus* | May occur as far south as Baja California<br>Benthic feeder<br>Recommended by EPA for contaminant studies | Resides in water depths up to 3,000 feet<br>Not frequently caught in Long Beach Harbor<br>Locally migratory |
| White croaker<br>*Genyonemus lineatus* | Abundant in shallow bays<br>Omnivorous benthic feeder<br>Nonmigratory local species<br>Frequently caught<br>Well documented in similar studies<br>Abundant reference data<br>Fish consumption advisory has been issued locally | |



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**Table 3-4**
**Fish Samples Analyzed by Transect, Species, and Sample Type**

| Transects | California Halibut | | | | White Croaker | | |
|---|---|---|---|---|---|---|---|
| | Fillet | Whole | Bile[a] | Total | Fillet | Whole | Total |
| T1 | 4 | 3 | 4 | 11 | 0 | 0 | 0 |
| T2 | 2 | 0 | 1 | 3 | 0 | 0 | 0 |
| T3 | 0 | 3 | 0 | 3 | 0 | 2 | 2 |
| T4 | 0 | 3 | 2 | 5 | 0 | 5 | 5 |
| T5 | 0 | 4 | 4 | 8 | 3 | 2 | 5 |
| T6 | 0 | 2 | 1 | 3 | 2 | 2 | 4 |
| T7 | 0 | 0 | 0 | 0 | 1 | 4 | 5 |
| 40010 | 3 | 6 | 3[b] | 12 | 3 | 0 | 3 |
| 40018 | 0 | 3 | 3 | 6 | 0 | 6 | 6 |
| Total | 9 | 24 | 18 | 51 | 9 | 21 | 30 |

Notes:

[a] Eight bile samples collected from same fish that fillet samples were collected.

[b] One additional fish collected to yield a single bile sample (no fillet).

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**Table 3-5**
**Latitudes and Longitudes of West Basin and Reference Fish Collection Transects**

| Transect | Latitude North | | Longitude West | |
|---|---|---|---|---|
| | Start | End | Start | End |
| T1 | 33° 44.88' | 33° 44.90' | 118° 13.45' | 118° 13.24' |
| T2 | 33° 45.05' | 33° 44.90' | 118° 14.18' | 118° 14.09' |
| T3 | 33° 44.75' | 33° 44.91' | 118° 14.09' | 118° 14.14' |
| T4 | 33° 45.12' | 33° 45.06' | 118° 13.56' | 118° 13.76' |
| T5 | 33° 44.87' | 33° 44.90' | 118° 14.50' | 118° 14.30' |
| T6 | 33° 44.85' | 33° 44.97' | 118° 13.20' | 118° 13.34' |
| T7 | 33° 45.26' | 33° 45.10' | 118° 13.51' | 118° 13.46' |
| 40010 | 33° 42.54' | 33° 42.56' | 118° 15.94' | 118° 16.28' |
| 40018 | 33° 43.88' | 33° 43.80' | 118° 09.75' | 118° 09.96' |

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## Table 3-6
## West Basin and Reference Station Samples Analyzed by Sample Type and Location

| Sample Type | West Basin | Reference | Total | Chemical and Physical Analyses/ Biological Endpoints |
|---|---|---|---|---|
| **Sediment** | | | | |
| Surface | 47[a] | 9[b] | 56 | SVOCs[c], pesticides, PCB[d] Aroclors, moisture content, priority pollutant metals, butyltins, AVS/SEM[e], total sulfides, particle size, TOC[f] |
| Surface | 0 | 11[g] | 11 | Particle size, TOC |
| Subsurface | 27[h] (8 cores) | 7 (2 cores) | 34 (10 cores) | SVOCs, pesticides, PCB Aroclors, moisture content, priority pollutant metals, butyltins, particle size, TOC |
| **Tissue and Bile** | | | | |
| Clam Bioaccumulation | 9 | 5 | 14 | PAHs[i], pesticides, PCB Aroclors, lipid content, priority pollutant metals, butyltins |
| Fish Whole Body | 30 | 15 | 45 | PAHs, pesticides, PCB Aroclors, lipid content, priority pollutant metals, butyltins |
| Fish Fillet | 12 | 6 | 18 | PAHs, pesticides, PCB Aroclors, lipid content, priority pollutant metals, butyltins |
| Fish Bile | 12 | 6 | 18 | PAH parent compounds and metabolites, normalized to specific PAH equivalents |
| **Biological** | | | | |
| Bioassay | 45 | 15[g] | 60 | Sediment solid phase: amphipod mortality and polychaete growth/mortality |
| | | | | Interstitial (pore) water (aqueous phase): echinoderm normal development/mortality |
| Benthic Community Analysis | 45 | 15[g] | 60 | Specific indices relating to benthic community structure |

Notes:

[a] Includes additional two field replicates at Station 1
[b] Includes additional two field replicates at Reference Station 40010.1
[c] SVOC – semivolatile organic compound
[d] PCB – polychlorinated biphenyls
[e] AVS/SEM – acid volatile sulfides/simultaneously extracted metals
[f] TOC – total organic carbon
[g] Includes additional two field replicates each at Reference Stations 40010.1, 40010.2, 40010.3, and 40018.3
[h] Includes one duplicate sample at Station 43
[i] PAH – polynuclear aromatic hydrocarbon



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**Table 3-7**
**Target Analyte Rationale**

| Target Analyte Class | Rationale |
|---|---|
| | **Surface Sediment** |
| Semivolatile Organic Compounds | Characterize possible constituents of disposed waste. |
| Pesticides/PCB* Aroclors | Characterize possible constituents of disposed waste. |
| Priority Pollutant Metals | Characterize possible constituents of disposed waste. |
| Butyltins | Characterize possible constituents of disposed waste. |
| Acid Volatile Sulfide | Aid in interpretation of potential for sediment toxicity and sources of contamination; provide index of divalent metal bioavailability. |
| Simultaneously Extracted Metals | Aid in interpretation of potential for sediment toxicity and sources of contamination; provide index of divalent metal bioavailability. |
| Total Sulfide | Aid in interpretation of potential for sediment toxicity and sources of contamination. |
| Total Organic Carbon (TOC) | Aid in interpretation of potential for sediment toxicity and sources of contamination; measure hydrophobic organic compound bioavailability. |
| Grain Size | Aid in interpretation of potential for sediment toxicity (contaminant bioavailability) and sources of contamination. |
| Percent Moisture | Aid in interpretation of potential for sediment toxicity and sources of contamination. |
| Echinoderm Survival and Normal Development | Characterize potential ecological risk of test sediments (acute exposure); directly measure test sediment contaminant bioavailability. |
| Amphipod Survival and Behavior | Characterize potential ecological risk of test sediments (subchronic exposure); measure test sediment contaminant bioavailability. |
| Polychaete Survival and Growth | Characterize potential ecological risk of test sediments (chronic exposure); measure test sediment contaminant bioavailability. |
| Benthic Community Indices | Directly measure and evaluate potential effects of sediment contaminants to native biological communities. |

(table continues)

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Table 3-7 (continued)

| Target Analyte Class | Rationale |
|---|---|
| | **Subsurface Sediment** |
| PAHs[b] | Characterize possible constituents of disposed waste. |
| Pesticides/PCB Aroclors | Characterize possible constituents of disposed waste. |
| Priority Pollutant Metals | Characterize possible constituents of disposed waste. |
| Butyltins | Characterize possible constituents of disposed waste. |
| TOC, grain size, and percent moisture | Aid in interpretation of potential for sediment toxicity and sources of contamination. |
| | **Fish and Clam Tissue** |
| PAHs | Characterize possible constituents of disposed waste; indirectly measure test sediment contaminant bioavailability and potential for bioaccumulation. |
| Pesticides/PCB Aroclors | Characterize possible constituents of disposed waste; indirectly measure test sediment contaminant bioavailability and potential for bioaccumulation. |
| Priority Pollutant Metals | Characterize possible constituents of disposed waste; indirectly measure test sediment contaminant bioavailability and potential for bioaccumulation. |
| Butyltins | Characterize possible constituents of disposed waste; indirectly measure test sediment contaminant bioavailability and potential for bioaccumulation. |
| Lipid Content | Normalize contaminant concentrations for comparisons between samples. |
| | **Fish Bile** |
| PAH parent compounds/metabolites | Indirectly measure the potential effects of test sediment to exposed fish. |

Notes:
[a] PCB - polychlorinated biphenyl
[b] PAH - polynuclear aromatic hydrocarbon

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**Table 3-8**
**Dates of Sample Collection**

| Sampling Event | Samples Collected | Dates of Collection |
|---|---|---|
| 1 | Surface and subsurface sediment from West Basin and reference stations. | 21-30 June 1994 |
| 2 | Subsurface sediment from underneath piers. | 26-27 July 1994<br>03 August 1994 |
| 3 | Fish from West Basin and reference stations. | 30-31 August 1994<br>16 September 1994 |

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## Table 3-9
## Sample Containers, Preservation, and Packaging

| Analysis | Containers | Preservation | Packaging Within Cooler |
|---|---|---|---|
| **Sediment** | | | |
| Chemistry | 500 mL[a] wide-mouth glass jars | Iced to 4°C[b], stored away from sunlight | Bubblewrap |
| Physical | 500 mL plastic bags | Iced[c], stored away from sunlight | None |
| Pore water bioassays | 2 L[d] polyethylene buckets | Purged with nitrogen, iced to 4°C, stored away from sunlight | None |
| Solid phase bioassays | 20 L plastic bags | Iced to 4°C, stored away from sunlight | None |
| Clam bioaccumulation | 20 L plastic bags | Iced to 4°C, stored away from sunlight | None |
| Benthic community | 1 L glass jars | Formalin | None |
| **Subsurface Sediment** | | | |
| Chemistry | 500 mL wide-mouth glass jars | Iced to 4°C, stored away from sunlight | Bubblewrap |
| Physical | 500 mL plastic bags | Iced[c], stored away from sunlight | None |
| **Liquid Rinseate and Field Blanks** | | | |
| Chemistry (organics) | 1 L glass bottles | Iced to 4°C, stored away from sunlight | Bubblewrap |
| Chemistry (inorganics) | 250 mL plastic bottles | Nitric acid; iced to 4°C, stored away from sunlight | None |
| **Fish Tissue** | | | |
| Chemistry (whole body and fillet) | Aluminum foil and plastic bags | Iced to 4°C, stored away from sunlight | None |
| PAH[e] (bile) | 3 mL amber glass vials | Iced to 0°C, stored away from sunlight | Plastic bags |

Notes:

[a] mL - milliliter
[b] °C - degree Celsius
[c] Samples for total organic carbon analysis iced to 0°C; samples for grain size analysis iced to 4°C
[d] L - liter
[e] PAH - polynuclear aromatic hydrocarbon

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## Table 3-10
## Laboratory Analyses and Methods Used for Sediment Testing

| Analysis | Documentation of Method | EPA Method Number | Method Modifications | Sample Type | Analytical Laboratory |
|---|---|---|---|---|---|
| Moisture | EPA 1979 | EPA 160.3 | Extended the baking time to overnight | Surface and subsurface sediment | Pace |
| Total Organic Carbon | Menzel and Vaccaro 1964 | | | Surface and subsurface sediment | MEC |
| Grain Size | Plumb 1981 | | | Surface and subsurface sediment | MEC |
| Total Sulfides | EPA 1986 | EPA 9030 | Quantitated by EPA 376.2 | Surface sediment | Pace |
| Metals | | | | | |
| Antimony | EPA 1986 | EPA 7041 | | Surface and subsurface sediment | Pace |
| Arsenic | EPA 1986 | EPA 7060 | | Surface and subsurface sediment | Pace |
| Beryllium | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Cadmium | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Chromium | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Copper | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Lead | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Mercury | EPA 1986 | EPA 7470 | | Surface and subsurface sediment | Pace |
| Nickel | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| Selenium | EPA 1986 | EPA 7740 | | Surface and subsurface sediment | Pace |
| Silver | EPA 1986 | EPA 6010 and 7760 | | Surface sediment | Pace |
| Silver | EPA 1986 | EPA 6010, 7760, and 7761 | | Subsurface sediment | Pace |
| Thallium | EPA 1986 | EPA 7841 | | Surface and subsurface sediment | Pace |
| Zinc | EPA 1986 | EPA 6010 | | Surface and subsurface sediment | Pace |
| AVS/SEM[a] | | | | | |
| Acid Volatile Sulfide | Allen et al. 1993 | | | Surface sediment | Pace |
| Cadmium | Allen et al. 1993 | | | Surface sediment | Pace |
| Copper | Allen et al. 1993 | | | Surface sediment | Pace |
| Lead | Allen et al. 1993 | | | Surface sediment | Pace |
| Mercury | Allen et al. 1993 | | | Surface sediment | Pace |
| Zinc | Allen et al. 1993 | | | Surface sediment | Pace |
| Butyltins | Uhler and Durell 1989 | | | Surface and subsurface sediment | Pace |
| Pesticides and PCBs[b] | EPA 1986 | EPA 8080 | | Surface and subsurface sediment | Pace |
| SVOCs[c] | EPA 1986 | EPA 8270 | | Surface and subsurface sediment | Pace |
| Bioassay | | | | | |
| Echinoderm | Dinnel 1994 | | | Surface sediment | MEC |
| Polychaete | Dillon et al. 1994 | | | Surface sediment | MEC |
| Amphipod | Swartz et al. 1985 | | | Surface sediment | MEC |
| Clam | Lee et al. 1989 | | | Surface sediment | MEC & Pace |
| Benthic Infauna | | | | Surface sediment | MEC |

Notes:
[a] AVS/SEM – acid volatile sulfides/simultaneously extracted metals
[b] PCBs – polychlorinated biphenyls
[c] SVOCs – semivolatile organic compounds



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## Table 3-11
## Laboratory Analyses and Methods Used for Fish Tissue and Fish Bile Testing

| Analysis | Documentation of Method | EPA Method Number | Method Modifications | Sample Type | Analytical Laboratory |
|---|---|---|---|---|---|
| Lipids | EPA 1986 | EPA 9071 | | Fish tissue | Pace |
| Metals | | | | | |
| Antimony | EPA 1986 | EPA 7041 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Arsenic | EPA 1986 | EPA 7060 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Beryllium | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Cadmium | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Chromium | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Copper | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Lead | EPA 1986 | EPA 7421 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Mercury | EPA 1986 | EPA 7470 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Nickel | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Selenium | EPA 1986 | EPA 7740 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Silver | EPA 1986 | EPA 7760 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Thallium | EPA 1986 | EPA 7841 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Zinc | EPA 1986 | EPA 6010 | Perchloric acid digestion (Tetra Tech 1986) | Fish tissue | Pace |
| Butyltins | Uhler and Durell 1989 | | | Fish tissue | Pace |
| Pesticides and PCBs[a] | EPA 1986 | EPA 8080 | Soxhlet extraction, alumina column, GPC[b] (Tetra Tech 1986) | Fish tissue | Pace |
| PAHs[c] | EPA 1986 | EPA 8270 | Soxhlet extraction, alumina column, GPC (Tetra Tech 1986), GC/MS - SIM[d] | Fish tissue | Pace |
| PAH Parent Compounds | Krahn et al. 1986 | | | Fish bile | Battelle |

Notes:
[a] PCBs – polychlorinated biphenyls
[b] GPC – gel permeation chromatography
[c] PAHs – polynuclear aromatic hydrocarbons
[d] GC/MS - SIM – gas chromatography/mass spectrometry - selective ion monitoring

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**Table 3-12**
**Analytes by Analytical Method for Surface and Subsurface Sediment, Fish and Clam Tissue, and Fish Bile Samples**

| Analyte Group | Analyte | Sample Matrix: Surface Sediment | Subsurface Sediment | Fish and Clam Tissue | Fish Bile |
|---|---|---|---|---|---|
| Physical | Total Organic Carbon | X | X | | |
| | Grain Size | X | X | | |
| | Lipids | | | X | |
| | Moisture | X | X | | |
| Metals | Antimony | X | X | X | |
| | Arsenic | X | X | X | |
| | Beryllium | X | X | X | |
| | Cadmium | X | X | X | |
| | Chromium | X | X | X | |
| | Copper | X | X | X | |
| | Lead | X | X | X | |
| | Mercury | X | X | X | |
| | Nickel | X | X | X | |
| | Selenium | X | X | X | |
| | Silver | X | X | X | |
| | Thallium | X | X | X | |
| | Zinc | X | X | X | |
| AVS/SEM[a] | Acid Volatile Sulfide | X | | | |
| | Total Sulfide | X | | | |
| | Simultaneously Extracted Metals | X | | | |
| | Cadmium | X | | | |
| | Copper | X | | | |
| | Lead | X | | | |
| | Mercury | X | | | |
| | Zinc | X | | | |
| Butyltins | Dibutyltin | X | X | X | |
| | Monobutyltin | X | X | X | |
| | Tributyltin | X | X | X | |
| PAHs[b] | Benzo(a)anthracene | X | X | X | |
| | Benzo(a)pyrene | X | X | X | X |
| | Benzo(b)fluoranthene | X | X | X | |
| | Benzo(g,h,i)perylene | X | X | X | |
| | Benzo(k)fluoranthene | X | X | X | |
| | Chrysene | X | X | X | |
| | Dibenzo(a,h)anthracene | X | X | X | |
| | Fluoranthene | X | X | X | |
| | Indeno(1,2,3-cd)pyrene | X | X | X | |
| | Pyrene | X | X | X | X |
| | Acenaphthene | X | X | X | |
| | Acenaphthylene | X | X | X | |
| | Anthracene | X | X | X | |
| | Fluorene | X | X | X | |
| | Methylnaphthalenes | X | X | X | |

(table continues)



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Table 3-12 (continued)

| Analyte Group | Analyte | Sample Matrix: Surface Sediment | Subsurface Sediment | Fish and Clam Tissue | Fish Bile |
|---|---|---|---|---|---|
| PAHs[b] (continued) | Naphthalene | X | X | X | X |
| | Phenanthrene | X | X | X | X |
| SVOCs[c] | 1,2,4-Trichlorobenzene | X | X | | |
| | 1,2-Dichlorobenzene | X | X | | |
| | 1,3-Dichlorobenzene | X | X | | |
| | 1,4-Dichlorobenzene | X | X | | |
| | 2,4-Dinitrotoluene | X | X | | |
| | 2,6-Dinitrotoluene | X | X | | |
| | 2-Chloronaphthalene | X | X | | |
| | 3,3-Dichlorobenzidine | X | X | | |
| | 4-Bromophenylphenylether | X | X | | |
| | 4-Chlorophenylphenylether | X | X | | |
| | Benzidine | X | X | | |
| | Bis(2-chloroethoxy)methane | X | X | | |
| | Bis(2-chloroethyl)ether | X | X | | |
| | Bis(2-chloroisopropyl)ether | X | X | | |
| | Hexachlorobenzene | X | X | | |
| | Hexachlorobutadiene | X | X | | |
| | Hexachlorocyclopentadiene | X | X | | |
| | Hexachloroethane | X | X | | |
| | Isophorone | X | X | | |
| | N-Nitrosodi-n-propylamine | X | X | | |
| | N-Nitrosodimethylamine | X | X | | |
| | N-Nitrosodiphenylamine | X | X | | |
| | Nitrobenzene | X | X | | |
| | 2,4,6-Trichlorophenol | X | X | | |
| | 2,4-Dichlorophenol | X | X | | |
| | 2,4-Dimethylphenol | X | X | | |
| | 2,4-Dinitrophenol | X | X | | |
| | 2-Chlorophenol | X | X | | |
| | 2-Methyl-4,6-dinitrophenol | X | X | | |
| | 2-Methylphenol | X | X | | |
| | 2-Nitrophenol | X | X | | |
| | 3- and 4-Methylphenol | X | X | | |
| | 4-Chloro-3-methylphenol | X | X | | |
| | 4-Nitrophenol | X | X | | |
| | Pentachlorophenol | X | X | | |
| | Phenol | X | X | | |
| | Bis(2-ethylhexyl)phthalate | X | X | | |
| | Butylbenzylphthalate | X | X | | |
| | Di-n-butylphthalate | X | X | | |
| | Di-n-octylphthalate | X | X | | |
| | Diethylphthalate | X | X | | |
| | Dimethylphthalate | X | X | | |

(table continues)



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**Table 3-12 (continued)**

| Analyte Group | Analyte | Sample Matrix: Surface Sediment | Subsurface Sediment | Fish and Clam Tissue | Fish Bile |
|---|---|---|---|---|---|
| Pesticides | Aldrin | X | X | X | |
| | alpha-BHC[d] | X | X | X | |
| | beta-BHC | X | X | X | |
| | Chlordane | X | X | X | |
| | delta-BHC | X | X | X | |
| | Dieldrin | X | X | X | |
| | Endosulfan I | X | X | X | |
| | Endosulfan II | X | X | X | |
| | Endosulfan Sulfate | X | X | X | |
| | Endrin | X | X | X | |
| | Endrin Aldehyde | X | X | X | |
| | Heptachlor | X | X | X | |
| | Heptachlor Epoxide | X | X | X | |
| | Lindane (gamma-BHC) | X | X | X | |
| | Methoxychlor | X | X | X | |
| | 4,4'-DDD[e] | X | X | X | |
| | 4,4'-DDE[f] | X | X | X | |
| | 4,4'-DDT[g] | X | X | X | |
| | Toxaphene | X | X | X | |
| PCBs[h] | Aroclor 1016 | X | X | X | |
| | Aroclor 1221 | X | X | X | |
| | Aroclor 1232 | X | X | X | |
| | Aroclor 1242 | X | X | X | |
| | Aroclor 1248 | X | X | X | |
| | Aroclor 1254 | X | X | X | |
| | Aroclor 1260 | X | X | X | |
| Bioassay | Echinoderm Normal Development | X | | | |
| | Echinoderm Survival | X | | | |
| | Polychaete Growth | X | | | |
| | Polychaete Survival | X | | | |
| | Amphipod Reburial | X | | | |
| | Amphipod Survival | X | | | |

Notes:

[a] AVS/SEM – acid volatile sulfides/simultaneously extracted metals
[b] PAHs – polynuclear aromatic hydrocarbons
[c] SVOCs – semivolatile organic compounds
[d] BHC – hexachlorocyclohexane
[e] DDD – dichloro-diphenyl-dichloroethane
[f] DDE – dichloro-diphenyl-ethane
[g] DDT – dichloro-diphenyl-trichloroethane
[h] PCBs – polychlorinated biphenyls
X – sample matrix was analyzed for analyte indicated



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**Table 3-13**
**Bioassay Performance Criteria**

| Test Organism | Negative Control Performance Criterion | Reference Sediment Performance Criterion | Data Interpretation Performance Criterion | | | Other Observations |
|---|---|---|---|---|---|---|
| Amphipod *R. abronius* Mortality | Survival (control) ≥ 90% | Survival (RPD[a] between reference and control) ≤ 20% | Survival (RPD between test and reference) ≥ 20% | and | Survival (test vs. reference) statistically significant ($P^b \leq 0.05$) | Reburial |
| Polychaete *N. arenaceodentata* Mortality | Survival (control) ≥ 90% | Survival (RPD between reference and control) ≤ 20% | Survival (RPD between test and reference) ≥ 20% | and | Survival (test vs. reference) statistically significant ($P \leq 0.05$) | – |
| Polychaete *N. arenaceodentata* Biomass | Survival (control) ≥ 90% | Mean individual weight (RPD between reference and control) ≤ 30% | Mean individual weight (RPD between test and reference) ≥ 30% | and | Mean individual weight (test vs. reference) statistically significant ($P \leq 0.05$) | – |
| Echinoderm *D. excentricus* Larval Development | Normal Development (control) ≥ 70% | Normal development (RPD between reference and control) ≤ 20% | Normal development (RPD between test and reference) ≥ 20% | and | Normal development (test vs. reference) statistically significant | Survival |

Notes:
[a] RPD - relative percent difference
[b] P - probability



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**Table 3-14**
**Bioassay Performance Criteria Evaluation Procedure - Example Using *Neanthes***

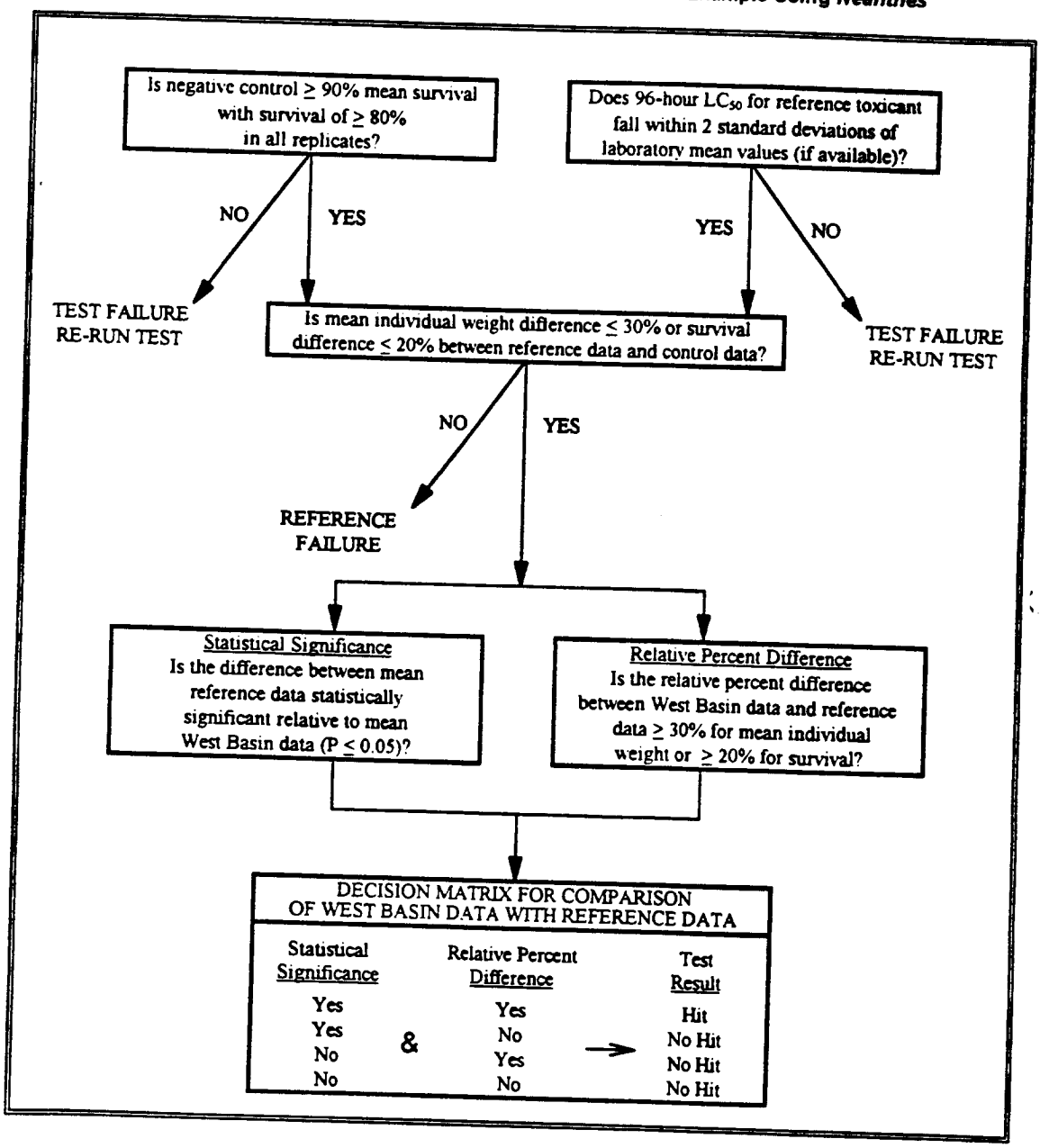


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**Table 3-15**
**ER-L and ER-M Guideline Values**

| Chemical | Guidelines ER-L | ER-M |
|---|---|---|
| **Metals, mg/kg** | | |
| Arsenic | 8.2 | 70 |
| Cadmium | 1.2 | 9.6 |
| Chromium | 81 | 370 |
| Copper | 34 | 270 |
| Lead | 46.7 | 218 |
| Mercury | 0.15 | 0.71 |
| Nickel | 20.9 | 51.6 |
| Silver | 1.0 | 3.7 |
| Zinc | 150 | 410 |
| **HPAHs, µg/kg** | | |
| Benzo(a)anthracene | 261 | 1,600 |
| Benzo(a)pyrene | 430 | 1,600 |
| Benzo(ghi)perylene | 540* | NA |
| Chrysene | 384 | 2,800 |
| Dibenzo(a,h)anthracene | 63.4 | 260 |
| Fluoranthene | 600 | 5,100 |
| Indeno(1,2,3-cd)pyrene | 69* | NA |
| Pyrene | 665 | 2,600 |
| Total benzofluoranthenes | 800* | NA |
| Total HPAHs | 1,700 | 9,600 |
| **LPAHs, µg/kg** | | |
| Acenaphthene | 16 | 500 |
| Acenaphthylene | 44 | 640 |
| Anthracene | 85.3 | 1,100 |
| Fluorene | 19 | 540 |
| 2-Methyl naphthalene | 70 | 2,100 |
| Naphthalene | 160 | 2,100 |
| Phenanthrene | 240 | 1,500 |
| Total LPAHs | 552 | 3,160 |
| Total PAHs | 4,022 | 44,792 |
| **PCBs, µg/kg** | | |
| Total PCBs | 22.7 | 180 |
| **Pesticides, µg/kg** | | |
| Aldrin | 5* | NA |
| Lindane (γ-BHC) | 5* | NA |
| 4,4'-DDE | 2 | 27 |
| Total DDTs | 1.58 | 46.1 |
| **SVOCs, µg/kg** | | |
| Phenol | 120* | NA |
| Bis(2-ethylhexyl)phthalate | 1,900* | NA |
| Di-n-octylphthalate | 68,000* | NA |

Source: Long et al. 1995.
Notes:
* PSDDA (U.S. ACOE 1988) SL value.
NA - Not available.



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**Table 4-1**
**Chemical Data Values Retained After Data Validation**

| Analysis Matrix | Number of Data Values Reported by Laboratory | Number of Data Values Retained by Validators | Percent Retained |
|---|---|---|---|
| Surface Sediment | 6,216 | 5,703 | 91.7 |
| Subsurface Sediment | 3,570 | 3,461 | 96.9 |
| Clam Tissue | 840 | 840 | 100.0 |
| California Halibut Fillet | 531 | 496 | 93.4 |
| California Halibut Whole Body | 1,416 | 1,303 | 92.0 |
| California Halibut Bile | 72 | 72 | 100.0 |
| White Croaker Fillet | 531 | 476 | 89.6 |
| White Croaker Whole Body | 1,239 | 1,118 | 90.2 |
| Total | 14,415 | 13,469 | 93.4 |
| Rejected Data | | 946 | 6.6 |

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**Table 4-2**
**Surface Sediment Visual Observations**

| Station ID | Texture | Color | Odor | Cohesiveness | Presence and Nature of Obvious Strata | Disturbed Sediment | Other Remarks |
|---|---|---|---|---|---|---|---|
| **West Basin** | | | | | | | |
| 1 | No Obs[a] | No Obs | Weak hydrogen sulfide | No Obs | Dense, dry clay under upper 2 cm[b] organic layer | No | None |
| 2 | No Obs | Blackish | None | No Obs | Gooey silt; slight clay | No | Little observed infauna |
| 3 | No Obs | Blackish | None | No Obs | Gooey silt | No | Little observable life |
| 4 | No Obs | Blackish/brown | Slight | No Obs | Clayey silt | No | Ghost shrimp holes; some polychaetes |
| 5 | No Obs | No Obs | None | No Obs | Overlying organic layer (2 cm) over dense and relatively dry clay; some sand | No | Relatively healthy infauna; polychaetes and shrimp |
| 6 | Very soft | Dark brown top 2 cm; dark black bottom 8 cm | None | No Obs | Silt (ooze) | No | None |
| 7 | Fine | No Obs | None | No Obs | Silt with some clay and fine sand | No | Shell hash; some animals |
| 8 | Hard | Dark brown top 2 cm; black bottom 8 cm | None | No Obs | Top 2 cm: silt/clay; bottom 8 cm: harder, packed clay | No | Visible biota |
| 9 | No Obs | Light brown | None | No Obs | Light silt with some clay | No | Polychaetes |
| 10 | No Obs | Brown organic layer top 2 cm; black bottom 8 cm | None | No Obs | Dense, dry clay | No | Polychaetes inhabiting clay but no evidence of shrimp or bivalves |
| 11 | No Obs | Dark brown | None | No Obs | Clayey silt | No | Some polychaetes |
| 12 | No Obs | Black with 0.5 cm brown overlayer | Strong | High | Clayey silt with minor vertical stratification | No | Few infaunal organisms apparent; oil-like; mucky |
| 13 | No Obs | Light to dark brown | None | High | Clayey silt | No | Shrimp burrows; few differences in grain size |
| 14 | No Obs | Dark brown | None | No Obs | Silt/clay | No | No obvious infauna |
| 15 | No Obs | Very dark brown | Some petroleum hydrocarbon | High | Some vertical stratification; silty clay | No | Very little infauna |



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Table 4-2 (continued)

| Station ID | Texture | Color | Odor | Cohesiveness | Presence and Nature of Obvious Strata | Disturbed Sediment | Other Remarks |
|---|---|---|---|---|---|---|---|
| 16 | Very fine | Brown to black | None | Very high | Clay/silt with slight vertical stratification | No | Few infauna |
| 17 | No Obs | Brown on top; black on bottom | Slight | High | High clay content with some sand | No | None |
| 18 | No Obs | Light brown | Moderate | High | Silty clay; little strata | No | Healthy looking surface community |
| 19 | No Obs | No Obs | None | High | Silty clay | No | None |
| 20 | No Obs | No Obs | None | High | Silty | No | Healthy with considerable epifauna |
| 21 | Slightly coarse | Light brown | None | High | Silty clay with some sand | No | None |
| 22 | Firm yet soft | Brown top layers; black bottom 5 cm | None | High | Silty mud | No | Crabs and ghost shrimp |
| 23 | No Obs | Light brown | None | High | Clayey silt; no strata | No | Relatively few animals present |
| 24 | Coarse | Grey | None | No Obs | Sandy | No | Lots of shell hash |
| 25 | No Obs | No Obs | Minimal | High | Silty sand upper 5 cm, then silty clay | No | None |
| 26 | No Obs | Dark | None | High | Clay | No Obs | Kelp crabs and clams at surface |
| 27 | Soft | Green | None | Moderate to high | None | No | None |
| 28 | Soft | Green | None | Moderate | None | No | None |
| 29 | No Obs | Dark brown | None | No Obs | Silt/clay; no real stratification | No | Visible infauna |
| 30 | No Obs | Brown | None | High | 60 - 80 percent silt | No | Healthy; mostly silt with some clay |
| 31 | Soft | Green/grey | None | Low | Silt/sand upper 5 cm; silt/clay bottom 5 cm | No | None |
| 32 | No Obs | No Obs | None | No Obs | 40 - 50 percent sand | No | Rock crabs in surface mud |

(table continues)





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Table 4-2 (continued)

| Station ID | Texture | Color | Odor | Cohesiveness | Presence and Nature of Obvious Strata | Disturbed Sediment | Other Remarks |
|---|---|---|---|---|---|---|---|
| 33 | Soft | No Obs | None | No Obs | Silt/sand (50 percent sand) top layers; progressively silty to 70 percent silt towards bottom of sample | No | Healthy appearing benthic community |
| 41 | Soft | Green-tinged | Organic | No Obs | None | No | Fine-grained with high organic content |
| Piers | | | | | | | |
| 42 | Fine | Dark brown | Moderate | No Obs Wet | Lots of shell hash | No | Fewer mussel shells; many live and dead crabs up to 7 inches across |
| 43 | No Obs | Black | Anaerobic | No Obs | 10 percent sand | No | Oily sheen; crabs present |
| 44 | Fine | Black | Strong | Extremely runny and wet | Silt with no sand or clay | No | Fewer mussel shells |
| 45 | Fine | Black | Strong | Extremely runny and wet | Silt with minimal clay | No | Mussel shells throughout mud |
| 46 | Fine | Black | Strong | No Obs | Silt with minimal clay | No | Mussel shells throughout mud |
| 47 | Medium to fine | Brownish/black | Medium | No Obs | Sandy silt | No | Slight sheen |
| 48 | Fine | Black | Medium | No Obs | Silty; very oily | No Obs | Many mussel shells (80 - 90 percent of sample) under pier; 50-60 percent mussel shells at edge of pier |
| 49 | Medium to fine | Black with brown streaks | Slight | No Obs | Sandy silt | No | Very few mussel shells; no oily sheen |

(table continues)



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Table 4-2 (continued)

| Station ID | Texture | Color | Odor | Cohesiveness | Presence and Nature of Obvious Strata | Disturbed Sediment | Other Remarks |
|---|---|---|---|---|---|---|---|
| 50 | No Obs | Brown | Strong | No Obs | Heterogenous silt to sand to some gravel | No | Many mussel shells; pig and scrap iron on harbor floor |
| 51 | Fine | Black with brown tint | Strong | No Obs | Silt | No | Sparse shells |
| 52 | No Obs | Jet black | Very strong | No Obs | Silt with minimal sand and clay | No | Oily sheen; sparse shells |
| Reference | | | | | | | |
| 40010.1 | No Obs | Dark brown | None | High | Clay | Yes - 1st drop; No - remainder of drops | High moisture content top 2 cm; low moisture content bottom 8 cm |
| 40010.2 | Very fine | Dark to medium brown with slight green tinge | None | High in lower 8 cm | Clay | No | High water content top 2 cm; low water content bottom 8 cm |
| 40010.3 | Very fine | Dark to medium brown with green tinge | None | High in lower 8 cm | Clay | No | High water content top 2 cm; low water content bottom 8 cm |
| 40018.1 | Very fine | Light on top; dark underneath | None | No Obs | Organic overlayer | No | Healthy looking benthic community |
| 40018.2 | Fine | Light | None | No Obs | Small amount of sand | No | None |
| 40018.3 | No Obs | No Obs | No Obs | No Obs | No Obs | No Obs | None |
| 40032.1 | Very fine | Light | None | No Obs | Sand | No | Appeared clean |
| 40032.2 | Slightly coarse | No Obs | None | No Obs | No Obs | No | None |
| 40032.3 | No Obs | No Obs | None | No Obs | Silty clay | No | None |

Notes:

[a] No Obs - no observation

[b] cm - centimeter



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## Table 4-3
## Surface Sediment Grain Size and Total Organic Carbon Data

| Station ID | Grain Size | | | | | | | Total Organic Carbon (percent) |
|---|---|---|---|---|---|---|---|---|
| | Clay (percent) | Silt (percent) | Sand (percent) | Gravel (percent) | Fines (percent) | Mean (µm*) | Median (µm) | |
| 1 | 15.6 | 37.9 | 46.6 | 0.0 | 53.4 | 22.4 | 52.0 | 0.8 |
| 2 | 18.6 | 33.3 | 48.1 | 0.0 | 51.9 | 18.2 | 55.5 | 1.1 |
| 3 | 24.9 | 46.3 | 28.8 | 0.0 | 71.2 | 12.1 | 19.6 | 1.2 |
| 4 | 27.9 | 43.5 | 28.6 | 0.0 | 71.4 | 10.8 | 17.2 | 1.3 |
| 5 | 7.6 | 37.6 | 54.8 | 0.0 | 45.2 | 34.9 | 66.5 | 0.4 |
| 6 | 17.7 | 33.4 | 48.9 | 0.0 | 51.1 | 17.2 | 59.2 | 0.6 |
| 7 | 17.1 | 25.0 | 57.9 | 0.0 | 42.1 | 19.5 | 72.3 | 0.7 |
| 8 | 13.5 | 30.8 | 55.7 | 0.0 | 44.3 | 26.6 | 69.2 | 0.7 |
| 9 | 27.0 | 38.4 | 34.6 | 0.0 | 65.4 | 11.0 | 22.6 | 0.9 |
| 10 | 42.1 | 40.3 | 17.6 | 0.0 | 82.4 | 6.4 | 5.6 | 1.8 |
| 11 | 28.4 | 41.3 | 30.4 | 0.0 | 69.6 | 10.1 | 16.5 | 1.3 |
| 12 | 23.2 | 38.6 | 38.1 | 0.0 | 61.9 | 12.2 | 34.2 | 0.6 |
| 13 | 12.4 | 43.3 | 44.2 | 0.0 | 55.8 | 29.4 | 50.4 | 0.6 |
| 14 | 10.7 | 30.8 | 58.4 | 0.0 | 41.6 | 33.8 | 70.5 | 0.5 |
| 15 | 31.1 | 52.7 | 16.2 | 0.0 | 83.8 | 8.2 | 11.2 | 0.9 |
| 16 | 30.0 | 47.8 | 22.2 | 0.0 | 77.8 | 9.5 | 13.7 | 0.9 |
| 17 | 48.0 | 38.8 | 13.3 | 0.0 | 86.7 | 4.6 | 4.3 | 1.8 |
| 18 | 33.2 | 50.1 | 16.7 | 0.0 | 83.3 | 8.9 | 10.8 | 0.4 |
| 19 | 23.5 | 44.1 | 32.5 | 0.0 | 67.5 | 12.9 | 22.3 | 0.6 |
| 20 | 24.4 | 51.2 | 24.5 | 0.0 | 75.5 | 11.4 | 18.0 | 0.7 |
| 21 | 46.4 | 46.1 | 7.6 | 0.0 | 92.4 | 4.0 | 4.5 | 1.5 |
| 22 | 46.5 | 46.7 | 6.8 | 0.1 | 93.1 | 4.2 | 4.5 | 0.7 |
| 23 | 26.4 | 43.9 | 29.6 | 0.0 | 70.3 | 11.8 | 20.3 | 0.7 |
| 24 | 1.8 | 2.1 | 79.5 | 16.6 | 3.9 | 637.8 | 397.8 | 0.1 |
| 25 | 8.7 | 21.4 | 69.8 | 0.1 | 30.2 | 58.2 | 102.2 | 0.6 |
| 26 | 32.3 | 51.9 | 15.8 | 0.0 | 84.2 | 8.2 | 9.2 | 1.3 |
| 27 | 46.6 | 44.2 | 9.2 | 0.0 | 90.8 | 4.8 | 4.5 | 1.7 |
| 28 | 23.0 | 44.9 | 32.2 | 0.0 | 67.8 | 13.8 | 25.3 | 0.7 |
| 29 | 23.4 | 47.1 | 29.6 | 0.0 | 70.4 | 13.3 | 20.8 | 0.6 |
| 30 | 17.3 | 56.0 | 26.7 | 0.0 | 73.3 | 15.8 | 31.5 | 0.5 |
| 31 | 20.5 | 26.4 | 53.1 | 0.0 | 46.9 | 24.7 | 77.6 | 0.5 |
| 32 | 11.0 | 12.9 | 76.1 | 0.0 | 23.9 | 53.8 | 151.4 | 0.4 |
| 33 | 28.4 | 47.1 | 24.5 | 0.0 | 75.5 | 10.9 | 15.8 | 0.6 |
| 41 | 29.7 | 46.9 | 23.3 | 0.0 | 76.6 | 10.0 | 13.0 | 1.1 |
| 42 | 43.4 | 28.6 | 14.0 | 14.0 | 72.0 | 22.7 | 5.7 | 1.6 |
| 43 | 51.6 | 42.3 | 5.6 | 0.5 | 93.9 | 2.4 | 3.5 | 2.2 |
| 44 | 32.5 | 21.9 | 8.9 | 36.8 | 54.3 | 0.0 | 20.5 | 1.7 |
| 45 | 44.1 | 26.5 | 19.6 | 9.9 | 70.5 | 9.6 | 6.0 | 1.4 |
| 46 | 46.4 | 25.4 | 12.8 | 15.4 | 71.8 | 25.7 | 4.8 | 1.9 |
| 47 | 26.5 | 23.7 | 47.2 | 2.6 | 50.2 | 13.1 | 61.4 | 1.3 |
| 48 | 38.4 | 32.6 | 20.9 | 8.1 | 71.0 | 16.9 | 8.3 | 2.3 |
| 49 | 32.7 | 43.2 | 23.6 | 0.5 | 75.9 | 8.8 | 9.2 | 1.6 |
| 50 | 22.6 | 15.8 | 32.1 | 29.4 | 38.4 | 87.9 | 411.8 | 1.6 |
| 51 | 38.5 | 46.5 | 11.0 | 3.9 | 85.1 | 4.9 | 8.0 | 2.1 |
| 52 | 40.1 | 41.6 | 9.3 | 9.0 | 81.7 | 7.1 | 7.4 | 2.1 |
| 40010.1 | 22.1 | 65.1 | 12.7 | 0.0 | 87.3 | 9.9 | 19.0 | 1.9 |
| 40010.2 | 23.3 | 68.3 | 8.4 | 0.0 | 91.6 | 8.8 | 17.8 | 2.0 |
| 40010.3 | 23.1 | 61.2 | 15.6 | 0.1 | 84.3 | 11.4 | 15.3 | 2.0 |
| 40018.1 | 32.9 | 35.5 | 31.5 | 0.2 | 68.4 | 9.4 | 11.3 | 0.9 |
| 40018.2 | 29.8 | 42.9 | 27.3 | 0.0 | 72.7 | 9.9 | 12.5 | 1.0 |
| 40018.3 | 33.9 | 44.8 | 21.3 | 0.0 | 78.7 | 8.4 | 9.5 | 1.0 |
| 40032.1 | 7.0 | 8.3 | 84.6 | 0.1 | 15.3 | 110.0 | 127.6 | 0.4 |

Note
* µm - micrometer



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**Table 4-4**
**Pier Subsurface Core Samples Collected for Laboratory Analysis**

| Approximate Depth (Meters) | Borehole Number | | |
|---|---|---|---|
| | STA-51A (Pier 2) | STA-43A (Pier 15) | STA-46 (Pier 12) |
| 0.0 – 0.9 | Sample 1<br>Silty clay with abundant shell fragments | Sample 1<br>Silty clay with abundant shell fragments | Sample 1<br>Sample not recovered |
| 0.7 – 1.6 | Sample 2<br>Silty clay with abundant shell fragments | Sample 2<br>Silty clay with abundant shell fragments | Sample 2<br>Clay with sludge |
| 1.7 – 2.9 | Sample 3<br>Clayey silt | Sample 3<br>Clayey silt | Sample not recovered |
| 2.9 – 3.7 | Sample 4<br>Silty clay | Sample 4<br>Clayey silt | |
| 3.7 – 4.9 | Sample 5<br>Clayey silt with sand | Sample 5<br>Clayey silt with increased sand content | Sample 4<br>Silty sand |
| 4.5 – 5.2 | | | Sample 5<br>Silty sand |

Note: ... Indicates approximate horizon sample separation depth.



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**Table 4-5**
**Subsurface Sediment Grain Size and Total Organic Carbon Data**

| Analyte Name | Core Horizon | Basin Stations 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 | Reference Stations 40010.1 | 40018.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gravel, percent | 1 | 0.02 | 0.00 | 0.21 | 0.15 | 0.05 | 17.13 | —[a] | 10.80 | 0.00 | 0.69 |
| | 2 | 1.61 | 0.14 | 0.02 | 0.09 | 1.16 | 24.41 | 18.19 | 5.52 | 0.00 | 0.21 |
| | 3 | 0.08 | — | — | — | — | 25.38 | — | 20.93 | — | 0.16 |
| | 4 | 7.24 | — | — | — | — | 17.23 | 8.89 | 6.57 | — | 0.00 |
| | 5 | 2.75 | — | — | — | — | 1.49 | 1.21 | 0.07 | — | 0.00 |
| Sand, percent | 1 | 74.69 | 92.07 | 59.30 | 34.03 | 86.24 | 19.20 | — | 24.42 | 0.61 | 42.59 |
| | 2 | 89.64 | 94.27 | 29.70 | 73.25 | 62.81 | 16.61 | 47.41 | 10.25 | 16.66 | 49.40 |
| | 3 | 2.00 | — | — | — | — | 14.36 | — | 7.39 | — | 43.90 |
| | 4 | 73.69 | — | — | — | — | 53.91 | 58.67 | 6.77 | — | 34.90 |
| | 5 | 59.43 | — | — | — | — | 36.96 | 66.92 | 37.53 | — | 43.35 |
| Silt, percent | 1 | 19.43 | 4.75 | 30.18 | 40.44 | 10.50 | 23.11 | — | 30.20 | 41.10 | 33.55 |
| | 2 | 6.16 | 4.17 | 52.77 | 20.53 | 22.25 | 22.84 | 15.72 | 40.76 | 48.08 | 38.35 |
| | 3 | 56.72 | — | — | — | — | 16.81 | — | 29.13 | — | 36.94 |
| | 4 | 11.28 | — | — | — | — | 18.45 | 18.15 | 29.52 | — | 45.79 |
| | 5 | 31.41 | — | — | — | — | 47.18 | 24.85 | 45.87 | — | 37.97 |
| Clay, percent | 1 | 5.86 | 3.19 | 10.32 | 25.38 | 3.21 | 40.56 | — | 34.59 | 58.29 | 23.17 |
| | 2 | 2.59 | 1.41 | 17.51 | 6.14 | 13.79 | 36.13 | 18.69 | 43.47 | 35.26 | 12.05 |
| | 3 | 41.21 | — | — | — | — | 43.46 | — | 42.55 | — | 19.00 |
| | 4 | 7.79 | — | — | — | — | 10.41 | 14.29 | 57.13 | — | 19.31 |
| | 5 | 6.41 | — | — | — | — | 14.37 | 7.02 | 16.54 | — | 18.69 |
| Fines, percent | 1 | 25.29 | 7.93 | 40.49 | 65.82 | 13.71 | 63.67 | — | 64.78 | 99.39 | 56.72 |
| | 2 | 8.75 | 5.58 | 70.28 | 26.67 | 36.04 | 58.98 | 34.40 | 84.23 | 83.34 | 50.39 |
| | 3 | 97.93 | — | — | — | — | 60.26 | — | 71.68 | — | 55.95 |
| | 4 | 19.07 | — | — | — | — | 28.86 | 32.44 | 86.66 | — | 65.10 |
| | 5 | 37.82 | — | — | — | — | 61.55 | 31.88 | 62.40 | — | 56.66 |
| Mean Grain Size, µm[b] | 1 | 70.32 | 110.59 | 36.68 | 13.72 | 125.03 | 39.62 | — | 31.37 | 1.82 | 13.48 |
| | 2 | 110.98 | 124.40 | 18.27 | 80.05 | 41.95 | 59.64 | 107.83 | 5.27 | 7.65 | 35.78 |
| | 3 | 4.59 | — | — | — | — | 70.49 | — | 65.79 | — | 20.02 |
| | 4 | 105.33 | — | — | — | — | 179.24 | 44.09 | 4.02 | — | 17.26 |
| | 5 | 57.60 | — | — | — | — | 25.08 | 52.91 | 21.19 | — | 16.81 |
| Median Grain Size, µm | 1 | 88.16 | 109.33 | 80.09 | 18.80 | 120.39 | 7.61 | — | 10.36 | 2.41 | 37.44 |
| | 2 | 109.92 | 111.13 | 25.95 | 118.54 | 134.20 | 7.52 | 113.87 | 5.75 | 9.07 | 61.45 |
| | 3 | 6.01 | — | — | — | — | 7.61 | — | 5.87 | — | 46.54 |
| | 4 | 147.99 | — | — | — | — | 113.03 | 119.26 | 2.72 | — | 32.77 |
| | 5 | 84.44 | — | — | — | — | 29.61 | 87.88 | 34.58 | — | 41.63 |
| Total Organic Carbon (TOC), percent | 1 | 0.24 | 0.21 | 0.31 | 0.43 | 0.10 | 2.16 | — | 2.19 | 3.63 | 0.69 |
| | 2 | 0.20 | 0.19 | 0.25 | 0.28 | 0.06 | 2.24 | 0.96 | 1.51 | 1.41 | 0.17 |
| | 3 | 0.28 | — | — | — | — | 1.60 | — | 2.39 | — | 0.09 |
| | 4 | 0.16 | — | — | — | — | 0.52 | 0.52 | 2.22 | — | 0.10 |
| | 5 | 0.09 | — | — | — | — | 0.52 | 0.20 | 0.38 | — | 0.05 |

Notes:

[a] — - indicates no samples collected at this horizon



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Table 4-6
Detected Analytes in Surface Sediment Samples Collected from Reference Stations

| Analyte Name | 40010.1 | 40010.2 | 40010.3 | 40018.1 | 40018.2 | 40018.3 | 40032.1 |
|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 14 | 9 | 12 | 7 | 6.9 | 6.9 | 2.8 |
| Beryllium | 0.44 | 0.43 | 0.43 | 0.38 | 0.39 | 0.71 | |
| Cadmium | 2.4 | 1.5 | 1.6 | 0.66 | 0.67 | 0.78 | 0.25 |
| Chromium | 53 | 45 | 50 | 27 | 28 | 38 | 15 |
| Copper | 130 | 130 | 140 | 30 | 33 | 43 | 13 |
| Lead | 42 | 36 | 41 | 44 | 43 | 61 | 11 |
| Mercury | 0.59 | 0.43 | 0.48 | 0.19 | 0.2 | 0.12 | 0.066 |
| Nickel | 37 | 32 | 34 | 17 | 18 | 24 | 8 |
| Selenium | 1.3 | 1.7 | 1.5 | | | | |
| Silver | 2.2 | 2.4 | 2.1 | 1.5 | 1.6 | 2.1 | 0.8 |
| Zinc | 240 | 240 | 230 | 93 | 100 | 130 | 42 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | | | | | | | 2.5 |
| Monobutyltin | | | | | | | |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 150 | 43 | 120 | 19 | 20 | | |
| Benzo(a)pyrene | 130 | 43 | 200 | 19 | 20 | | |
| Benzo(b)fluoranthene | 66 | 21 | 59 | | | | |
| Benzo(ghi)perylene | 200 | 43 | 190 | 19 | 20 | | |
| Benzo(k)fluoranthene | 88 | 43 | 81 | 19 | 20 | | |
| Chrysene | | | | | | | |
| Dibenzo(a,h)anthracene | 150 | 64 | 170 | 19 | 20 | | |
| Fluoranthene | 66 | 21 | 45 | | | | |
| Indeno(1,2,3-cd)pyrene | 130 | 64 | 150 | 38 | 20 | 24 | |
| Pyrene | 330 | 86 | 390 | 38 | 40 | | |
| Benzofluoranthenes | 980 | 342 | 1015 | 133 | 120 | 24 | |
| Total HPAH | | | | | | | |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | | | | | | | |
| Acenaphthylene | 44 | | 45 | | | | |
| Anthracene | | | | | | | |
| Fluorene | | | | | | | |
| Methylnaphthalenes | 44 | | 45 | | | | |
| Phenanthrene | 88 | | 90 | | | | |
| Total LPAH | 1068 | 342 | 1105 | 133 | 120 | 24 | |
| Total PAH | | | | | | | |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | | | | | | | |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | | | | | | | |
| Lindane (gamma-BHC) | | | | | | | |
| 4,4'-DDD | 10 | 20 | 15 | 8.9 | 9.8 | 19 | 5.3 |
| 4,4'-DDE | 130 | 190 | 180 | 95 | 98 | 71 | 70 |
| 4,4'-DDT | 140 | 210 | 195 | 103.9 | 107.8 | 90 | 75.3 |
| Total DDTs | | | | | | | |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | | | | | | | |
| Bis(2-ethylhexyl)phthalate | 220 | | 160 | | | 310 | |
| Di-n-octylphthalate | | | | | | | |
| **Sulfides** | | | | | | | |
| Sulfide, Total, mg/kg | 15 | 41 | 24 | 380 | 120 | 260 | 17 |
| Acid Volatile Sulfide, µmol/g | 0.2464 | 1.7467 | 1.7467 | 14.6600 | 3.4311 | 8.1098 | 0.4991 |
| **SEM, µmol/g** | | | | | | | |
| Cadmium, Extractable | 0.0214 | 0.0231 | 0.0169 | 0.0068 | 0.0087 | 0.0125 | |
| Copper, Extractable | 1.1016 | 1.2904 | 1.1645 | 0.4721 | 0.4564 | 0.5980 | 0.1731 |
| Lead, Extractable | 0.1689 | 0.1641 | 0.1593 | 0.2558 | 0.2461 | 0.3330 | 0.0579 |
| Mercury, Extractable | 0.0002 | | | | 0.0001 | | |
| Zinc, Extractable | 2.9056 | 3.2115 | 2.7527 | 1.3611 | 1.3458 | 1.8351 | 0.4435 |
| **SEM/AVS** | | | | | | | |
| Cadmium/AVS | 0.0866 | 0.0132 | 0.0097 | 0.0005 | 0.0025 | 0.0015 | |
| Copper/AVS | 4.4704 | 0.7388 | 0.6667 | 0.0322 | 0.1330 | 0.0737 | 0.3469 |
| Lead/AVS | 0.6855 | 0.0939 | 0.0912 | 0.0174 | 0.0717 | 0.0411 | 0.1160 |
| Mercury/AVS | 0.0009 | | | | 0.0000 | | |
| Zinc AVS | 11.7918 | 1.8386 | 1.5759 | 0.0928 | 0.3922 | 0.2263 | 0.8886 |
| Total SEM AVS | 17.0352 | 2.6845 | 2.3435 | 0.1430 | 0.5995 | 0.3426 | 1.3516 |

Note: blank space indicates sample analyzed for compound, but not detected.



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**Table 4-7**
**Summary of Descriptive Statistics for Detected Analytes in Surface Sediment Samples Collected from Reference Stations**

| Analyte Name | Frequency Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UPL |
|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 7 of 7 | 100 | 2.8 | 14 | 8.3 | 3.7 | 16 |
| Beryllium | 6 of 7 | 86 | 0.38 | 0.71 | 0.40 | 0.19 | 0.80 |
| Cadmium | 7 of 7 | 100 | 0.25 | 2.4 | 1.1 | 0.7 | 2.7 |
| Chromium | 7 of 7 | 100 | 15 | 53 | 37 | 14 | 65 |
| Copper | 7 of 7 | 100 | 13 | 140 | 74 | 56 | 191 |
| Lead | 7 of 7 | 100 | 11 | 61 | 40 | 15 | 71 |
| Mercury | 7 of 7 | 100 | 0.066 | 0.59 | 0.30 | 0.20 | 0.71 |
| Nickel | 7 of 7 | 100 | 8 | 37 | 24 | 11 | 46 |
| Selenium | 3 of 7 | 43 | 1.3 | 1.7 | 0.9 | 0.6 | 2.1 |
| Silver | 7 of 7 | 100 | 0.8 | 2.4 | 1.8 | 0.6 | 3.0 |
| Zinc | 7 of 7 | 100 | 42 | 240 | 154 | 82 | 324 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 1 of 7 | 14 | 2.5 | 2.5 | 1.21 | 0.57 | 2.39 |
| Monobutyltin | 0 of 7 | 0 | 0 | 0 | 0.93 | 0.19 | 1.32 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 0 of 7 | 0 | 0 | 0 | 11 | 5.6 | 23 |
| Benzo(a)pyrene | 5 of 7 | 71 | 19 | 150 | 52 | 58 | 174 |
| Benzo(b)fluoranthene | 5 of 7 | 71 | 19 | 200 | 61 | 75 | 216 |
| Benzo(ghi)perylene | 3 of 7 | 43 | 21 | 66 | 26 | 26 | 79 |
| Benzo(k)fluoranthene | 5 of 7 | 71 | 19 | 200 | 70 | 87 | 249 |
| Chrysene | 5 of 7 | 71 | 19 | 88 | 38 | 34 | 109 |
| Dibenzo(a,h)anthracene | 0 of 7 | 0 | 0 | 0 | 11 | 5.6 | 23 |
| Fluoranthene | 5 of 7 | 71 | 19 | 170 | 63 | 69 | 207 |
| Indeno(1,2,3-cd)pyrene | 3 of 7 | 43 | 21 | 66 | 24 | 23 | 72 |
| Pyrene | 6 of 7 | 86 | 20 | 150 | 62 | 57 | 180 |
| Benzofluoranthenes | 5 of 7 | 71 | 38 | 390 | 131 | 159 | 462 |
| Total HPAH | 6 of 7 | 86 | 24 | 1015 | 417 | 430 | 1311 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 0 of 7 | 0 | 0 | 0 | 11 | 5.6 | 23 |
| Acenaphthylene | 0 of 7 | 0 | 0 | 0 | 11 | 5.6 | 23 |
| Anthracene | 2 of 7 | 29 | 44 | 45 | 19 | 17 | 55 |
| Fluorene | 0 of 7 | 0 | 0 | 0 | 11 | 5.6 | 23 |
| Methylnaphthalenes | 0 of 7 | 0 | 0 | 0 | 14 | 12 | 38 |
| Phenanthrene | 2 of 7 | 29 | 44 | 45 | 19 | 17 | 55 |
| Total LPAH | 2 of 7 | 29 | 88 | 90 | 85 | 58 | 206 |
| Total PAH | 6 of 7 | 86 | 24 | 1105 | 502 | 485 | 1510 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 0 of 7 | 0 | 0 | 0 | 9.3 | 1.9 | 13.2 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 0 of 7 | 0 | 0 | 0 | 0.47 | 0.06 | 0.59 |
| Lindane (gamma-BHC) | 0 of 7 | 0 | 0 | 0 | 0.47 | 0.06 | 0.59 |
| 4,4'-DDD | 7 of 7 | 100 | 5.3 | 20 | 12.6 | 5.5 | 24.0 |
| 4,4'-DDE | 7 of 7 | 100 | 70 | 190 | 109 | 41 | 195 |
| 4,4'-DDT | 0 of 7 | 0 | 0 | 0 | 0.5 | 0.1 | 0.6 |
| Total DDTs | 7 of 7 | 100 | 75.3 | 210 | 122 | 44 | 214 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 0 of 7 | 0 | 0 | 0 | 24 | 10.6 | 46 |
| Bis(2-ethylhexyl)phthalate | 1 of 7 | 14 | 310 | 310 | 119 | 96.5 | 320 |
| Di-n-octylphthalate | 2 of 7 | 29 | 160 | 220 | 69 | 84.8 | 245 |
| **Sulfides** | | | | | | | |
| Sulfide, Total, mg/kg | 7 of 7 | 100 | 15 | 380 | 122 | 144 | 421 |
| Acid Volatile Sulfide, µmol/g | 7 of 7 | 100 | 0.25 | 14.7 | 4.3 | 5.3 | 15.3 |
| **SEM, µmol/g** | | | | | | | |
| Cadmium, Extractable | 6 of 7 | 86 | 0.0068 | 0.023 | 0.01 | 0.01 | 0.03 |
| Copper, Extractable | 7 of 7 | 100 | 0.17 | 1.3 | 0.75 | 0.43 | 1.6 |
| Lead, Extractable | 7 of 7 | 100 | 0.058 | 0.33 | 0.20 | 0.09 | 0.38 |
| Mercury, Extractable | 2 of 7 | 29 | 0.00010 | 0.00022 | 0.00008 | 0.00007 | 0.00022 |
| Zinc, Extractable | 7 of 7 | 100 | 0.44 | 3.2 | 2.0 | 1.0 | 4.1 |
| **SEM/AVS** | | | | | | | |
| Cadmium/AVS | 6 of 7 | 86 | 0.00046 | 0.087 | 0.017 | 0.031 | 0.082 |
| Copper/AVS | 7 of 7 | 100 | 0.032 | 4.5 | 0.92 | 1.6 | 4.2 |
| Lead/AVS | 7 of 7 | 100 | 0.017 | 0.69 | 0.16 | 0.23 | 0.65 |
| Mercury/AVS | 2 of 7 | 29 | 0.00003 | 0.00089 | 0.00015 | 0.00033 | 0.00083 |
| Zinc/AVS | 7 of 7 | 100 | 0.093 | 12 | 2.4 | 4.2 | 11 |
| Total SEM/AVS | 7 of 7 | 100 | 0.14 | 17 | 3.5 | 6.0 | 16 |

Note: When compound was not detected, the statistical values were calculated from one half the sample PQL.
UPL indicates upper predictive limit.



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**Table 4-8**
**Detected Analytes in Subsurface Sediment Samples Collected at Reference Stations**

| Analyte Name | Core Horizon | Reference Station 40010.1 | Reference Station 40018.3 |
|---|---|---|---|
| **Metals, mg/kg** | | | |
| Arsenic | 1 | 13 | 6.5 |
| | 2 | 9.8 | 2.2 |
| | 3 | — | 3.3 |
| | 4 | — | 4.8 |
| | 5 | — | 3.7 |
| Beryllium | 1 | 0.7 | 0.46 |
| | 2 | 0.77 | 0.24 |
| | 3 | — | 0.6 |
| | 4 | — | 0.48 |
| | 5 | — | 0.6 |
| Cadmium | 1 | 1.8 | 0.37 |
| | 2 | 0.81 | 0.53 |
| | 3 | — | 0.33 |
| | 4 | — | 0.11 |
| | 5 | — | 0.11 |
| Chromium | 1 | 65 | 34 |
| | 2 | 48 | 16 |
| | 3 | — | 30 |
| | 4 | — | 26 |
| | 5 | — | 29 |
| Copper | 1 | 98 | |
| | 2 | 65 | 11 |
| | 3 | — | 25 |
| | 4 | — | 22 |
| | 5 | — | 32 |
| Lead | 1 | 37 | 43 |
| | 2 | 65 | 6.1 |
| | 3 | — | 11 |
| | 4 | — | 9.6 |
| | 5 | — | 9.6 |
| Mercury | 1 | 0.77 | 0.12 |
| | 2 | 0.86 | |
| | 3 | — | 0.036 |
| | 4 | — | |
| | 5 | — | |
| Nickel | 1 | 63 | 25 |
| | 2 | 40 | 12 |
| | 3 | — | 24 |
| | 4 | — | 22 |
| | 5 | — | 26 |
| Selenium | 1 | 2.8 | |
| | 2 | 1.5 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Silver | 1 | 2.8 | 1.9 |
| | 2 | 2.5 | 0.85 |
| | 3 | — | 1.8 |
| | 4 | — | 1.7 |
| | 5 | — | 1.7 |
| Zinc | 1 | 200 | 98 |
| | 2 | 170 | 36 |
| | 3 | — | 56 |
| | 4 | — | 49 |
| | 5 | — | 56 |

(table continues)

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Table 4-8 (continued)

| Analyte Name | Core Horizon | Reference Station 40010.1 | 40010.3 |
|---|---|---|---|
| HPAH, µg/kg | | | |
| Benzo(e)pyrene | 1 | 47 | |
| | 2 | 120 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Benzo(b)fluoranthene | 1 | 47 | |
| | 2 | 120 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Benzo(ghi)perylene | 1 | 47 | |
| | 2 | 77 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Benzo(k)fluoranthene | 1 | 47 | |
| | 2 | 130 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Chrysene | 1 | | |
| | 2 | 19 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Dibenzo(a,h)anthracene | 1 | | |
| | 2 | 19 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Indeno(1,2,3-cd)pyrene | 1 | 23 | |
| | 2 | 58 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Total HPAH | 1 | 211 | |
| | 2 | 543 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Total PAH | 1 | 211 | |
| | 2 | 543 | |
| | 3 | — | |
| | 4 | — | |
| | 5 | — | |
| Pesticide, µg/kg | | | |
| 4,4'-DDE | 1 | 30 | 9.3 |
| | 2 | 13 | 7.2 |
| | 3 | — | 5.1 |
| | 4 | — | |
| | 5 | — | 11 |
| SVOC, µg/kg | | | |
| Di-n-octylphthalate | 1 | | 62 |
| | 2 | | 24 |
| | 3 | — | 36 |
| | 4 | — | |
| | 5 | — | 84 |

Notes: blank space indicates sample analyzed for compound, but not detected.
— indicates no sample was collected at this horizon.



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## Table 4-9
## Relative Percent Difference Between Reference Station and Laboratory Control Sediment Samples - Echinoderm Bioassay*

| Reference Station ID | Reference Replicate ID | Reference Survival (percent) | Control Survival (percent) | Relative Percent Difference (percent) | Reference Normal Development (percent) | Control Normal Development (percent) | Relative Percent Difference (percent) |
|---|---|---|---|---|---|---|---|
| 40010.1 | REP 1 | 92.0 | 88.3 | 4 | 86.0 | 90.7 | 5 |
| 40010.1 | REP 2 | 96.0 | 88.3 | 9 | 87.7 | 90.7 | 3 |
| 40010.1 | REP 3 | 97.3 | 88.3 | 10 | 84.0 | 90.7 | 7 |
| 40010.2 | REP 1 | 82.0 | 80.0 | 3 | 86.3 | 94.3 | 8 |
| 40010.2 | REP 2 | 92.7 | 88.3 | 5 | 78.0 | 90.7 | 14 |
| 40010.2 | REP 3 | 91.3 | 88.3 | 3 | 85.0 | 90.7 | 6 |
| 40010.3 | REP 1 | 73.3 | 80.0 | 8 | 84.0 | 94.3 | 11 |
| 40010.3 | REP 2 | 72.0 | 88.3 | 18 | 83.0 | 90.7 | 8 |
| 40010.3 | REP 3 | 88.7 | 88.3 | 0 | 91.7 | 90.7 | 1 |
| 40018.1 | REG | 97.7 | 88.3 | 11 | 68.0 | 90.7 | 25 |
| 40018.2 | REG | 86.3 | 87.7 | 2 | 80.3 | 91.7 | 12 |
| 40018.3 | REP 1 | 69.3 | 80.0 | 13 | 83.0 | 94.3 | 12 |
| 40018.3 | REP 2 | 72.0 | 80.0 | 10 | 75.0 | 94.3 | 20 |
| 40018.3 | REP 3 | 70.3 | 80.0 | 12 | 5.7 | 94.3 | 94 |
| 40032.1 | REG | 77.0 | 87.7 | 12 | 0.0 | 91.7 | 100 |

Notes:

* 100 percent pore water concentration.

Underlined numbers indicate performance criterion (20%) was exceeded.

REP indicates the replicate sample number.

REG indicates sample was not replicated.

0 3 6 0 0



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**Table 4-10**
**Relative Percent Difference Between Reference Station and Laboratory Control Sediment Samples - Amphipod Bioassay**

| Reference Station ID | Reference Replicate ID | Reference Survival (percent) | Control Survival (percent) | Relative Percent Difference (percent) | Reference Reburial (percent) | Control Reburial (percent) | Relative Percent Difference (percent) |
|---|---|---|---|---|---|---|---|
| 40010.1 | REP 1 | 85.0 | 94.0 | 10 | 97.5 | 99.0 | 2 |
| 40010.1 | REP 2 | 78.0 | 94.0 | 17 | 92.1 | 99.0 | 7 |
| 40010.1 | REP 3 | 76.0 | 94.0 | 19 | 96.1 | 99.0 | 3 |
| 40010.2 | REP 1 | 92.0 | 94.0 | 2 | 97.9 | 99.0 | 1 |
| 40010.2 | REP 2 | 68.8 | 94.0 | 27 | 97.1 | 99.0 | 2 |
| 40010.2 | REP 3 | 85.0 | 94.0 | 10 | 96.5 | 99.0 | 3 |
| 40010.3 | REP 1 | 83.0 | 94.0 | 12 | 97.6 | 99.0 | 1 |
| 40010.3 | REP 2 | 89.0 | 94.0 | 5 | 100.0 | 99.0 | 1 |
| 40010.3 | REP 3 | 83.0 | 94.0 | 12 | 94.9 | 99.0 | 4 |
| 40018.1 | REG | 64.0 | 91.0 | 30 | 93.1 | 96.8 | 4 |
| 40018.2 | REG | 83.0 | 91.0 | 9 | 96.5 | 96.8 | 0 |
| 40018.3 | REP 1 | 87.0 | 95.0 | 8 | 98.9 | 93.6 | 6 |
| 40018.3 | REP 2 | 91.0 | 95.0 | 4 | 95.3 | 93.6 | 2 |
| 40018.3 | REP 3 | 87.0 | 94.0 | 7 | 95.1 | 99.0 | 4 |
| 40032.1 | REG | 83.0 | 91.0 | 9 | 98.9 | 96.8 | 2 |

Note:
Underlined numbers indicate performance criterion (20%) was exceeded.
REP indicates the replicate sample number.
REG indicates sample was not replicated.

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**Table 4-11**
**Relative Percent Difference Between Reference Station and Laboratory Control Sediment Samples - Polychaete Bioassay**

| Reference Station ID | Reference Replicate ID | Reference Survival (percent) | Control Survival (percent) | Relative Percent Difference (percent) | Reference Normal Development (percent) | Control Normal Development (percent) | Relative Percent Difference (percent) |
|---|---|---|---|---|---|---|---|
| 40010.1 | REP 1 | 96.0 | 100.0 | 4 | 0.092 | 0.191 | 52 |
| 40010.1 | REP 2 | 100.0 | 100.0 | 0 | 0.104 | 0.191 | 46 |
| 40010.1 | REP 3 | 100.0 | 100.0 | 0 | 0.097 | 0.191 | 49 |
| 40010.2 | REP 1 | 100.0 | 100.0 | 0 | 0.121 | 0.191 | 37 |
| 40010.2 | REP 2 | 100.0 | 100.0 | 0 | 0.108 | 0.191 | 43 |
| 40010.2 | REP 3 | 96.0 | 100.0 | 4 | 0.080 | 0.191 | 58 |
| 40010.3 | REP 1 | 100.0 | 100.0 | 0 | 0.110 | 0.191 | 43 |
| 40010.3 | REP 2 | 100.0 | 100.0 | 0 | 0.086 | 0.191 | 55 |
| 40010.3 | REP 3 | 88.0 | 100.0 | 12 | 0.129 | 0.191 | 32 |
| 40018.1 | REG | 96.0 | 91.1 | 5 | 0.073 | 0.136 | 46 |
| 40018.2 | REG | 92.0 | 91.1 | 1 | 0.056 | 0.136 | 59 |
| 40018.3 | REP 1 | 100.0 | 94.0 | 6 | 0.090 | 0.196 | 54 |
| 40018.3 | REP 2 | 100.0 | 94.0 | 6 | 0.101 | 0.196 | 48 |
| 40018.3 | REP 3 | 100.0 | 100.0 | 0 | 0.106 | 0.191 | 45 |
| 40032.1 | REG | 96.0 | 91.1 | 5 | 0.076 | 0.136 | 44 |

Note:
Underlined numbers indicate performance criterion (20%) was exceeded.
REP indicates the replicate sample number.
REG indicates sample was not replicated.

0 3 6 2



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## Table 4-12
## Reference Station Surface Sediment Sample Bioassay Test Results

| Station ID | Bioassay | | | | | |
|---|---|---|---|---|---|---|
| | Echinoderm[a] | | Amphipod | | Polychaete | |
| | Survival (percent) | Normal Development (percent) | Survival (percent) | Reburial (percent) | Survival (percent) | Growth (mg/d) |
| 40010.1[b] | 95.1 | 85.9 | 79.7 | 95.2 | 98.7 | 0.0977 |
| 40010.2[b] | 88.7 | 83.1 | 88.5[c] | 97.2 | 98.7 | 0.1030 |
| 40010.3[b] | 78.0 | 86.2 | 85.0 | 97.5 | 96.0 | 0.1080 |
| 40018.1 | 97.7 | —[d] | — | 93.1 | 96.0 | 0.0730 |
| 40018.2 | 86.3 | 80.3 | 83.0 | 96.5 | 92.0 | 0.0560 |
| 40018.3[b] | 70.5 | 83.0[e] | 88.3 | 96.4 | 100.0 | 0.0990 |
| 40032.1 | 77.0 | — | 83.0 | 98.9 | 96.0 | 0.0760 |
| Minimum | 70.5 | 80.3 | 79.7 | 93.1 | 92.0 | 0.0560 |
| Maximum | 97.7 | 86.2 | 88.5 | 98.9 | 100.0 | 0.1080 |
| Mean | 84.8 | 83.7 | 84.6 | 96.4 | 96.8 | 0.0875 |
| 95% LPL[f] | 64.0 | 78.0 | 77.2 | 92.6 | 91.2 | 0.0475 |

Notes:

[a] 100 percent pore water concentration.
[b] Mean of three field replicates.
[c] Second field replicate not included in calculation of station mean due to reference sediment performance criterion failure.
[d] Data failed reference sediment performance criterion.
[e] Second and third replicates not included in calculation of station mean due to reference sediment performance criterion failure.
[f] LPL - lower predictive limit

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**Table 4-13**
**Benthic Infauna Community Indices and Major Taxonomic Groups for Reference Station**

| Taxonomic Group / Index | 40010.1 | 40010.2 | 40010.3 | 40018.1 | 40018.2 | 40018.3 | 40032.1 |
|---|---|---|---|---|---|---|---|
| **Benthic Infauna Community Indices** | | | | | | | |
| Total Abundance | 466 | 590 | 406 | 50 | 68 | 132 | 164 |
| Number of Taxa | 30 | 33 | 28 | 21 | 32 | 37 | 51 |
| Total Biomass | 4.745 | 5.176 | 3.068 | 0.408 | 0.963 | 2.358 | 3.971 |
| Shannon-Wiener Diversity Index | 2.08 | 2.04 | 1.80 | 2.57 | 3.29 | 3.11 | 3.48 |
| Margalef Diversity Index | 4.7 | 5.1 | 4.6 | 5.1 | 7.3 | 7.4 | 9.8 |
| Evenness | 0.61 | 0.58 | 0.54 | 0.84 | 0.95 | 0.88 | 0.89 |
| Dominance Index | 4.7 | 4.0 | 3.0 | 9.0 | 17.0 | 14.0 | 19.0 |
| **Polychaetes** | | | | | | | |
| Abundance | 287 | 417 | 265 | 24 | 26 | 86 | 68 |
| Number of Taxa | 11 | 12 | 8 | 12 | 13 | 20 | 24 |
| Biomass | 0.730 | 0.608 | 1.038 | 0.379 | 0.637 | 0.699 | 1.379 |
| **Crustaceans** | | | | | | | |
| Abundance | 166 | 105 | 119 | 3 | 10 | 7 | 41 |
| Number of Taxa | 10 | 10 | 11 | 3 | 6 | 3 | 8 |
| Biomass | 3.880 | 4.306 | 1.799 | 0.001 | 0.015 | 0.017 | 0.090 |
| **Mollusks** | | | | | | | |
| Abundance | 11 | 57 | 19 | 7 | 16 | 25 | 38 |
| Number of Taxa | 7 | 9 | 8 | 4 | 10 | 10 | 12 |
| Biomass | 0.093 | 0.248 | 0.210 | 0.012 | 0.091 | 1.524 | 1.811 |
| **Echinoderms** | | | | | | | |
| Abundance | 0 | 0 | 0 | 0 | 4 | 2 | 8 |
| Number of Taxa | 0 | 0 | 0 | 0 | 1 | 1 | 4 |
| Biomass | 0 | 0 | 0 | 0 | 0.159 | 0.006 | 0.617 |
| **Others** | | | | | | | |
| Abundance | 3 | 10 | 3 | 16 | 12 | 12 | 9 |
| Number of Taxa | 2 | 2 | 2 | 2 | 2 | 3 | 3 |
| Biomass | 0.042 | 0.015 | 0.021 | 0.016 | 0.061 | 0.112 | 0.074 |

Note:
Biomass reported in grams.

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**Table 4-14**
**Most Abundant Benthic Infauna Species at Reference Stations**
**(number of individuals found per station)**

| Species | Reference Station | | | | | | |
|---|---|---|---|---|---|---|---|
| | 40010.1 | 40010.2 | 40010.3 | 40018.1 | 40018.2 | 40018.3 | 40032.1 |
| *Cossura* sp. A | 171 | 274 | 208 | 1 | 4 | 24 | 1 |
| *Pseudopolydora paucibranchiata* | 72 | 90 | 39 | 1 | 1 | 1 | |
| *Euphilomedes carcharodonta* | 47 | 42 | 85 | 1 | 1 | 1 | 1 |
| *Amphideutopus oculatus* | 47 | 22 | 7 | | | | 14 |
| *Corophium alienense* | 44 | 12 | 9 | | | | |
| *Mediomastus* sp. | 10 | 22 | 5 | | 2 | 10 | 1 |
| *Phoronida* | | 2 | | 15 | 10 | 5 | 7 |
| *Haminaea vesicula* | | 36 | 1 | | | | |
| *Paraprionospio pinnata* | 1 | 7 | 2 | 1 | 4 | 8 | 13 |
| *Macoma yoldiformis* | | 2 | 3 | 1 | 2 | 8 | 8 |
| *Listriella goleta* | 4 | 13 | 5 | | 1 | 1 | |
| *Prionospio lighti* | 14 | 6 | 1 | | | | 1 |
| *Lumbrineris* sp. B | 3 | 4 | 3 | 1 | 1 | 2 | 7 |
| *Tellina modesta* | 1 | 5 | 3 | | | | 10 |
| *Nephtys caecoides* | 8 | 4 | 7 | | | | |
| *Oxyurostylis pacifica* | 7 | 6 | 6 | | | | |
| *Euclymene grossa newporti* | | | | | 3 | 13 | 1 |
| *Monticellina tesselata* | | | | 3 | | 1 | 12 |
| *Metamysidopsis elongata* | | | | | | | 15 |
| *Cooperella subdiaphana* | 2 | 1 | 4 | | 1 | | 5 |
| *Spiophanes missionensis* | 2 | 2 | 1 | 5 | 1 | 1 | |
| *Chaetozone corona* | 1 | | | 4 | 1 | 4 | 1 |
| *Theora lubrica* | 1 | 4 | 5 | | | | |
| *Nematoda* | 1 | 7 | 1 | | | | |
| *Spiochaetopterus costarum* | 1 | 2 | | 2 | | 2 | 2 |
| *Tubulanus polymorphus* | | | | 1 | | 6 | 1 |
| *Neotrypaea californiensis* | 3 | 1 | 1 | 1 | 1 | | |
| *Pectinaria californiensis* | | 1 | | 2 | 2 | 2 | |
| *Volvulella panamica* | | | | 4 | 2 | 1 | |
| *Amphiodia urtica* | | | | | 3 | | 4 |
| *Mayerella banksia* | | 5 | 2 | | | | |
| *Leitoscoloplos pugettensis* | | 1 | | | | 2 | 4 |
| *Streblosoma* sp. B (SCAMIT) | | | | | 4 | 3 | |
| *Compsomyax subdiaphana* | | | | | 2 | 4 | |
| *Pinnotheridae* | | | | 1 | 1 | 2 | 2 |
| *Apoprionospio pygmaea* | | | | | | | 5 |
| *Listriella melanica* | 3 | | 2 | | | | |
| *Rictaxis punctocaelatus* | | | | 1 | 2 | 2 | |
| *Aphelochaeta monilaris* | | | | 1 | 1 | 2 | |
| *Nereis procera* | | | | | | | 4 |
| *Nuculana taphria* | | 1 | | | 2 | 1 | 1 |
| *Malacoplax californiensis* | 2 | 1 | 1 | | | | |
| *Foxiphalus obtusidens* | | | | | | | 4 |
| *Parvilucina tenuisculpta* | | | | | 1 | 1 | 2 |
| *Diopatra tridentata* | | | | | | 2 | 2 |
| *Laonice cirrata* | | | | 2 | | 2 | |
| *Turbonilla* spp. | | | | | | 2 | |
| *Nassarius perpinguis* | | | | | | 1 | 3 |
| *Scleroplax granulata* | | | 2 | | | 1 | |

Note: blank space indicates none were found.



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**Table 4-15**
**Summary of Community Indices for Reference Station Benthic Infauna and Major Taxonomic Groups**

| Taxonomic Group Index | Minimum | Maximum | Mean | Standard Deviation | 95% LPL |
|---|---|---|---|---|---|
| **Total** | | | | | |
| Abundance | 50 | 590 | 268 | 215.5 | -179.8 |
| Number of Taxa | 21 | 51 | 33 | 9.3 | 13.9 |
| Biomass | 0.4 | 5.2 | 3.0 | 1.8 | -0.8 |
| Shannon-Wiener Diversity Index | 1.8 | 3.5 | 2.6 | 0.7 | 1.2 |
| Margalef Diversity Index | 4.6 | 9.8 | 6.3 | 2.0 | 2.2 |
| Evenness | 0.5 | 0.9 | 0.8 | 0.2 | 0.4 |
| Dominance Index | 3.0 | 19.0 | 10.1 | 6.6 | -3.6 |
| **Polychaetes** | | | | | |
| Abundance | 24 | 417 | 168 | 154.4 | -153.2 |
| Number of Taxa | 8 | 24 | 14 | 5.6 | 2.8 |
| Biomass | 0.4 | 1.4 | 0.8 | 0.3 | 0.1 |
| **Crustaceans** | | | | | |
| Abundance | 3 | 166 | 65 | 65.2 | -70.9 |
| Number of Taxa | 3 | 11 | 7 | 3.2 | 0.5 |
| Biomass | 0.0 | 4.3 | 1.4 | 1.9 | -2.6 |
| **Mollusks** | | | | | |
| Abundance | 7 | 57 | 25 | 17.6 | -11.9 |
| Number of Taxa | 4 | 12 | 8 | 2.6 | 3.1 |
| Biomass | 0.0 | 1.8 | 0.6 | 0.8 | -1.0 |
| **Echinoderms** | | | | | |
| Abundance | 0 | 8 | 2 | 3.1 | -4.4 |
| Number of Taxa | 0 | 4 | 1 | 1.5 | -2.2 |
| Biomass | 0 | 0.6 | 0.1 | 0.2 | -0.4 |
| **Others** | | | | | |
| Abundance | 3 | 16 | 9 | 4.9 | -1.0 |
| Number of Taxa | 2 | 3 | 2 | 0.5 | 1.3 |
| Biomass | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 |

Notes:
Biomass reported in grams.
LPL indicates lower predictive limit.



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**Table 4-16**
**Detected Analytes in Surface Sediment Samples from West Basin Stations**

| Analyte Name | Basin Stations | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| **Metals, mg/kg** | | | | | | | | | | | | | | | | | |
| Arsenic | 10 | 7.2 | 12 | 12 | 5.4 | 4.6 | 6.8 | 5.2 | 9.4 | 12 | 12 | 8 | 7.8 | 6 | 7.8 | 9.8 | 19 |
| Beryllium | 0.44 | 0.32 | 0.59 | 0.54 | 0.3 | 0.3 | 0.49 | 0.33 | 0.53 | 0.68 | 0.55 | 0.55 | 0.47 | 0.32 | 0.54 | 0.6 | 0.75 |
| Cadmium | 0.25 | 0.46 | 0.45 | 0.41 | 0.15 | 0.24 | 0.16 | 0.21 | 0.36 | 0.32 | 0.35 | 0.27 | 0.2 | 0.14 | 0.4 | 0.34 | 1 |
| Chromium | 33 | 32 | 39 | 39 | 22 | 27 | 29 | 26 | 39 | 54 | 42 | 33 | 39 | 25 | 42 | 42 | 88 |
| Copper | 110 | 130 | 130 | 120 | 54 | 67 | 73 | 54 | 96 | 210 | 120 | 69 | 150 | 47 | 88 | 92 | 530 |
| Lead | 39 | 45 | 51 | 52 | 21 | 26 | 37 | 43 | 48 | 77 | 62 | 38 | 58 | 21 | 45 | 46 | 180 |
| Mercury | 0.62 | 0.59 | 0.85 | 0.72 | 0.22 | 0.23 | 0.41 | 0.34 | 0.59 | 0.57 | 0.7 | 0.38 | 0.68 | 0.21 | 0.51 | 0.54 | 1.8 |
| Nickel | 21 | 16 | 24 | 27 | 13 | 18 | 16 | 16 | 25 | 32 | 22 | 22 | 22 | 17 | 25 | 26 | 35 |
| Selenium | | | | | | | | | | | | | | | | | |
| Silver | 2 | 2.6 | 2.6 | 2.7 | 1.3 | 1.5 | 2.3 | 1.3 | 2.3 | 3.4 | 2.2 | 2 | 2.3 | 1.6 | 2.5 | 2.6 | 3.8 |
| Zinc | 150 | 160 | 170 | 170 | 94 | 110 | 110 | 110 | 160 | 250 | 200 | 130 | 160 | 85 | 160 | 160 | 480 |
| **Butyltins, µg/kg** | | | | | | | | | | | | | | | | | |
| Dibutyltin | | | | | | | | | | | | | | | | | |
| Monobutyltin | | | | | | | | | | | | | | | | | |
| **HPAH, µg/kg** | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 38 | 16 | 59 | | 60 | 46 | 65 | | 18 | 200 | 92 | 36 | | 32 | | | 150 |
| Benzo(a)pyrene | 120 | 64 | 200 | 220 | 100 | 120 | 180 | 82 | 53 | 540 | 310 | 110 | 160 | 95 | 54 | | 500 |
| Benzo(b)fluoranthene | 140 | 96 | 240 | 320 | 150 | 150 | 180 | 98 | 53 | 500 | 370 | 150 | 200 | 130 | 72 | | 680 |
| Benzo(ghi)perylene | 65 | 48 | 120 | | 75 | 46 | 130 | 49 | 36 | 340 | 200 | 91 | 93 | 63 | | | 380 |
| Benzo(k)fluoranthene | 140 | 80 | 310 | 250 | 180 | 180 | 260 | 130 | 71 | 660 | 370 | 180 | 160 | 140 | 72 | | 480 |
| Chrysene | 93 | 32 | 79 | | 100 | 91 | 150 | 49 | 53 | 390 | 150 | | | 63 | | | 380 |
| Dibenzo(a,h)anthracene | | | | | | | | | | | | | | 16 | | | |
| Fluoranthene | 28 | 16 | | | | 30 | 81 | 33 | 18 | 160 | 92 | 55 | | | | | 150 |
| Indeno(1,2,3-cd)pyrene | 71 | 32 | 120 | | 75 | 46 | 130 | 49 | 36 | 360 | 200 | 91 | | 63 | | | 400 |
| Pyrene | 42 | 32 | | | | 30 | 65 | 33 | 18 | 340 | 110 | 55 | | | | | 180 |
| Benzofluoranthenes | 280 | 176 | 550 | 570 | 330 | 330 | 440 | 228 | 124 | 1160 | 740 | 330 | 360 | 270 | 144 | | 1160 |
| Total HPAH | 737 | 416 | 1128 | 790 | 740 | 739 | 1241 | 523 | 356 | 3490 | 1894 | 768 | 613 | 602 | 198 | | 3300 |
| **LPAH, µg/kg** | | | | | | | | | | | | | | | | | |
| Acenaphthene | | | | | | | | | | | | | | | | | |
| Acenaphthylene | 25 | | 20 | | 30 | 15 | 32 | | | 68 | 37 | 18 | | | | | |
| Anthracene | 44 | 32 | 39 | | 60 | 46 | 65 | 33 | 18 | 160 | 73 | 36 | | 32 | | | |
| Fluorene | | | | | | | | | | | | | | | | | |
| Methylnaphthalenes | | | | | | | | | | | | | | | | | |
| Phenanthrene | 31 | | 39 | | 45 | 30 | 32 | 16 | | 110 | 73 | 36 | | 32 | | | |
| Total LPAH | 100 | 32 | 98 | | 135 | 91 | 129 | 49 | 18 | 338 | 183 | 90 | | 64 | | | |
| Total PAH | 837 | 448 | 1226 | 790 | 875 | 830 | 1370 | 572 | 374 | 3828 | 2077 | 858 | 613 | 666 | 198 | | 3300 |
| **PCB, µg/kg** | | | | | | | | | | | | | | | | | |
| Aroclor 1260 | 170 | 290 | 240 | 250 | 67 | 110 | 150 | 97 | 150 | 540 | 310 | 110 | 370 | 63 | 120 | 150 | 880 |
| **Pesticides, µg/kg** | | | | | | | | | | | | | | | | | |
| Aldrin | | | | | | | | | | | | | | | | | |
| Lindane (gamma-BHC) | 0.63 | | | | | | | | | 6.8 | | | | | | | |
| 4,4'-DDD | 13 | 6.9 | 7.1 | 10 | 1.9 | | 9.2 | 4.1 | 8.4 | 20 | | 7.1 | 16 | | 20 | 42 | 33 |
| 4,4'-DDE | 34 | 46 | 67 | 72 | 13 | 21 | 31 | 25 | 46 | 88 | 57 | 36 | 50 | 17 | 43 | 60 | 180 |
| 4,4'-DDT | | | | | | | | | | | | | | | | 34 | |
| Total DDTs | 47 | 52.9 | 74.1 | 82 | 14.9 | 21 | 40.2 | 29.1 | 54.4 | 108 | 57 | 43.1 | 66 | 17 | 63 | 136 | 213 |
| **SVOCs, µg/kg** | | | | | | | | | | | | | | | | | |
| Phenol | | | | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | | | | | | | | | |
| Di-n-octylphthalate | 38 | 32 | 59 | | 45 | 30 | | 49 | 36 | 91 | 73 | 73 | | 32 | | | |
| **Sulfides** | | | | | | | | | | | | | | | | | |
| Sulfide, Total, mg/kg | 17 | 18 | 31 | 1.1 | 14 | 47 | 18 | 98 | 25 | 270 | 35 | 400 | 5.8 | 24 | 7.2 | 190 | 140 |
| Acid Volatile Sulfide, µmol/g | 2.03 | 1.59 | 2.99 | 0.13 | 0.84 | 3.74 | 1.37 | 3.12 | 2.71 | 18.40 | 2.53 | 11.23 | 0.59 | 1.03 | 6.24 | 5.61 | 3.43 |
| **SEM, µmol/g** | | | | | | | | | | | | | | | | | |
| Cadmium, Extractable | 0.0035 | 0.0043 | 0.0052 | | | 0.0054 | | 0.0044 | 0.0063 | | | | | | | | |
| Copper, Extractable | 1.196 | 1.542 | 1.731 | 1.495 | 0.677 | 0.787 | 1.070 | 0.740 | 1.464 | 2.203 | 1.558 | 1.054 | 1.888 | 0.645 | 0.0064 | 0.0053 | 0.0116 |
| Lead, Extractable | 0.150 | 0.179 | 0.227 | 0.217 | 0.087 | 0.111 | 0.179 | 0.333 | 0.222 | 0.338 | 0.256 | 0.169 | 0.212 | 0.101 | 1.275 | 1.259 | 5.193 |
| Mercury, Extractable | 0.0003 | 0.0002 | 0.0003 | 0.0005 | 0.0001 | 0.0002 | 0.0003 | 0.0003 | 0.0004 | 0.0002 | 0.0004 | 0.0002 | 0.0004 | 0.0003 | 0.217 | 0.212 | 0.917 |
| Zinc, Extractable | 1.68 | 1.99 | 2.29 | 1.99 | 1.01 | 1.38 | 1.53 | 1.53 | 2.14 | 3.06 | 2.14 | 1.68 | 1.84 | 0.99 | 0.0002 | 0.0003 | 0.0001 |
| **SEM/AVS** | | | | | | | | | | | | | | | 1.99 | 1.99 | 8.87 |
| Cadmium/AVS | 0.0017 | 0.0027 | 0.0018 | | | 0.0014 | | 0.0014 | 0.0023 | | | | | | | | |
| Copper/AVS | 0.590 | 0.969 | 0.578 | 11.146 | 0.803 | 0.210 | 0.780 | 0.237 | 0.539 | 0.120 | 0.617 | 0.094 | 3.186 | 0.627 | 0.0010 | 0.0010 | 0.0034 |
| Lead/AVS | 0.074 | 0.112 | 0.076 | 1.619 | 0.103 | 0.030 | 0.130 | 0.107 | 0.082 | 0.018 | 0.101 | 0.015 | 0.358 | 0.098 | 0.204 | 0.224 | 1.514 |
| Mercury/AVS | 0.0002 | 0.0002 | 0.0001 | 0.0041 | 0.0002 | 0.0001 | 0.0002 | 0.0001 | 0.0001 | 0.0000 | 0.0001 | 0.0000 | 0.0007 | 0.0003 | 0.035 | 0.038 | 0.267 |
| Zinc/AVS | 0.83 | 1.25 | 0.77 | 14.82 | 1.20 | 0.37 | 1.11 | 0.49 | 0.79 | 0.17 | 0.85 | 0.15 | 3.10 | 0.97 | 0.0000 | 0.0001 | 0.0000 |
| Total SEM/AVS | 1.50 | 2.33 | 1.42 | 27.59 | 2.11 | 0.61 | 2.02 | 0.84 | 1.41 | 0.30 | 1.57 | 0.26 | 6.64 | 1.69 | 0.32 | 0.35 | 2.59 |
| | | | | | | | | | | | | | | | 0.56 | 0.62 | 4.37 |

(table continues)



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Table 4-16 (continued)

| Analyte Name | Basin Stations | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 41 |
| **Metals, mg/kg** | | | | | | | | | | | | | | | | | |
| Arsenic | 11 | 10 | 8.5 | 16 | 17 | 8.5 | 4.6 | 1.6 | 13 | 13 | 12 | 4.8 | 7.9 | 5.2 | 5 | 8.8 | 11 |
| Beryllium | 0.61 | 0.52 | 0.68 | 0.69 | 1 | 0.54 | 0.13 | 0.28 | 0.77 | 0.72 | 0.54 | 0.56 | 0.49 | 0.31 | 0.31 | 0.69 | 0.6 |
| Cadmium | 0.51 | 0.37 | 0.42 | 1 | 0.91 | 0.36 | 0.078 | 0.26 | 0.46 | 0.48 | 0.41 | 0.33 | 0.3 | 0.14 | 0.13 | 0.24 | 0.72 |
| Chromium | 43 | 37 | 42 | 67 | 71 | 40 | 9.8 | 21 | 48 | 65 | 39 | 33 | 33 | 22 | 22 | 35 | 44 |
| Copper | 110 | 68 | 76 | 220 | 210 | 81 | 13 | 30 | 120 | 220 | 110 | 52 | 52 | 30 | 27 | 50 | 120 |
| Lead | 49 | 37 | 41 | 78 | 89 | 38 | 5.2 | 16 | 56 | 75 | 43 | 30 | 31 | 19 | 17 | 28 | 74 |
| Mercury | 0.57 | 0.31 | 0.31 | 0.74 | 0.48 | 0.31 | | 0.11 | 0.48 | 0.87 | 0.34 | 0.13 | 0.23 | 0.13 | 0.11 | 0.26 | 1.1 |
| Nickel | 26 | 23 | 25 | 37 | 41 | 22 | 7.8 | 16 | 33 | 34 | 27 | 24 | 21 | 16 | 16 | 26 | 20 |
| Selenium | | | | 1.6 | | | | | | | | | | | | | |
| Silver | 2.4 | 2.1 | 2.5 | 3 | 3.5 | 2.2 | | 1.3 | 19 | 3.4 | 5.2 | 1.9 | 2 | 1.4 | 1.4 | 2.2 | 2.4 |
| Zinc | 170 | 130 | 150 | 300 | 300 | 140 | 33 | 73 | 190 | 240 | 160 | 110 | 120 | 68 | 63 | 110 | 220 |
| **Butyltins, µg/kg** | | | | | | | | | | | | | | | | | |
| Dibutyltin | | | | | | | | | | | | | | | | | |
| Monobutyltin | | | | | | | | | | | | | | | | | |
| **HPAH, µg/kg** | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 120 | | | 280 | 130 | 110 | | | 38 | | | | | | | | 140 |
| Benzo(a)pyrene | 240 | 87 | 100 | 440 | 300 | 180 | | | 96 | 48 | 36 | 19 | 33 | | | | 340 |
| Benzo(b)fluoranthene | 260 | | 100 | 510 | 410 | 220 | | | 130 | 48 | 36 | 19 | 33 | | | | 440 |
| Benzo(ghi)perylene | 220 | | | 300 | 150 | 140 | | | 58 | | | | | | | | 160 |
| Benzo(k)fluoranthene | 320 | 120 | 85 | 550 | 300 | 290 | | | 120 | 72 | 36 | 37 | 33 | | | | 400 |
| Chrysene | 220 | | 85 | 550 | 280 | 230 | | | 58 | 48 | 36 | | 33 | | | | 220 |
| Dibenzo(a,h)anthracene | 120 | | | | | | | | 19 | | | | | | | | 80 |
| Fluoranthene | 120 | | | 320 | 76 | 130 | | | 38 | 24 | 18 | | 16 | | | | 140 |
| Indeno(1,2,3-cd)pyrene | 220 | | | 300 | 150 | 140 | | | 58 | | | | | | | | 160 |
| Pyrene | 120 | | | 350 | 150 | 140 | | | 38 | 48 | 18 | | 33 | | | | 140 |
| Benzofluoranthenes | 580 | 120 | 185 | 1060 | 710 | 510 | | | 250 | 120 | 72 | 56 | 66 | | | | 840 |
| Total HPAH | 1960 | 207 | 370 | 3600 | 1946 | 1580 | | | 653 | 288 | 180 | 75 | 181 | | | | 2220 |
| **LPAH, µg/kg** | | | | | | | | | | | | | | | | | |
| Acenaphthene | | | | | | | | | | | | | | | | | |
| Acenaphthylene | | | | | | | | | | | | | | | | | |
| Anthracene | | | | 180 | 51 | | | | | | | | | | | | 40 |
| Fluorene | | | | | | | | | | | | | | | | | 80 |
| Methylnaphthalenes | | | | | | | | | | | | | | | | | |
| Phenanthrene | | | | 160 | 76 | | | | | 24 | | | | | | | 60 |
| Total LPAH | | | | 340 | 127 | | | | | 24 | | | | | | | 180 |
| Total PAH | 1960 | 207 | 370 | 3940 | 2073 | 1580 | | | 653 | 312 | 180 | 75 | 181 | | | | 2400 |
| **PCB, µg/kg** | | | | | | | | | | | | | | | | | |
| Aroclor 1260 | 200 | 56 | 75 | 230 | 410 | 160 | | | 130 | 430 | 140 | | 51 | | | 31 | 220 |
| **Pesticides, µg/kg** | | | | | | | | | | | | | | | | | |
| Aldrin | | | | | | | | | | | 2.3 | | | | | | |
| Lindane (gamma-BHC) | | | | | | | | | 2.5 | | | | | | | | |
| 4,4'-DDD | 7.9 | 4.5 | 4.9 | 11 | 16 | 7 | | | 9.8 | 12 | 7 | | 5.9 | 3.8 | 3 | 4.8 | 20 |
| 4,4'-DDE | 57 | 38 | 37 | 92 | 130 | 61 | 6 | 18 | 65 | 100 | 54 | 43 | 33 | 31 | 27 | 41 | 110 |
| 4,4'-DDT | | | | | | | | | | | | | | | | | |
| Total DDTs | 64.9 | 42.5 | 41.9 | 103 | 146 | 68 | 6 | 18 | 74.8 | 112 | 61 | 43 | 38.9 | 34.8 | 30 | 45.8 | 130 |
| **SVOCs, µg/kg** | | | | | | | | | | | | | | | | | |
| Phenol | | | | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | 250 | | | | | | | | | 94 | | | |
| Di-n-octylphthalate | | | | | | | | | | | | | | | | | |
| **Sulfides** | | | | | | | | | 38 | | | | | | | | |
| Sulfide, Total, mg/kg | 110 | 33 | 160 | 60 | 140 | 87 | 11 | 54 | 98 | 240 | 50 | 150 | 44 | 15 | 41 | 31 | 120 |
| Acid Volatile Sulfide, µmol/g | 3.43 | 2.84 | 3.43 | 4.68 | 5.93 | 4.68 | 0.22 | 2.03 | 3.43 | 5.61 | 2.18 | 5.30 | 1.59 | 0.59 | 1.31 | 0.97 | 6.86 |
| **SEM, µmol/g** | | | | | | | | | | | | | | | | | |
| Cadmium, Extractable | | | | 0.0082 | 0.0068 | | | | | | 0.0054 | 0.0083 | | | | | 0.0071 |
| Copper, Extractable | 1.212 | 0.881 | 0.771 | 2.203 | 0.677 | 1.086 | 0.220 | 0.268 | 1.086 | 2.518 | 0.928 | 0.677 | 0.519 | 0.378 | 0.268 | 0.456 | 1.888 |
| Lead, Extractable | 0.227 | 0.150 | 0.140 | 0.314 | 0.343 | 0.183 | 0.013 | 0.053 | 0.212 | 0.314 | 0.174 | 0.154 | 0.111 | 0.077 | 0.063 | 0.101 | 0.347 |
| Mercury, Extractable | 0.0001 | | | | | | | | | | | 0.0002 | | | | | 0.0003 |
| Zinc, Extractable | 1.84 | 1.32 | 1.19 | 3.06 | 2.75 | 1.68 | 0.31 | 0.47 | 1.84 | 2.91 | 1.53 | 1.53 | 1.02 | 0.63 | 0.47 | 0.61 | 3.06 |
| **SEM/AVS** | | | | | | | | | | | | | | | | | |
| Cadmium/AVS | | | | 0.0017 | 0.0011 | | | | | | 0.0029 | 0.0016 | | | | | 0.0010 |
| Copper/AVS | 0.353 | 0.310 | 0.225 | 0.471 | 0.114 | 0.232 | 1.024 | 0.132 | 0.316 | 0.448 | 0.425 | 0.128 | 0.326 | 0.637 | 0.204 | 0.472 | 0.275 |
| Lead/AVS | 0.066 | 0.053 | 0.041 | 0.067 | 0.058 | 0.039 | 0.058 | 0.026 | 0.062 | 0.056 | 0.080 | 0.029 | 0.070 | 0.130 | 0.048 | 0.105 | 0.051 |
| Mercury/AVS | 0.0000 | | | | | | | | | | | 0.0000 | | | | | 0.0000 |
| Zinc/AVS | 0.53 | 0.46 | 0.35 | 0.65 | 0.46 | 0.36 | 1.42 | 0.23 | 0.53 | 0.52 | 0.70 | 0.29 | 0.64 | 1.06 | 0.36 | 0.63 | 0.45 |
| Total SEM/AVS | 0.95 | 0.83 | 0.61 | 1.19 | 0.64 | 0.63 | 2.50 | 0.39 | 0.91 | 1.02 | 1.21 | 0.45 | 1.04 | 1.83 | 0.61 | 1.21 | 0.77 |

(Table continues)



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Table 4-16 (continued)

| Analyte Name | Pier 16 42 | Pier 15 43 | Pier 12 44 | Pier 12 45 | Pier 12 46 | Pier 9 47 | Pier 7 48 | Pier 6 49 | Pier 3 50 | Pier 2 51 | Pier 1 52 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | | | | | |
| Arsenic | 8 5 | 11 | 10 | 11 | 8 4 | 7 7 | 15 | 13 | 11 | 13 | 9 7 |
| Beryllium | 0 61 | 0 73 | 0 88 | 0 68 | 0.54 | 0 38 | 0.55 | 0 68 | 0.27 | 0.72 | 0.86 |
| Cadmium | 0 49 | 0.95 | 0 64 | 0 75 | 0.68 | 0 61 | 0 63 | 0 55 | 1 3 | 1 5 | 0 94 |
| Chromium | 49 | 58 | 56 | 44 | 46 | 34 | 330 | 59 | 43 | 51 | 63 |
| Copper | 120 | 260 | 160 | 130 | 120 | 180 | 330 | 230 | 170 | 210 | 260 |
| Lead | 55 | 80 | 79 | 65 | 60 | 54 | 94 | 77 | 84 | 72 | 89 |
| Mercury | 0 27 | 0 62 | 0 5 | 0 38 | 0 46 | 0 88 | 0 52 | 0 71 | 0 33 | 0 4 | 0 49 |
| Nickel | 33 | 29 | 32 | 24 | 30 | 19 | 28 | 30 | 35 | 29 | 34 |
| Selenium | | | | | | | | | | | |
| Silver | 2 1 | 2 5 | 2 6 | 2 4 | 2 2 | 1 5 | 2 2 | 2 7 | 4 1 | 2 5 | 2 9 |
| Zinc | 190 | 300 | 250 | 210 | 200 | 210 | 390 | 300 | 620 | 260 | 340 |
| **Butyltins, µg/kg** | | | | | | | | | | | |
| Dibutyltin | | | | | | | | | | | |
| Monobutyltin | | 3 6 | | | | 2 5 | | | | | |
| **HPAH, µg/kg** | | | | | | | | | | | |
| Benzo(a)anthracene | | 1600 | | | | 150 | 1900 | 500 | 1000 | | |
| Benzo(a)pyrene | | 980 | 230 | 240 | | 290 | 1500 | 1100 | 870 | 510 | 430 |
| Benzo(b)fluoranthene | | 1300 | 320 | 270 | | 330 | 1800 | 1400 | 1200 | 620 | 540 |
| Benzo(ghi)perylene | | 180 | 200 | | | 110 | 440 | 340 | 220 | 140 | 140 |
| Benzo(k)fluoranthene | | 1100 | 260 | 240 | | 360 | 1300 | 960 | 870 | 620 | 510 |
| Chrysene | | 1700 | 200 | 170 | | 330 | 2100 | 820 | 1200 | 580 | 260 |
| Dibenzo(a,h)anthracene | | | | | | | 330 | 270 | | | |
| Fluoranthene | | 3600 | 150 | | | 250 | 4400 | 520 | 2000 | 250 | 86 |
| Indeno(1,2,3-cd)pyrene | | 220 | 200 | | | 110 | 550 | 360 | 240 | 180 | 140 |
| Pyrene | | 2800 | 180 | | | 250 | 3300 | 2000 | 1800 | 870 | 490 |
| Benzofluoranthenes | | 2400 | 580 | 510 | | 690 | 3100 | 2360 | 2070 | 1240 | 1050 |
| Total HPAH | | 13480 | 1740 | 920 | | 2180 | 17620 | 8270 | 9400 | 3770 | 2596 |
| **LPAH, µg/kg** | | | | | | | | | | | |
| Acenaphthene | | 180 | | | | | 360 | | | | |
| Acenaphthylene | | | | | | | 500 | 110 | 81 | 72 | 29 |
| Anthracene | | 650 | | | | 150 | 1400 | 300 | 1200 | 290 | 110 |
| Fluorene | | | | | | | 550 | 46 | 190 | 36 | |
| Methylnaphthalenes | | | | | | | 83 | | | | |
| Phenanthrene | | 510 | | | | 77 | 2700 | 250 | 810 | 250 | 86 |
| Total LPAH | | 1340 | | | | 227 | 5593 | 706 | 2281 | 648 | 225 |
| Total PAH | | 14820 | 1740 | 920 | | 2407 | 23213 | 8976 | 11681 | 4418 | 2821 |
| **PCB, µg/kg** | | | | | | | | | | | |
| Aroclor 1260 | | | | | | 340 | | 390 | | | |
| **Pesticides, µg/kg** | | | | | | | | | | | |
| Aldrin | | | | | | | | | | | |
| Lindane (gamma-BHC) | | | | | | | | | | | |
| 4,4'-DDD | | | | | | | | | | | |
| 4,4'-DDE | 110 | 13 | 99 | 110 | 92 | 15 | 36 | 13 | | | |
| 4,4'-DDT | | | | | | 110 | 110 | 87 | 70 | 91 | 94 |
| Total DDTs | 110 | 13 | 99 | 110 | 92 | 125 | 146 | 100 | 70 | 91 | 94 |
| **SVOCs, µg/kg** | | | | | | | | | | | |
| Phenol | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | 210 | | | | | |
| Di-n-octylphthalate | | | | | | | | | | | |
| **Sulfides** | | | | | | | 190 | 230 | 220 | 220 | 170 |
| Sulfide, Total, mg/kg | 3600 | 4400 | 3800 | 3800 | 4100 | 360 | 3900 | 3000 | 4900 | 5400 | 4300 |
| Acid Volatile Sulfide, µmol/g | 81 10 | 124 77 | 81.10 | 68.62 | 74.86 | 9 67 | 102.93 | 93.57 | 118.53 | 112.29 | 115 41 |
| **SEM, µmol/g** | | | | | | | | | | | |
| Cadmium, Extractable | 0 0081 | 0 0098 | 0 0107 | 0 0151 | 0.0098 | 0 0068 | 0 0098 | 0 0098 | 0 0098 | | 0 0098 |
| Copper, Extractable | 1 432 | 3 462 | 1 888 | 2 046 | 1.369 | 2 833 | 4.721 | 3 462 | 2 518 | 2 675 | 2 675 |
| Lead, Extractable | 0 251 | 0 367 | 0 338 | 0 347 | 0.236 | 0.323 | 0 579 | 0 362 | 0 430 | 0 314 | 0.333 |
| Mercury, Extractable | 0 0003 | | 0 0004 | 0 0007 | 0 0004 | 0 0003 | 0 0005 | 0 0002 | 0 0003 | | |
| Zinc, Extractable | 2 45 | 4 28 | 3 06 | 3 52 | 2.29 | 3 36 | 6.27 | 4 13 | 6.27 | 3.36 | 3.67 |
| **SEM/AVS** | | | | | | | | | | | |
| Cadmium/AVS | 0 0001 | 0 0001 | 0 0001 | 0 0002 | 0 0001 | 0 0007 | 0 0001 | 0 0001 | 0 0001 | | 0 0001 |
| Copper/AVS | 0 018 | 0 028 | 0 023 | 0 030 | 0 018 | 0 293 | 0 046 | 0 037 | 0 021 | 0 024 | 0 023 |
| Lead/AVS | 0 003 | 0 003 | 0 004 | 0 005 | 0 003 | 0 033 | 0 006 | 0 004 | 0 004 | 0 003 | 0 003 |
| Mercury/AVS | 0 0000 | | 0 0000 | 0 0000 | 0 0000 | 0 0000 | 0 0000 | 0 0000 | 0 0000 | | |
| Zinc/AVS | 0 03 | 0 03 | 0 04 | 0 05 | 0 03 | 0 35 | 0 06 | 0 04 | 0 05 | 0 03 | 0 03 |
| Total SEM/AVS | 0 05 | 0 07 | 0 07 | 0 09 | 0 05 | 0 68 | 0 11 | 0 09 | 0 08 | 0 06 | 0 06 |

Note Blank space indicates sample was analyzed for compound, but not detected



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## Table 4-17
## Results of Surface Sediment Tentatively Identified Compound

| Station ID | Benzo(e) pyrene | Methyl-propanal | Pentylpropyl-disulfide | Perylene | $C_{16}H_{12}$ Isomer | $C_{15}H_{12}$ Isomer | $C_{17}H_{12}$ Isomer | $C_{18}H_{14}$ Isomer | Unknown |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 82 | | | | | | 93 | 44 | |
| 2 | 45 | | | 13 | | 3 | 35 | 20 | |
| 3 | 64 | | | | | | 27 | 39 | |
| 4 | 54 | | | 61 | | | 15 | 4 | |
| 5 | 61 | | | | | | 66 | 23 | |
| 6 | 51 | | | 18 | | | | 18 | |
| 7 | 100 | | | 34 | | 8 | 83 | 27 | |
| 8 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 9 | 23 | | | 10 | | | 24 | | |
| 10 | 180 | | | 63 | | 14 | 238 | 81 | |
| 11 | 140 | | | 34 | | 6 | 120 | 52 | |
| 12 | 50 | | | 15 | | | 51 | 22 | |
| 13 | 100 | | | 24 | | 20 | 105 | 32 | |
| 14 | 59 | | | 19 | | 5 | | 21 | |
| 15 | 27 | | | 12 | | | 36 | 13 | |
| 16 | 27 | | | 11 | | 2 | 27 | | 83 |
| 17 | | | | | | | | | 450 |
| 18 | | | | | | | | | 880 |
| 19 | | | | | | | | | |
| 20 | | | | | | | | | |
| 21 | 220 | | | | 29 | | 312 | 55 | 190 |
| 22 | 210 | | | | | | | | |
| 23 | | | | | | | | | 2200 |
| 24 | | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | 46 | | | 17 | | 3 | 50 | 31 | |
| 27 | 22 | | 80 | 9 | | | | | |
| 28 | 14 | | | 7 | | | | | |
| 29 | 7 | | | | | | | | |
| 30 | 16 | 290 | | 7 | | | | | |
| 31 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 32 | | | | | | | | | |
| 33 | | | | | | | | | |
| 41 | 8 | | | 45 | | | 99 | 61 | 48 |
| 42 | | | | | | | | | |
| 43 | 210 | | | 70 | | 198 | 1145 | 259 | 380 |
| 44 | | | | | | | | | |
| 45 | | | | | | | | | 850 |
| 46 | | | | | | | | | 520 |
| 47 | 92 | | | 47 | | 19 | 176 | 57 | 740 |
| 48 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 49 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 50 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 51 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 52 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 40010.1 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 40010.2 | | | | | | | | | NA |
| 40010.3 | | | | | | | | | 310 |
| 40018.1 | 9 | | | 7 | | | | | 310 |
| 40018.2 | 9 | | | 9 | | | | | |
| 40018.3 | | | | | | | | | |
| 40032.1 | | | | | | | | | |

Notes:
Concentrations reported in microgram per kilogram (µg/kg)
Blank space indicates compound not found in sample
NA - not analyzed



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**Table 4-18**
**Summary of Descriptive Statistics for Detected Analytes in Surface Sediment Samples from Basin Stations**

| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation |
|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | |
| Arsenic | 34 of 34 | 100 | 1.6 | 19 | 9.2 | 3.86 |
| Beryllium | 34 of 34 | 100 | 0.13 | 1.00 | 0.52 | 0.18 |
| Cadmium | 34 of 34 | 100 | 0.078 | 1.000 | 0.377 | 0.230 |
| Chromium | 34 of 34 | 100 | 9.8 | 88 | 39 | 15.7 |
| Copper | 34 of 34 | 100 | 13 | 530 | 110 | 92.6 |
| Lead | 34 of 34 | 100 | 5.2 | 180 | 48 | 30.6 |
| Mercury | 33 of 34 | 97 | 0.11 | 1.8 | 0.48 | 0.34 |
| Nickel | 34 of 34 | 100 | 7.8 | 41 | 23 | 7.3 |
| Selenium | 1 of 34 | 3 | 1.6 | 1.6 | 0.47 | 0.20 |
| Silver | 33 of 34 | 97 | 1.3 | 19 | 2.8 | 3.0 |
| Zinc | 34 of 34 | 100 | 33 | 480 | 160 | 83.6 |
| **Butyltins, µg/kg** | | | | | | |
| Dibutyltin | 0 of 34 | 0 | 0.0 | 0.0 | 1.1 | 0.9 |
| Monobutyltin | 0 of 34 | 0 | 0.0 | 0.0 | 1.0 | 0.2 |
| **HPAH, µg/kg** | | | | | | |
| Benzo(a)anthracene | 18 of 33 | 55 | 16 | 280 | 57 | 64.3 |
| Benzo(a)pyrene | 28 of 34 | 82 | 19 | 540 | 144 | 143.0 |
| Benzo(b)fluoranthene | 27 of 34 | 79 | 19 | 680 | 172 | 172.0 |
| Benzo(ghi)perylene | 20 of 33 | 61 | 36 | 380 | 90 | 99.4 |
| Benzo(k)fluoranthene | 28 of 34 | 82 | 33 | 660 | 180 | 166.4 |
| Chrysene | 22 of 33 | 67 | 32 | 550 | 108 | 131.3 |
| Dibenzo(a,h)anthracene | 4 of 26 | 15 | 16 | 120 | 25 | 27.0 |
| Fluoranthene | 19 of 32 | 59 | 16 | 320 | 55 | 67.2 |
| Indeno(1,2,3-cd)pyrene | 19 of 33 | 58 | 32 | 400 | 89 | 104.1 |
| Pyrene | 19 of 32 | 59 | 18 | 350 | 67 | 87.4 |
| Benzofluoranthenes | 28 of 34 | 82 | 56 | 1160 | 352 | 333.1 |
| Total HPAH | 28 of 34 | 82 | 75 | 3600 | 964 | 996.7 |
| **LPAH, µg/kg** | | | | | | |
| Acenaphthene | 0 of 26 | 0 | 0 | 0 | 19 | 16.1 |
| Acenaphthylene | 9 of 32 | 28 | 15 | 68 | 24 | 17.1 |
| Anthracene | 15 of 33 | 45 | 18 | 180 | 40 | 39.5 |
| Fluorene | 0 of 26 | 0 | 0 | 0 | 19 | 16.1 |
| Methylnaphthalenes | 0 of 26 | 0 | 0 | 0 | 20 | 16.1 |
| Phenanthrene | 14 of 33 | 42 | 16 | 160 | 35 | 32.9 |
| Total LPAH | 16 of 34 | 47 | 18 | 340 | 140 | 114.2 |
| Total PAH | 28 of 34 | 82 | 75 | 3940 | 1104 | 1094.1 |
| **PCB, µg/kg** | | | | | | |
| Aroclor 1260 | 29 of 34 | 85 | 31 | 880 | 184 | 180.9 |
| **Pesticides, µg/kg** | | | | | | |
| Aldrin | 1 of 34 | 3 | 2.3 | 2.3 | 0.49 | 0.32 |
| Lindane (gamma-BHC) | 3 of 34 | 9 | 0.63 | 6.8 | 0.69 | 1.1 |
| 4,4'-DDD | 28 of 34 | 82 | 1.9 | 42 | 9.4 | 9.2 |
| 4,4'-DDE | 34 of 34 | 100 | 6 | 180 | 53.8 | 36.0 |
| 4,4'-DDT | 1 of 34 | 3 | 34 | 34 | 1.4 | 5.8 |
| Total DDTs | 34 of 34 | 100 | 6 | 213 | 65 | 44.0 |
| **SVOCs, µg/kg** | | | | | | |
| Phenol | 1 of 27 | 4 | 94 | 94 | 42 | 40.4 |
| Bis(2-ethylhexyl)phthalate | 1 of 26 | 4 | 250 | 250 | 134 | 134.9 |
| Di-n-octylphthalate | 12 of 32 | 38 | 30 | 91 | 48 | 36.0 |
| **Sulfides** | | | | | | |
| Sulfide, Total, mg/kg | 34 of 34 | 100 | 1.1 | 400 | 82 | 88.9 |
| Acid Volatile Sulfide, µmol/g | 34 of 34 | 100 | 0.13 | 18.40 | 3.61 | 3.50 |
| **SEM, µmol/g** | | | | | | |
| Cadmium, Extractable | 14 of 34 | 41 | 0.0035 | 0.0116 | 0.0040 | 0.0024 |
| Copper, Extractable | 34 of 34 | 100 | 0.220 | 5.193 | 1.230 | 0.915 |
| Lead, Extractable | 34 of 34 | 100 | 0.013 | 0.917 | 0.209 | 0.153 |
| Mercury, Extractable | 20 of 34 | 59 | 0.0001 | 0.0005 | 0.0002 | 0.0001 |
| Zinc, Extractable | 34 of 34 | 100 | 0.31 | 8.87 | 1.89 | 1.44 |
| **SEM/AVS** | | | | | | |
| Cadmium/AVS | 14 of 34 | 41 | 0.0010 | 0.0034 | 0.0022 | 0.0029 |
| Copper/AVS | 34 of 34 | 100 | 0.094 | 11.146 | 0.839 | 1.906 |
| Lead/AVS | 34 of 34 | 100 | 0.015 | 1.619 | 0.127 | 0.272 |
| Mercury/AVS | 20 of 34 | 59 | 0.0000 | 0.0041 | 0.0002 | 0.0007 |
| Zinc/AVS | 34 of 34 | 100 | 0.15 | 14.82 | 1.17 | 2.49 |
| Total SEM/AVS | 34 of 34 | 100 | 0.26 | 27.59 | 2.14 | 4.67 |

Note: When compound was not detected, the statistical values were calculated from one half the sample PQL.



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**Table 4-19**
**Summary of Descriptive Statistics for Detected Analytes in Surface Sediment Samples from Pier Stations**

| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation |
|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | |
| Arsenic | 11 of 11 | 100 | 7.7 | 15 | 11 | 2.2 |
| Beryllium | 11 of 11 | 100 | 0.27 | 0.88 | 0.63 | 0.2 |
| Cadmium | 11 of 11 | 100 | 0.49 | 1.5 | 0.82 | 0.3 |
| Chromium | 11 of 11 | 100 | 34 | 330 | 76 | 84.8 |
| Copper | 11 of 11 | 100 | 120 | 330 | 197 | 67.5 |
| Lead | 11 of 11 | 100 | 54 | 94 | 74 | 13.5 |
| Mercury | 11 of 11 | 100 | 0.27 | 0.88 | 0.51 | 0.2 |
| Nickel | 11 of 11 | 100 | 19 | 35 | 29 | 4.6 |
| Selenium | 0 of 11 | 0 | 0 | 0 | 0.7 | 0.3 |
| Silver | 11 of 11 | 100 | 1.5 | 4.1 | 2.5 | 0.6 |
| Zinc | 11 of 11 | 100 | 190 | 620 | 297 | 124.3 |
| **Butyltins, µg/kg** | | | | | | |
| Dibutyltin | 1 of 11 | 9 | 2.5 | 2.5 | 1.6 | 0.4 |
| Monobutyltin | 1 of 11 | 9 | 3.6 | 3.6 | 1.6 | 0.7 |
| **HPAH, µg/kg** | | | | | | |
| Benzo(a)anthracene | 5 of 11 | 45 | 150 | 1900 | 499 | 688.0 |
| Benzo(a)pyrene | 9 of 11 | 82 | 230 | 1500 | 573 | 471.3 |
| Benzo(b)fluoranthene | 9 of 11 | 82 | 270 | 1800 | 721 | 598.8 |
| Benzo(ghi)perylene | 8 of 11 | 73 | 110 | 440 | 184 | 115.3 |
| Benzo(k)fluoranthene | 9 of 11 | 82 | 240 | 1300 | 579 | 424.4 |
| Chrysene | 9 of 11 | 82 | 170 | 2100 | 683 | 698.5 |
| Dibenzo(a,h)anthracene | 2 of 11 | 18 | 270 | 330 | 89 | 109.9 |
| Fluoranthene | 8 of 11 | 73 | 86 | 4400 | 1046 | 1572.7 |
| Indeno(1,2,3-cd)pyrene | 8 of 11 | 73 | 110 | 550 | 205 | 143.0 |
| Pyrene | 8 of 11 | 73 | 180 | 3300 | 1085 | 1188.4 |
| Benzofluoranthenes | 9 of 11 | 82 | 510 | 3100 | 1300 | 1019.7 |
| Total HPAH | 9 of 11 | 82 | 920 | 17620 | 5663 | 5746.0 |
| **LPAH, µg/kg** | | | | | | |
| Acenaphthene | 2 of 11 | 18 | 180 | 360 | 83 | 106.2 |
| Acenaphthylene | 5 of 11 | 45 | 29 | 500 | 102 | 136.3 |
| Anthracene | 7 of 11 | 64 | 110 | 1400 | 400 | 479.2 |
| Fluorene | 4 of 11 | 36 | 36 | 550 | 106 | 156.2 |
| Methylnaphthalenes | 1 of 11 | 9 | 83 | 83 | 70 | 66.3 |
| Phenanthrene | 7 of 11 | 64 | 77 | 2700 | 453 | 781.8 |
| Total LPAH | 7 of 11 | 64 | 225 | 5593 | 1214 | 1570.9 |
| Total PAH | 9 of 11 | 82 | 920 | 23213 | 6877 | 7120.3 |
| **PCB, µg/kg** | | | | | | |
| Aroclor 1260 | 2 of 10 | 20 | 340 | 390 | 86 | 147.8 |
| **Pesticides, µg/kg** | | | | | | |
| Aldrin | 0 of 10 | 0 | 0 | 0 | 0.7 | 0.2 |
| Lindane (gamma-BHC) | 0 of 10 | 0 | 0 | 0 | 0.7 | 0.2 |
| 4,4'-DDD | 3 of 10 | 30 | 13 | 36 | 6.9 | 11.6 |
| 4,4'-DDE | 11 of 11 | 100 | 13 | 110 | 89.64 | 28.35 |
| 4,4'-DDT | 0 of 10 | 0 | 0 | 0 | 0.7 | 0.2 |
| Total DDTs | 11 of 11 | 100 | 13 | 146 | 97 | 33.9 |
| **SVOCs, µg/kg** | | | | | | |
| Phenol | 1 of 11 | 9 | 210 | 210 | 90 | 71.1 |
| Bis(2-ethylhexyl)phthalate | 0 of 11 | 0 | 0 | 0 | 250 | 200.0 |
| Di-n-octylphthalate | 5 of 11 | 45 | 170 | 230 | 153 | 69.4 |
| **Sulfides** | | | | | | |
| Sulfide, Total, mg/kg | 11 of 11 | 100 | 360 | 5400 | 3778 | 1303 |
| Acid Volatile Sulfide, µmol/g | 11 of 11 | 100 | 10 | 125 | 89 | 33 |
| **SEM, µmol/g** | | | | | | |
| Cadmium, Extractable | 10 of 11 | 91 | 0.0068 | 0.0151 | 0.0094 | 0.0026 |
| Copper, Extractable | 11 of 11 | 100 | 1.3691 | 4.7210 | 2.6438 | 0.9863 |
| Lead, Extractable | 11 of 11 | 100 | 0.2365 | 0.5792 | 0.3528 | 0.0918 |
| Mercury, Extractable | 8 of 11 | 73 | 0.0002 | 0.0007 | 0.0003 | 0.0002 |
| Zinc, Extractable | 11 of 11 | 100 | 2.2939 | 6.2701 | 3.8788 | 1.3266 |
| **SEM/AVS** | | | | | | |
| Cadmium/AVS | 10 of 11 | 91 | 0.0001 | 0.0007 | 0.0002 | 0.0002 |
| Copper/AVS | 11 of 11 | 100 | 0.0177 | 0.2929 | 0.0510 | 0.0807 |
| Lead/AVS | 11 of 11 | 100 | 0.0028 | 0.0334 | 0.0064 | 0.0090 |
| Mercury/AVS | 8 of 11 | 73 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Zinc/AVS | 11 of 11 | 100 | 0.0300 | 0.3479 | 0.0683 | 0.0933 |
| Total SEM/AVS | 11 of 11 | 100 | 0.0510 | 0.6751 | 0.1259 | 0.1831 |

Note: When compound was not detected the statistical values were calculated from one half the sample PQL.



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## Table 4-20
## Detected Analytes for Subsurface Sediment Samples

| Analyte Name | Core Sample | Basin Stations 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 |
|---|---|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | | | |
| Arsenic | 1 | 3.7 | 3.4 | 4.6 | 6.9 | 2.2 | 9.1 | — | 5.2 |
| | 2 | 4.2 | 2 | 4.6 | 1.1 | 1.4 | 7 | 6.4 | 5.2 |
| | 3 | 3.7 | — | — | — | — | 8.1 | — | 5.4 |
| | 4 | 8.1 | — | — | — | — | 4.1 | 3.8 | 5.6 |
| | 5 | 1.4 | — | — | — | — | 5.2 | 2 | 4.2 |
| Beryllium | 1 | 0.27 | 0.14 | 0.27 | 0.6 | 0.29 | 1 | — | 1 |
| | 2 | 0.12 | 0.13 | 0.26 | 0.12 | 0.25 | 1 | 0.47 | 1 |
| | 3 | 0.89 | — | — | — | — | 1 | — | 0.8 |
| | 4 | 0.23 | — | — | — | — | 0.44 | 0.46 | 0.93 |
| | 5 | 0.25 | — | — | — | — | 0.54 | 0.4 | 0.58 |
| Cadmium | 1 | 0.096 | 0.095 | | 0.36 | 0.087 | 1.4 | — | 1 |
| | 2 | 0.15 | 0.089 | 0.065 | 0.097 | 0.14 | 2 | 0.47 | 1 |
| | 3 | 0.73 | — | — | — | — | 1.95 | — | 2.8 |
| | 4 | 0.07 | — | — | — | — | 0.29 | 0.46 | 2.2 |
| | 5 | | — | — | — | — | 0.14 | 0.13 | 0.43 |
| Chromium | 1 | 18 | 14 | 19 | 36 | 16 | 70 | — | 54 |
| | 2 | 12 | 9.6 | 17 | 10 | 11 | 67 | 31 | 58 |
| | 3 | 36 | — | — | — | — | 56.5 | — | 62 |
| | 4 | 14 | — | — | — | — | 29 | 29 | 59 |
| | 5 | 22 | — | — | — | — | 24 | 17 | 27 |
| Copper | 1 | 23 | 12 | 17 | 45 | 16 | 260 | — | 160 |
| | 2 | 8.6 | 10 | 18 | 7.3 | 11 | 220 | 64 | 160 |
| | 3 | 50 | — | — | — | — | 185 | — | 200 |
| | 4 | 9.4 | — | — | — | — | 57 | 53 | 200 |
| | 5 | 36 | — | — | — | — | 35 | 17 | 84 |
| Lead | 1 | 8.2 | 8.2 | 9.4 | 33 | 7.2 | 110 | — | 85 |
| | 2 | 3.7 | | 6.5 | | 7.5 | 140 | 42 | 89 |
| | 3 | 18 | — | — | — | — | 105 | — | 140 |
| | 4 | 14 | — | — | — | — | 22 | 33 | 170 |
| | 5 | 7.4 | — | — | — | — | 14 | 9.2 | 20 |
| Mercury | 1 | 0.055 | 0.054 | | 0.21 | | 0.66 | — | 0.21 |
| | 2 | | | | | | 1 | 0.23 | 0.34 |
| | 3 | 0.074 | — | — | — | — | 0.76 | — | 0.7 |
| | 4 | | — | — | — | — | 0.12 | 0.27 | 1.8 |
| | 5 | | — | — | — | — | 0.082 | 0.04 | 0.27 |
| Nickel | 1 | 11 | 9.5 | 15 | 26 | 13 | 35 | — | 31 |
| | 2 | 8.6 | 7.6 | 14 | 8.5 | 10 | 40 | 25 | 37 |
| | 3 | 33 | — | — | — | — | 33.5 | — | 32 |
| | 4 | 12 | — | — | — | — | 24 | 21 | 31 |
| | 5 | 17 | — | — | — | — | 20 | 15 | 22 |
| Selenium | 1 | | | | | | | — | |
| | 2 | | | | | | | | |
| | 3 | | — | — | — | — | 1.3 | — | 1.2 |
| | 4 | | — | — | — | — | | | |
| | 5 | | — | — | — | — | | | |
| Silver | 1 | 1.1 | 0.82 | 1.2 | 2.3 | 1.2 | 0.63 | — | 0.41 |
| | 2 | 0.86 | | 1 | 0.85 | 0.87 | 0.34 | 0.16 | |
| | 3 | 2.7 | — | — | — | — | 0.42 | — | 0.12 |
| | 4 | 0.7 | — | — | — | — | 0.088 | | 0.2 |
| | 5 | 1.4 | — | — | — | — | | | 0.1 |
| Zinc | 1 | 55 | 42 | 47 | 170 | 53 | 380 | — | 280 |
| | 2 | 33 | 24 | 48 | 30 | 36 | 400 | 130 | 420 |
| | 3 | 99 | — | — | — | — | 335 | — | 420 |
| | 4 | 35 | — | — | — | — | 87 | 120 | 540 |
| | 5 | 49 | — | — | — | — | 71 | 50 | 88 |

(table continues)



0 0 3 7 1 3

R0062982

Table 4-20 (continued)

| Analyte Name | Core Horizon | Basin Stations 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 |
|---|---|---|---|---|---|---|---|---|---|
| **Butyltins, µg/kg** | | | | | | | | | |
| Dibutyltin | 1 | | 3.4 | | | | | — | |
| | 2 | | | | | 4.1 | | | |
| | 3 | | — | — | — | — | | — | |
| | 4 | | — | — | — | — | | | |
| | 5 | | — | — | — | — | | | |
| **HPAH, µg/kg** | | | | | | | | | |
| Benzo(a)anthracene | 1 | 14 | | | | | 200 | — | 720 |
| | 2 | | | | | | 970 | | 260 |
| | 3 | | — | — | — | — | 280 | — | 10000 |
| | 4 | | — | — | — | — | 990 | | 3700 |
| | 5 | | — | — | — | — | | | 1100 |
| Benzo(a)pyrene | 1 | 55 | 14 | 13 | | | 190 | — | |
| | 2 | 12 | | | | | 770 | 78 | |
| | 3 | | — | — | — | — | 315 | — | 5200 |
| | 4 | | — | — | — | — | 370 | 140 | 2000 |
| | 5 | | — | — | — | — | | | 610 |
| Benzo(b)fluoranthene | 1 | 68 | 14 | 27 | | | 190 | — | |
| | 2 | 12 | | | | | 870 | 170 | |
| | 3 | | — | — | — | — | 285 | — | |
| | 4 | | — | — | — | — | 490 | 130 | 1500 |
| | 5 | | — | — | — | — | | | 590 |
| Benzo(ghi)perylene | 1 | 27 | | | | | 150 | — | |
| | 2 | | | | | | 300 | | |
| | 3 | | — | — | — | — | 122.5 | — | 2600 |
| | 4 | | — | — | — | — | 150 | | 700 |
| | 5 | | — | — | — | — | | | 270 |
| Benzo(k)fluoranthene | 1 | 55 | 14 | 13 | | | 200 | — | |
| | 2 | 12 | | | | | 640 | 190 | |
| | 3 | | — | — | — | — | 215 | — | 14000 |
| | 4 | | — | — | — | — | 340 | 210 | 2800 |
| | 5 | | — | — | — | — | | | 520 |
| Chrysene | 1 | 41 | | | | | 170 | — | 2500 |
| | 2 | | | | | | 810 | 110 | 2900 |
| | 3 | | — | — | — | — | 265 | — | 8800 |
| | 4 | | — | — | — | — | 940 | 88 | 4400 |
| | 5 | | — | — | — | — | | | 940 |
| Dibenzo(a,h)anthracene | 1 | | | | | | 87 | — | |
| | 2 | | | | | | | | |
| | 3 | | — | — | — | — | | — | |
| | 4 | | — | — | — | — | | | |
| | 5 | | — | — | — | — | | | 110 |
| Fluoranthene | 1 | | | | | | 160 | — | 1300 |
| | 2 | | | | | | 380 | 160 | 1700 |
| | 3 | | — | — | — | — | 295 | — | 3400 |
| | 4 | | — | — | — | — | 720 | 85 | 13000 |
| | 5 | | — | — | — | — | | | 810 |
| Indeno(1,2,3-cd)pyrene | 1 | 27 | | | | | 140 | — | |
| | 2 | | | | | | 330 | | |
| | 3 | | — | — | — | — | 118.5 | — | 2200 |
| | 4 | | — | — | — | — | 160 | 36 | 740 |
| | 5 | | — | — | — | — | | | 580 |
| Pyrene | 1 | 14 | | | | | 310 | — | 3100 |
| | 2 | | | | | | 1200 | 190 | 1000 |
| | 3 | | — | — | — | — | 440 | — | 12000 |
| | 4 | | — | — | — | — | 1000 | 120 | 9300 |
| | 5 | | — | — | — | — | | | 1700 |

(table continues)



VOL 18
0374
R0062983

Table 4-20 (continued)

| Analyte Name | Core Horizon | Basin Stations 6 | 9 | 14 | 24 | 29 | Pier 15 4 | Pier 12 46 | Pier 2 51 |
|---|---|---|---|---|---|---|---|---|---|
| Total HPAH | 1 | 301 | 42 | 53 | | | 1797 | — | 7620 |
| | 2 | 36 | | | | | 6270 | 898 | 5860 |
| | 3 | | — | — | — | — | 2336 | — | 58200 |
| | 4 | | — | — | — | — | 5160 | 809 | 38140 |
| | 5 | | — | — | — | — | | | 7230 |
| **LPAH, µg/kg** | | | | | | | | | |
| Anthracene | 1 | | | | | | | | |
| | 2 | | | | | | 73 | — | 88 |
| | 3 | | | | | | 330 | 34 | 170 |
| | 4 | | — | — | — | — | 145 | — | 6800 |
| | 5 | | — | — | — | — | 260 | 41 | 6100 |
| Fluorene | 1 | | — | — | — | — | | | 270 |
| | 2 | | | | | | | — | 98 |
| | 3 | | — | — | — | — | | | 310 |
| | 4 | | — | — | — | — | | — | 1400 |
| | 5 | | — | — | — | — | | | 240 |
| Methylnaphthalenes | 1 | | | | | | | | |
| | 2 | | | | | | | — | |
| | 3 | | — | — | — | — | | | |
| | 4 | | — | — | — | — | | — | 17000 |
| | 5 | | — | — | — | — | | | |
| Naphthalene | 1 | | | | | | | | |
| | 2 | | | | | | | — | |
| | 3 | | — | — | — | — | | | |
| | 4 | | — | — | — | — | | — | 4800 |
| | 5 | | — | — | — | — | | | |
| Phenanthrene | 1 | | | | | | | | |
| | 2 | | | | | | | — | 340 |
| | 3 | | — | — | — | — | 84 | | 630 |
| | 4 | | — | — | — | — | 57 | — | 9200 |
| | 5 | | — | — | — | — | 85 | | 4600 |
| Total LPAH | 1 | | | | | | | | 190 |
| | 2 | | | | | | 73 | — | 526 |
| | 3 | | — | — | — | — | 414 | 34 | 1110 |
| | 4 | | — | — | — | — | 202 | — | 39200 |
| | 5 | | — | — | — | — | 345 | 41 | 10940 |
| Total PAH | 1 | 301 | 42 | 53 | | | | | 460 |
| | 2 | 36 | | | | | 1870 | — | 8146 |
| | 3 | | — | — | — | — | 6684 | 932 | 6970 |
| | 4 | | — | — | — | — | 2538 | — | 97400 |
| | 5 | | — | — | — | — | 5505 | 850 | 49080 |
| **PCBs, µg/kg** | | | | | | | | | 7690 |
| Aroclor 1248 | 1 | | | | | | | | |
| | 2 | | | | | | | — | |
| | 3 | | — | — | — | — | | | |
| | 4 | | — | — | — | — | | — | 6600 |
| | 5 | | — | — | — | — | | | |
| Aroclor 1254 | 1 | | | | 110 | | | | |
| | 2 | | | | | | | — | |
| | 3 | | — | — | — | — | | | |
| | 4 | | — | — | — | — | | — | |
| | 5 | | — | — | — | — | | | |
| Aroclor 1260 | 1 | 23 | | | | | | | |
| | 2 | | | | | | 290 | — | |
| | 3 | | | | | | 250 | | |
| | 4 | | — | — | — | — | 110 | — | |
| | 5 | | — | — | — | — | | 87 | |

(table continues)



R0062984

VOL 18
0315

Table 4-20 (continued)

| Analyte Name | Core Horizon | Basin Stations 6 | 8 | 14 | 24 | 29 | Pier 15 43 | Pier 12 46 | Pier 2 51 |
|---|---|---|---|---|---|---|---|---|---|
| **Pesticides, µg/kg** | | | | | | | | | |
| Delta-BHC (HCH) | 1 | | | | | | | — | |
| | 2 | | | | | | | | |
| | 3 | | — | — | — | — | | — | |
| | 4 | | — | — | — | — | | | |
| | 5 | | — | — | — | — | | 7 | |
| Endosulfan II | 1 | | | | | | | — | |
| | 2 | | | | | | 37 | | |
| | 3 | | — | — | — | — | | — | |
| | 4 | | — | — | — | — | | | |
| | 5 | | — | — | — | — | | | |
| 4,4'-DDD | 1 | | | | | | 35 | — | |
| | 2 | | | | | | 44 | 6.4 | |
| | 3 | | — | — | — | — | 41 | — | |
| | 4 | | — | — | — | — | | 5.5 | 19 |
| | 5 | | — | — | — | — | 3.5 | | |
| 4,4'-DDE | 1 | 7.1 | | | 17 | | 230 | — | 250 |
| | 2 | | | | | | 220 | 41 | 230 |
| | 3 | | — | — | — | — | 320 | — | 1100 |
| | 4 | | — | — | — | — | 50 | 41 | 50 |
| | 5 | | — | — | — | — | 29 | 9.6 | 4.2 |
| **SVOCs, µg/kg** | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | 1 | | | | | | | — | |
| | 2 | | | | | | 740 | | 580 |
| | 3 | | — | — | — | — | 180 | — | |
| | 4 | | — | — | — | — | | | |
| | 5 | | — | — | — | — | | | |
| Di-n-octylphthalate | 1 | | | | | | | — | |
| | 2 | | | | | | | | |
| | 3 | | — | — | — | — | | — | |
| | 4 | | — | — | — | — | | | |
| | 5 | 37 | — | — | — | — | | | |
| 1,2,4-Trichlorobenzene | 1 | | | | | | | — | |
| | 2 | | | | | | | | |
| | 3 | | — | — | — | — | | — | 11000 |
| | 4 | | — | — | — | — | | | |
| | 5 | | — | — | — | — | | | |
| 1,2-Dichlorobenzene | 1 | | | | | | | — | |
| | 2 | | | | | | | | |
| | 3 | | — | — | — | — | | — | 8000 |
| | 4 | | — | — | — | — | | | 220 |
| | 5 | | — | — | — | — | | | |
| 1,3-Dichlorobenzene | 1 | | | | | | | — | |
| | 2 | | | | | | | | |
| | 3 | | — | — | — | — | | — | 19000 |
| | 4 | | — | — | — | — | | | 780 |
| | 5 | | — | — | — | — | | | 200 |
| 1,4-Dichlorobenzene | 1 | | | | | | | — | 490 |
| | 2 | | | | | | | | 210 |
| | 3 | | — | — | — | — | | — | 60000 |
| | 4 | | — | — | — | — | | | 2000 |
| | 5 | | — | — | — | — | | | 530 |

Notes:
Blank space indicates sample was analyzed for compound, but not detected.
— indicates no sample was collected at this horizon.



VOL 18
0376
R0062985

VOL 18

## Table 4-21
## Physical Characteristics of Fish Sampled from West Basin and Reference Stations

| Sample ID | Transect | Tissue Type | Weight (g) | Standard Length (cm) | Species | Comments |
|---|---|---|---|---|---|---|
| 026030001/ 026040001 | T1 | Fillet/Bile | 2300 | 52.6 | California halibut | Fluke and miscellaneous abrasions on ventral side |
| 026030201/ 026040101 | T1 | Fillet/Bile | 500 | 43.0 | California halibut | No obvious lesions; couple of flukes on dorsal side |
| 026030301/ 026040301 | T1 | Fillet/Bile | 300 | 26.0 | California halibut | No obvious lesions |
| 026030501/ 026040501 | T1 | Fillet/Bile | 220 | 20.0 | California halibut | No obvious lesions |
| 026032101 | T1 | Whole body | 166 | 21.1 | California halibut | No obvious lesions |
| 026032201 | T1 | Whole body | 155 | 21.4 | California halibut | Flukes; torn fins |
| 026032301 | T1 | Whole body | 115 | 19.2 | California halibut | No obvious lesions |
| 026030101/ 026040101 | T2 | Fillet/Bile | 1100 | 52.0 | California halibut | No obvious lesions |
| 026030401 | T2 | Fillet | 150 | 22.0 | California halibut | No obvious lesions |
| 026032701 | T3 | Whole body | 210 | 22.0 | White croaker | No obvious lesions |
| 026032801 | T3 | Whole body | 340 | 25.5 | White croaker | No obvious lesions |
| 026032901 | T3 | Whole body | 180 | 24.0 | California halibut | No obvious lesions |
| 026033001 | T3 | Whole body | 160 | 22.5 | California halibut | No obvious lesions |
| 026033101 | T3 | Whole body | 280 | 26.0 | California halibut | No obvious lesions |
| 026033201 | T4 | Whole body | 170 | 20.0 | White croaker | No obvious lesions |
| 026033301 | T4 | Whole body | 70 | 17.0 | White croaker | Blind left eye |
| 026033501 | T4 | Whole body | 185 | 21.0 | White croaker | No obvious lesions |
| 026033601 | T4 | Whole body | 240 | 22.0 | White croaker | No obvious lesions |
| 026033901 | T4 | Whole body | 680 | 34.0 | California halibut | No obvious lesions |
| 026034001 | T4 | Whole body | 420 | 28.0 | California halibut | Many contusions over entire body; fins reddened with contusions |
| 026034101 | T4 | Whole body | 145 | 21.0 | California halibut | Cyst near ventral gill |
| 026034701 | T4 | Whole body | 30 | 15.5 | White croaker | No obvious lesions |
| 026041401 | T4 | Bile | 530 | 31.5 | California halibut | No obvious lesions |
| 026041501 | T4 | Bile | 600 | 32.0 | California halibut | No obvious lesions |
| 026034201 | T5 | Whole body | 335.0 | 28.2 | California halibut | Slight skin abrasions ventral side |
| 026034301 | T5 | Whole body | 500 | 29.0 | California halibut | No obvious lesions |
| 026034401 | T5 | Fillet | 130 | 18.5 | White croaker | No obvious lesions |
| 026034501 | T5 | Fillet | 40 | 15.5 | White croaker | No obvious lesions |
| 026034601 | T5 | Whole body | 30 | 15.0 | White croaker | No obvious lesions |
| 026034801 | T5 | Fillet | 180 | 21.5 | White croaker | Couple of abrasions |
| 026034901 | T5 | Whole body | 15 | 14.0 | White croaker | No obvious lesions |
| 026035001 | T5 | Whole body | 420 | 28.0 | California halibut | No obvious lesions |
| 026036901 | T5 | Whole body | 160 | 21.0 | California halibut | No obvious lesions |
| 026041601 | T5 | Bile | 650.0 | 37 | California halibut | Miscellaneous scars over body; slightly contused, reddened caudal fin |

(table continues)



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VOL 18

Table 4-21 (continued)

| Sample ID | Transect | Tissue Type | Weight (g) | Standard Length (cm) | Species | Comments |
|---|---|---|---|---|---|---|
| 026041701 | T5 | Bile | 450 | 33.0 | California halibut | No obvious lesions |
| 026041801 | T5 | Bile | 380 | 29.0 | California halibut | No obvious lesions |
| 026042001 | T5 | Bile | 205 | 23.0 | California halibut | No obvious lesions |
| 026035101 | T6 | Fillet | 235 | 22.5 | White croaker | No obvious lesions |
| 026035201 | T6 | Whole body | 127 | 18.1 | White croaker | No obvious lesions |
| 026035301 | T6 | Whole body | 116 | 17.4 | White croaker | No obvious lesions |
| 026035401 | T6 | Whole body | 560 | 29.5 | California halibut | No obvious lesions |
| 026035501 | T6 | Whole body | 215 | 23.0 | California halibut | No obvious lesions |
| 026035601 | T6 | Fillet | 210 | 22.0 | White croaker | No obvious lesions |
| 026041901 | T6 | Bile | 700 | 36.0 | California halibut | A few flukes on ventral side |
| 026036301 | T7 | Fillet | 220 | 22.0 | White croaker | No obvious lesions |
| 026036401 | T7 | Whole body | 200 | 22.0 | White croaker | No obvious lesions |
| 026036501 | T7 | Whole body | 148 | 19.3 | White croaker | No obvious lesions |
| 026036701 | T7 | Whole body | 213 | 21.1 | White croaker | No obvious lesions |
| 026036801 | T7 | Whole body | 150 | 19.0 | White croaker | Deformed jaw, questionable old injury |
| 026030601/ 026040701 | R1 | Fillet/Bile | 1040 | 42.1 | California halibut | Flukes on ventral side |
| 026030701/ 026040801 | R1 | Fillet/Bile | 230 | 25.0 | California halibut | No obvious lesions |
| 026030801/ 026040901 | R1 | Fillet/Bile | 190 | 24.0 | California halibut | No obvious lesions |
| 026031201 | R1 | Fillet | 280 | 22.0 | White croaker | No obvious lesions |
| 026031301 | R1 | Fillet | 140 | 19.5 | White croaker | No obvious lesions |
| 026031401 | R1 | Fillet | 120 | 19.0 | White croaker | No obvious lesions |
| 026032401 | R1 | Whole body | 820 | 35.4 | California halibut | No obvious lesions; copepod attached to body |
| 026032501 | R1 | Whole body | 182 | 23.3 | California halibut | No obvious lesions |
| 026032601 | R1 | Whole body | 156 | 21.5 | California halibut | No obvious lesions |
| 026035701 | R1 | Whole body | 460 | 31.0 | California halibut | No obvious lesions |
| 026035801 | R1 | Whole body | 165 | 22.0 | California halibut | No obvious lesions |
| 026035901 | R1 | Whole body | 185 | 22.0 | California halibut | No obvious lesions |
| 026037501 | R1 | Bile | 420 | 28.7 | California halibut | No obvious lesions |
| 026030901 | R2 | Whole body | 265 | 25.3 | California halibut | No obvious lesions |
| 026031001 | R2 | Whole body | 190 | 22.4 | California halibut | No obvious lesions |
| 026031101 | R2 | Whole body | 135 | 21.3 | California halibut | No obvious lesions |
| 026031501 | R2 | Whole body | 215 | 21.8 | White croaker | No obvious lesions |
| 026031601 | R2 | Whole body | 186 | 20.2 | White croaker | No obvious lesions |
| 026031701 | R2 | Whole body | 206 | 21.5 | White croaker | No obvious lesions |
| 026036001 | R2 | Whole body | 295 | 21.0 | White croaker | No obvious lesions |
| 026036101 | R2 | Whole body | 176 | 20.3 | White croaker | No obvious lesions |
| 026036201 | R2 | Whole body | 175 | 21.4 | White croaker | Tail missing |
| 026041001 | R2 | Bile | 520 | 30.0 | California halibut | No obvious lesions |
| 026041101 | R2 | Bile | 480 | 33.2 | California halibut | No obvious lesions |
| 026041201 | R2 | Bile | 260 | 25.5 | California halibut | No obvious lesions |

0378



R0062987

VOL 18 03719

**Table 4-22**
**Fish Assemblages Captured in West Basin and at Reference Stations**

| Transect | T1 | T2 | T3 | T4 | T5 | T6 | T7 | 40010 | 40018 | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trawl Attempts | 4 | 3 | 3 | 3 | 8 | 3 | 3 | 8 | 3 | West Basin 27 | Reference 11 |
| **Common Fish Name** | | | | | | | | | | | |
| Barred sandbass | 2 | 1 | 2 | 1 | 1 | | 1 | | 1 | 8 | 1 |
| Bat ray | | | | | | | | 1 | | 0 | 1 |
| California halibut | 6 | 3 | 3 | 5 | 12 | 6 | 3 | 19 | 10 | 38 | 29 |
| California tonguefish | 8 | 1 | 2 | | 2 | 5 | 3 | 3 | 4 | 21 | 7 |
| Fantail sole | 1 | | | | | 1 | 1 | | | 3 | 0 |
| Jack smelt | | | | | | | | 1 | | 0 | 1 |
| Lizardfish | | | | 1 | | | | 1 | | 1 | 1 |
| Midshipman | | | | 1 | | 2 | 2 | 2 | 1 | 5 | 3 |
| Northern anchovy | | 1 | | | | | | | | 1 | 0 |
| Octopus | 1 | | | 2 | | 1 | 1 | 1 | | 5 | 1 |
| Queenfish | 2 | | 2 | | | 3 | | 4 | 1 | 7 | 5 |
| Sculpin | | | | | | | | 2 | | 0 | 2 |
| Shovelnose guitarfish | 1 | | | | | | | | | 1 | 0 |
| Starfish | 1 | | | | | | 1 | 1 | | 2 | 1 |
| Toadfish | | | | | | | | 1 | | 0 | 1 |
| Turbot | | | | 3 | 1 | 2 | 2 | 2 | | 8 | 2 |
| White croaker | 65 | 10 | 85 | 95 | 170 | 60 | 110 | 160 | 125 | 595 | 285 |
| White perch | 2 | 1 | 2 | 2 | | 2 | | 4 | | 9 | 4 |
| Total fish | 89 | 17 | 96 | 110 | 186 | 82 | 124 | 202 | 142 | 704 | 344 |

Note:
Miscellaneous invertebrates (crabs, prawns, slugs, and shrimps) also captured at various trawl transects.
Blank space indicates that none were found.



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VOL 18

**Table 4-23**
**Concentrations of Analytes in California Halibut Fillet Samples from West Basin and Reference Stations**

| Analyte Name | Detection Limit | Sample Source | Number of Samples Analyzed | Number of Detects | Mean | Standard Deviation | 95% UCL* |
|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 0.50 | Reference | 3 | 1 | 0.37 | 0.20 | 0.87 |
| | | West Basin | 6 | 1 | 0.31 | 0.14 | 0.46 |
| Copper | 1.0 | Reference | 3 | 1 | 1.0 | 0.87 | 3.2 |
| | | West Basin | 6 | 2 | 0.83 | 0.61 | 1.5 |
| Mercury | 0.060 | Reference | 3 | 3 | 0.050 | 0.040 | 0.13 |
| | | West Basin | 6 | 6 | 0.080 | 0.060 | 0.14 |
| Selenium | 0.50 | Reference | 3 | 1 | 0.40 | 0.26 | 1.1 |
| | | West Basin | 6 | 0 | 0.25 | 0.0 | 0.25 |
| Zinc | 1.0 | Reference | 3 | 2 | 5.5 | 0.87 | 7.7 |
| | | West Basin | 6 | 5 | 5.6 | 1.9 | 7.5 |
| **Butyltins, mg/kg** | | | | | | | |
| Dibutyltin | 0.0010 | Reference | 3 | 0 | 0.00050 | 0.0 | 0.00050 |
| | | West Basin | 6 | 1 | 0.00065 | 0.00037 | 0.0010 |
| Tributyltin | 0.0010 | Reference | 3 | 0 | 0.00050 | 0.0 | 0.00050 |
| | | West Basin | 6 | 1 | 0.00065 | 0.00037 | 0.0010 |
| **Pesticides, mg/kg** | | | | | | | |
| 4,4'-DDE | 0.032 | Reference | 3 | 3 | 0.022 | 0.013 | 0.055 |
| | | West Basin | 6 | 6 | 0.057 | 0.028 | 0.13 |

Note:
* UCL – upper confidence limit.

03800



R0062989

VOL 18

**Table 4-24**
**Concentrations of Analytes in California Halibut**
**Whole Body Samples from West Basin and Reference Stations**

| Analyte Name | Detection Limit | Sample Source | Number of Samples Analyzed | Number of Detects | Mean | Standard Deviation | 95% UCL* |
|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 0.50 | Reference | 9 | 2 | 0.33 | 0.16 | 0.43 |
| | | West Basin | 15 | 4 | 0.34 | 0.16 | 0.43 |
| Copper | 1.0 | Reference | 9 | 6 | 12 | 20.0 | 24 |
| | | West Basin | 15 | 9 | 3.3 | 9.3 | 7.6 |
| Lead | 0.50 | Reference | 9 | 3 | 0.60 | 0.61 | 0.97 |
| | | West Basin | 15 | 1 | 0.25 | 0.0 | 0.0 |
| Mercury | 0.020 | Reference | 9 | 9 | 0.020 | 0.010 | 0.030 |
| | | West Basin | 15 | 15 | 0.010 | 0.0 | 0.0 |
| Nickel | 3.0 | Reference | 9 | 2 | 2.5 | 2.5 | 4.0 |
| | | West Basin | 15 | 0 | 1.5 | 0.0 | 0.0 |
| Selenium | 0.50 | Reference | 9 | 0 | 0.25 | 0.0 | 0.0 |
| | | West Basin | 15 | 1 | 0.29 | 0.17 | 0.37 |
| Zinc | 1.0 - 3.0 | Reference | 9 | 6 | 16 | 14 | 27 |
| | | West Basin | 15 | 11 | 12 | 7.2 | 16 |
| **Butyltins, mg/kg** | | | | | | | |
| Dibutyltin | 0.0010 | Reference | 9 | 4 | 0.0020 | 0.0020 | 0.0020 |
| | | West Basin | 15 | 14 | 0.0020 | 0.0 | 0.0030 |
| Tributyltin | 0.0010 | Reference | 9 | 7 | 0.0040 | 0.0050 | 0.0070 |
| | | West Basin | 15 | 15 | 0.0070 | 0.0040 | 0.0090 |
| **Pesticides, mg/kg** | | | | | | | |
| Endosulfan II | 0.0050 | Reference | 9 | 1 | 0.0030 | 0.0010 | 0.0050 |
| | | West Basin | 15 | 2 | 0.0040 | 0.0050 | 0.0070 |
| 4,4'-DDD | 0.0050 | Reference | 9 | 2 | 0.0040 | 0.0030 | 0.0060 |
| | | West Basin | 15 | 1 | 0.0030 | 0.0020 | 0.0040 |
| 4,4'-DDE | 0.017 | Reference | 9 | 9 | 0.10 | 0.067 | 0.14 |
| | | West Basin | 15 | 15 | 0.10 | 0.12 | 0.15 |

Note:
* UCL – upper confidence limit.

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**Table 4-25**
**Concentrations of Analytes in White Croaker Fillet Samples from West Basin and Reference Stations**

| Analyte Name | Detection Limit | Sample Source | Number of Samples Analyzed | Number of Detects | Mean | Standard Deviation | 95% UCL* |
|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 0.50 | Reference | 3 | 3 | 1.1 | 0.17 | 1.53 |
| | | West Basin | 6 | 5 | 0.83 | 0.39 | 1.23 |
| Copper | 1.0 | Reference | 3 | 0 | 0.050 | 0.0 | 0.050 |
| | | West Basin | 6 | 3 | 0.92 | 0.58 | 1.5 |
| Lead | 0.50 | Reference | 3 | 0 | 0.25 | 0.0 | 0.25 |
| | | West Basin | 6 | 1 | 0.91 | 1.6 | 2.6 |
| Mercury | 0.060 | Reference | 3 | 3 | 0.030 | 0.010 | 0.050 |
| | | West Basin | 6 | 6 | 0.060 | 0.020 | 0.070 |
| Selenium | 0.50 | Reference | 3 | 0 | 0.25 | 0.0 | 0.25 |
| | | West Basin | 6 | 1 | 0.31 | 0.14 | 0.46 |
| Zinc | 1.0 - 3.0 | Reference | 3 | 0 | 4.3 | 1.5 | 8.1 |
| | | West Basin | 6 | 6 | 7.7 | 1.6 | 9.4 |
| **Butyltins, mg/kg** | | | | | | | |
| Tributyltin | 0.0010 | Reference | 3 | 3 | 0.0090 | 0.0030 | 0.016 |
| | | West Basin | 6 | 6 | 0.0050 | 0.0010 | 0.0064 |
| **Pesticides, mg/kg** | | | | | | | |
| Endosulfan II | 0.0050 | Reference | 3 | 0 | 0.0030 | 0.0 | 0.0030 |
| | | West Basin | 6 | 5 | 0.028 | 0.029 | 0.059 |
| Endrin | 0.0050 | Reference | 3 | 0 | 0.0030 | 0.0 | 0.0030 |
| | | West Basin | 6 | 3 | 0.0050 | 0.0030 | 0.0085 |
| 4,4'-DDD | 0.022 | Reference | 3 | 2 | 0.014 | 0.011 | 0.041 |
| | | West Basin | 6 | 6 | 0.034 | 0.028 | 0.064 |
| 4,4'-DDE | 0.032 | Reference | 3 | 3 | 1.0 | 0.61 | 2.5 |
| | | West Basin | 6 | 6 | 0.33 | 0.32 | 0.67 |

Note:
* UCL – upper confidence limit.

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**Table 4-26**
**Concentrations of Analytes in White Croaker Whole Body Samples from West Basin and Reference Stations**

| Analyte Name | Detection Limit | Sample Source | Number of Samples Analyzed | Number of Detects | Mean | Standard Deviation | 95% UCL* |
|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 0.50 | Reference | 6 | 6 | 0.82 | 0.26 | 1.0 |
| | | West Basin | 15 | 15 | 1.2 | 0.28 | 1.4 |
| Beryllium | 0.10 | Reference | 6 | 0 | 0.050 | 0.0 | 0.0 |
| | | West Basin | 15 | 1 | 0.050 | 0.010 | 0.060 |
| Chromium | 0.50 | Reference | 6 | 0 | 0.25 | 0.0 | 0.0 |
| | | West Basin | 15 | 3 | 0.33 | 0.16 | 0.42 |
| Copper | 1.0 | Reference | 6 | 4 | 1.0 | 0.55 | 1.4 |
| | | West Basin | 15 | 15 | 2.5 | 0.99 | 3.1 |
| Mercury | 0.020 | Reference | 6 | 6 | 0.060 | 0.010 | 0.070 |
| | | West Basin | 15 | 15 | 0.060 | 0.030 | 0.070 |
| Selenium | 0.50 | Reference | 6 | 5 | 0.56 | 0.16 | 0.68 |
| | | West Basin | 15 | 12 | 0.73 | 0.31 | 0.87 |
| Zinc | 1.0 - 3.0 | Reference | 6 | 3 | 8.7 | 4.6 | 13 |
| | | West Basin | 15 | 15 | 12 | 1.2 | 12 |
| **Butyltins, mg/kg** | | | | | | | |
| Dibutyltin | 0.0010 | Reference | 6 | 0 | 0.5 | 0.0 | 0.0 |
| | | West Basin | 15 | 10 | 0.0020 | 0.0010 | 0.0020 |
| Tributyltin | 0.0010 | Reference | 6 | 3 | 0.0020 | 0.0020 | 0.0040 |
| | | West Basin | 15 | 15 | 0.010 | 0.0040 | 0.012 |
| **Pesticides, mg/kg** | | | | | | | |
| α-BHC | 0.0050 | Reference | 6 | 0 | 0.0030 | 0.0 | 0.0 |
| | | West Basin | 15 | 1 | 0.0030 | 0.0010 | 0.0032 |
| Endosulfan II | 0.0050 | Reference | 6 | 2 | 0.0080 | 0.011 | 0.17 |
| | | West Basin | 15 | 5 | 0.011 | 0.013 | 0.018 |
| Endrin | 0.0050 | Reference | 6 | 0 | 0.0030 | 0.0 | 0.0 |
| | | West Basin | 15 | 3 | 0.0050 | 0.0080 | 0.0094 |
| 4,4'-DDD | 0.0050 | Reference | 6 | 4 | 0.019 | 0.019 | 0.035 |
| | | West Basin | 15 | 9 | 0.022 | 0.020 | 0.031 |
| 4,4'-DDE | 0.017 | Reference | 6 | 6 | 0.30 | 0.17 | 0.43 |
| | | West Basin | 15 | 15 | 0.39 | 0.23 | 0.50 |

Note:
* UCL – upper confidence limit.



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**Table 4-27**
**Results of California Halibut Gall Bladder Bile Analyses from the West Basin and Reference Stations**

| | Naphthalene (µg/mL) | Phenanthrene (µg/mL) | Pyrene (µg/mL) | Benzo(a)pyrene (µg/mL) |
|---|---|---|---|---|
| | | West Basin (n = 12) | | |
| | 153 | 104 | 53 | 6.7 |
| | 154 | 77 | 34 | 3.7 |
| | 104 | 77 | 43 | 5.6 |
| | 82 | 51 | 24 | 4.1 |
| | 58 | 44 | 21 | 2.7 |
| | 174 | 133 | 93 | 11 |
| | 96 | 71 | 39 | 5.2 |
| | 655 | 536 | 469 | 59 |
| | 268 | 170 | 120 | 17 |
| | 506 | 323 | 220 | 33 |
| | 261 | 203 | 132 | 18 |
| | 315 | 226 | 142 | 21 |
| Mean | 236 | 168 | 116 | 16 |
| Standard Deviation | 183 | 143 | 127 | 16 |
| | | Reference (n = 6) | | |
| | 122 | 95 | 60 | 8.0 |
| | 80 | 59 | 33 | 5.6 |
| | 206 | 165 | 118 | 17 |
| | 75 | 69 | 30 | 3.7 |
| | 72 | 46 | 13 | 1.9 |
| | 312 | 250 | 118 | 15 |
| Mean | 145 | 114 | 62 | 8.4 |
| Standard Deviation | 97 | 79 | 46 | 6.0 |

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**Table 4-28**
**Chemicals Detected in Clam Tissue**
**by Station and Sediment Evaluation Zone**

| Reference Station | 40010.1 | 40010.2 | 40010.3 | 40018.3 | 40032.1 | Mean | Standard Deviation |
|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 2.5 | 3.0 | 3.2 | 3.0 | 2.7 | 2.9 | 0.3 |
| Chromium | | 0.4 | | 0.4 | | 0.3 | 0.1 |
| Copper | 1.0 | 1.5 | 1.6 | 1.4 | 1.1 | 1.3 | 0.3 |
| Mercury | | 0.04 | | 0.03 | | 0.02 | 0.01 |
| Thallium | | | 0.6 | | | 0.3 | 0.2 |
| Zinc | 13.0 | 11.0 | 14.0 | 12.0 | 11.0 | 12.2 | 1.3 |
| **Butyltins, µg/kg** | | | | | | | |
| Tributyltin | 1.3 | | 1.9 | 1.4 | 5.1 | 2.0 | 1. 8 |
| **HPAH, µg/kg** | | | | | | | |
| Pyrene | | | | | | | |
| **Pesticides, µg/kg** | | | | | | | |
| 4,4'-DDE | 4.8 | 26.0 | 57.0 | 22.0 | 59.0 | 33.8 | 23.5 |

| Basin - Non-Pier Station | Station 24 | Zone A 29 | Zone B 6 | 8 | 14 | Mean | Standard Deviation |
|---|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 3.3 | 2.9 | 3.2 | 2.8 | 2.8 | 3.0 | 0.2 |
| Chromium | | | | | 0.4 | 0.2 | 0.1 |
| Copper | 1.3 | 1.1 | 1.5 | 1.4 | 1.7 | 1.4 | 0.2 |
| Mercury | | | 0.02 | | 0.02 | 0.01 | 0.01 |
| Thallium | | | | | | | |
| Zinc | 16. 0 | 12.0 | 11.0 | 12. 0 | 12.0 | 12.6 | 2.0 |
| **Butyltins, µg/kg** | | | | | | | |
| Tributyltin | 3.0 | 1.5 | 3.4 | 2.8 | 2.6 | 2.7 | 0.7 |
| **HPAH, µg/kg** | | | | | | | |
| Pyrene | | | | | | | |
| **Pesticides, µg/kg** | | | | | | | |
| 4,4'-DDE | 36.0 | 26.0 | 35.0 | 17.0 | 23.0 | 27.4 | 8.1 |

(table continues)

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Table 4-28 (continued)

| Pier Station | Zone G 46 | Zone G 51 | Zone H 43 | Zone H 49 | Mean | Standard Deviation |
|---|---|---|---|---|---|---|
| **Metals, mg/kg** | | | | | | |
| Arsenic | 3.2 | 2.9 | 2.6 | 2.7 | 2.9 | 0.3 |
| Chromium | | | | | | |
| Copper | 1.5 | 1.4 | 2.4 | 1.3 | 1.7 | 0.5 |
| Mercury | | 0.02 | | | 0.01 | 0.01 |
| Thallium | | | | | | |
| Zinc | 13.0 | 13.0 | 15.0 | 14.0 | 13.8 | 1.0 |
| **Butyltins, µg/kg** | | | | | | |
| Tributyltin | 1.6 | 1.8 | 1.5 | 1.8 | 1.7 | 0.2 |
| **HPAH, µg/kg** | | | | | | |
| Pyrene | | 20.0 | 20.0 | 30.0 | 18.8 | 10.3 |
| **Pesticides, µg/kg** | | | | | | |
| 4,4'-DDE | 88.0 | 28.0 | 37.0 | 5.4 | 39.6 | 34.9 |

Note:
Data are based on fish wet weight.

Blank space indicates sample was analyzed for compound, but not detected.

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## Table 4-29
## Surface Sediment Bioassay Test Results

| Station ID | Bioassay | | | | | |
|---|---|---|---|---|---|---|
| | Echinoderm[a] | | Amphipod | | Polychaete | |
| | Survival (percent) | Normal Development (percent) | Survival (percent) | Reburial (percent) | Survival (percent) | Growth (mg/d) |
| 1 | 96.0 | 1.0 | 85.0 | 92.0 | 100.0 | 0.134 |
| 2 | 33.7 | 0.0 | 91.0 | 92.6 | 100.0 | 0.116 |
| 3 | 100.0 | 84.0 | 93.0 | 88.2 | 95.0 | 0.075 |
| 4 | 65.0 | 0.0 | 90.0 | 98.9 | 100.0 | 0.068 |
| 5 | 32.0 | 7.0 | 87.0 | 96.6 | 92.0 | 0.132 |
| 6 | 52.0 | 0.0 | 87.0 | 93.3 | 96.0 | 0.098 |
| 7 | 66.3 | 0.0 | 87.0 | 98.5 | 92.0 | 0.103 |
| 8 | 64.3 | 0.7 | 87.0 | 92.0 | 92.0 | 0.104 |
| 9 | 96.0 | 11.0 | 88.0 | 100.0 | 92.0 | 0.095 |
| 10 | 100.0 | 89.7 | 91.0 | 97.7 | 96.0 | 0.101 |
| 11 | 97.7 | 87.3 | 98.8 | 98.0 | 88.0 | 0.106 |
| 12 | 97.0 | 0.3 | 88.0 | 98.8 | 100.0 | 0.095 |
| 13 | 42.3 | 0.3 | 92.5 | 98.9 | 92.0 | 0.087 |
| 14 | 64.0 | 0.0 | 96.3 | 97.4 | 100.0 | 0.123 |
| 15 | 91.7 | 57.0 | 93.0 | 96.9 | 96.0 | 0.089 |
| 16 | 90.0 | 67.7 | 91.0 | 96.7 | 92.0 | 0.093 |
| 17 | 46.3 | 0.0 | 88.0 | 97.9 | 96.0 | 0.067 |
| 18 | 97.0 | 86.7 | 92.0 | 97.8 | 96.0 | 0.097 |
| 19 | 97.3 | 86.7 | 89.0 | 100.0 | 100.0 | 0.088 |
| 20 | 87.0 | 92.3 | 87.0 | 97.6 | 92.0 | 0.077 |
| 21 | 99.3 | 92.3 | 85.0 | 94.1 | 84.0 | 0.066 |
| 22 | 89.0 | 89.3 | 90.0 | 89.8 | 96.0 | 0.085 |
| 23 | 87.3 | 93.3 | 95.0 | 96.6 | 100.0 | 0.093 |
| 24[b] | 60.3 | 0.0 | 92.0 | 100.0 | 84.0 | 0.134 |
| 25 | 50.7 | 0.0 | 93.0 | 96.7 | 100.0 | 0.101 |
| 26 | 91.3 | 91.3 | 90.0 | 94.5 | 96.0 | 0.089 |
| 27 | 87.7 | 93.7 | 81.0 | 95.1 | 100.0 | 0.076 |
| 28 | 84.3 | 94.3 | 90.0 | 90.4 | 100.0 | 0.066 |
| 29 | 97.7 | 96.3 | 83.0 | 92.8 | 92.0 | 0.092 |
| 30 | 92.3 | 93.3 | 83.5 | 95.8 | 96.0 | 0.067 |
| 31 | 25.0 | 0.0 | 86.0 | 95.1 | 92.0 | 0.094 |
| 32 | 82.7 | 40.3 | 91.0 | 97.9 | 88.0 | 0.110 |
| 33 | 46.0 | 0.5 | 83.0 | 95.2 | 96.0 | 0.104 |
| 41 | 86.7 | 51.3 | 57.0 | 77.9 | 100.0 | 0.077 |
| 42 | 51.7 | 0.0 | 29.0 | 61.0 | 92.0 | 0.133 |
| 43 | 86.3 | 0.0 | 78.0 | 96.2 | 92.0 | 0.164 |
| 44 | 81.7 | 0.3 | 16.3 | 24.6 | 96.0 | 0.138 |
| 45 | 36.3 | 0.0 | 53.0 | 63.0 | 92.0 | 0.132 |
| 46 | 50.7 | 0.0 | 21.0 | 45.2 | 92.0 | 0.158 |
| 47 | 72.7 | 0.0 | 83.0 | 91.5 | 84.0 | 0.083 |
| 48 | 91.0 | 0.0 | 23.0 | 53.8 | 76.0 | 0.187 |
| 49 | 77.7 | 0.0 | 73.0 | 77.9 | 84.0 | 0.150 |
| 50 | 75.3 | 0.0 | 75.0 | 93.0 | 100.0 | 0.138 |
| 51[b] | 72.7 | 0.0 | 69.0 | 92.6 | 88.0 | 0.145 |
| 52 | 71.7 | 0.0 | 83.0 | 91.9 | 80.0 | 0.129 |

Notes:

[a] 100 percent pore water concentration.

[b] Dissolved oxygen levels fell below 60 percent saturation during pore water bioassay.



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## Table 4-30
## Determination of Sediment Toxicity by Echinoderm Bioassay for West Basin Stations[1]

| Station ID | Survival | | | | Normal Development | | | |
|---|---|---|---|---|---|---|---|---|
| | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect[2] | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect[2] |
| 1 | 13 | No | No | No Hit | 99 | Yes | Yes | Hit |
| 2 | 60 | Yes | Yes | Hit | 100 | Yes | Yes | Hit |
| 3 | 18 | No | No | No Hit | 0 | No | No | No Hit |
| 4 | 23 | Yes | No | No Hit | 100 | Yes | Yes | Hit |
| 5 | 62 | Yes | Yes | Hit | 92 | Yes | Yes | Hit |
| 6 | 39 | Yes | Yes | Hit | 100 | Yes | Yes | Hit |
| 7 | 22 | Yes | No | No Hit | 100 | Yes | Yes | Hit |
| 8 | 24 | Yes | No | No Hit | 99 | Yes | Yes | Hit |
| 9 | 13 | No | No | No Hit | 87 | Yes | Yes | Hit |
| 10 | 18 | No | No | No Hit | 7 | No | No | No Hit |
| 11 | 15 | No | No | No Hit | 4 | No | No | No Hit |
| 12 | 14 | No | No | No Hit | 100 | Yes | Yes | Hit |
| 13 | 50 | Yes | Yes | Hit | 100 | Yes | Yes | Hit |
| 14 | 25 | Yes | No | No Hit | 100 | Yes | Yes | Hit |
| 15 | 8 | No | No | No Hit | 32 | Yes | Yes | Hit |
| 16 | 6 | No | No | No Hit | 19 | No | Yes | No Hit |
| 17 | 45 | Yes | Yes | [illegible] | 100 | Yes | Yes | Hit |
| 18 | 14 | No | No | [illegible]rit | 4 | No | No | No Hit |
| 19 | 15 | No | No | No Hit | 4 | No | No | No Hit |
| 20 | 3 | No | No | No Hit | 10 | No | No | No Hit |
| 21 | 17 | No | No | No Hit | 10 | No | No | No Hit |
| 22 | 5 | No | No | No Hit | 7 | No | No | No Hit |
| 23 | 3 | No | No | No Hit | 11 | No | No | No Hit |
| 24[3] | 29 | Yes | Yes | No Hit | 100 | Yes | Yes | No Hit |
| 25 | 40 | Yes | Yes | Hit | 100 | Yes | Yes | Hit |
| 26 | 8 | No | No | No Hit | 9 | No | No | No Hit |
| 27 | 3 | No | No | No Hit | 12 | No | No | No Hit |
| 28 | 1 | No | No | No Hit | 13 | No | No | No Hit |
| 29 | 15 | No | No | No Hit | 15 | No | No | No Hit |
| 30 | 9 | No | No | No Hit | 11 | No | No | No Hit |
| 31 | 71 | Yes | Yes | Hit | 100 | Yes | Yes | Hit |
| 32 | 2 | No | No | No Hit | 52 | Yes | Yes | Hit |
| 33 | 46 | Yes | Yes | Hit | 99 | Yes | Yes | Hit |
| 41 | 2 | No | No | No Hit | 39 | Yes | Yes | Hit |
| 42 | 39 | Yes | Yes | Hit | 100 | Yes | Yes | Hit |
| 43 | 2 | No | No | No Hit | 100 | Yes | Yes | Hit |
| 44 | 4 | No | No | No Hit | 100 | Yes | Yes | Hit |
| 45 | 57 | Yes | Yes | Hit | 100 | Yes | Yes | Hit |
| 46 | 40 | Yes | Yes | Hit | 100 | Yes | Yes | Hit |
| 47 | 14 | No | No | No Hit | 100 | Yes | Yes | Hit |
| 48 | 7 | No | No | No Hit | 100 | Yes | Yes | Hit |
| 49 | 8 | No | No | No Hit | 100 | Yes | Yes | Hit |
| 50 | 11 | No | No | No Hit | 100 | Yes | Yes | Hit |
| 51[3] | 14 | No | No | No Hit | 100 | Yes | Yes | Hit |
| 52 | 15 | No | No | No Hit | 100 | Yes | Yes | Hit |

Notes:

[1] 100 percent pore water concentration.

[2] Anomalous toxicity effects discussed in text.

[3] Dissolved oxygen levels fell below 60 percent saturation during bioassay.



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## Table 4-31
## Determination of Sediment Toxicity by Amphipod Bioassay for West Basin Stations

| | Survival | | | | Reburial | | | |
|---|---|---|---|---|---|---|---|---|
| Station ID | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect |
| 1 | 0 | No | No | No Hit | 5 | No | Yes | No Hit |
| 2 | 8 | No | No | No Hit | 4 | No | No | No Hit |
| 3 | 10 | No | No | No Hit | 9 | No | Yes | No Hit |
| 4 | 6 | No | No | No Hit | 3 | No | No | No Hit |
| 5 | 3 | No | No | No Hit | 0 | No | No | No Hit |
| 6 | 3 | No | No | No Hit | 3 | No | No | No Hit |
| 7 | 3 | No | No | No Hit | 2 | No | No | No Hit |
| 8 | 3 | No | No | No Hit | 5 | No | Yes | No Hit |
| 9 | 4 | No | No | No Hit | 4 | No | No | No Hit |
| 10 | 8 | No | No | No Hit | 1 | No | No | No Hit |
| 11 | 17 | No | No | No Hit | 2 | No | No | No Hit |
| 12 | 4 | No | No | No Hit | 2 | No | No | No Hit |
| 13 | 9 | No | No | No Hit | 3 | No | No | No Hit |
| 14 | 14 | No | No | No Hit | 1 | No | No | No Hit |
| 15 | 10 | No | No | No Hit | 1 | No | No | No Hit |
| 16 | 8 | No | No | No Hit | 0 | No | No | No Hit |
| 17 | 4 | No | No | No Hit | 2 | No | No | No Hit |
| 18 | 9 | No | No | No Hit | 1 | No | No | No Hit |
| 19 | 5 | No | No | No Hit | 4 | No | No | No Hit |
| 20 | 3 | No | No | No Hit | 1 | No | No | No Hit |
| 21 | 0 | No | No | No Hit | 2 | No | No | No Hit |
| 22 | 6 | No | No | No Hit | 7 | No | Yes | No Hit |
| 23 | 12 | No | No | No Hit | 0 | No | No | No Hit |
| 24 | 9 | No | No | No Hit | 4 | No | No | No Hit |
| 25 | 10 | No | No | No Hit | 0 | No | No | No Hit |
| 26 | 6 | No | No | No Hit | 2 | No | No | No Hit |
| 27 | 4 | No | No | No Hit | 1 | No | No | No Hit |
| 28 | 6 | No | No | No Hit | 6 | No | Yes | No Hit |
| 29 | 2 | No | No | No Hit | 4 | No | No | No Hit |
| 30 | 1 | No | No | No Hit | 1 | No | No | No Hit |
| 31 | 2 | No | No | No Hit | 1 | No | No | No Hit |
| 32 | 8 | No | No | No Hit | 2 | No | No | No Hit |
| 33 | 2 | No | No | No Hit | 1 | No | No | No Hit |
| 41 | 33 | Yes | Yes | Hit | 19 | No | Yes | No Hit |
| 42 | 66 | Yes | Yes | Hit | 37 | Yes | Yes | Hit |
| 43 | 8 | No | No | No Hit | 0 | No | No | No Hit |
| 44 | 81 | Yes | Yes | Hit | 74 | Yes | Yes | Hit |
| 45 | 37 | Yes | Yes | Hit | 35 | Yes | Yes | Hit |
| 46 | 75 | Yes | Yes | Hit | 53 | Yes | Yes | Hit |
| 47 | 2 | No | No | No Hit | 5 | No | Yes | No Hit |
| 48 | 73 | Yes | Yes | Hit | 44 | Yes | Yes | Hit |
| 49 | 14 | No | Yes | No Hit | 19 | No | Yes | No Hit |
| 50 | 11 | No | Yes | No Hit | 4 | No | No | No Hit |
| 51 | 18 | No | Yes | No Hit | 4 | No | No | No Hit |
| 52 | 2 | No | No | No Hit | 5 | No | Yes | No Hit |

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## Table 4-32
## Determination of Sediment Toxicity by Polychaete Bioassay for West Basin Stations

| Station ID | Survival | | | | Growth | | | |
|---|---|---|---|---|---|---|---|---|
| | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect* | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect |
| 1 | 3 | No | No | No Hit | 53 | Yes | No | No Hit |
| 2 | 3 | No | No | No Hit | 32 | Yes | No | No Hit |
| 3 | 2 | No | No | No Hit | 14 | No | No | No Hit |
| 4 | 3 | No | No | No Hit | 22 | No | No | No Hit |
| 5 | 5 | No | No | No Hit | 51 | Yes | No | No Hit |
| 6 | 1 | No | No | No Hit | 12 | No | No | No Hit |
| 7 | 5 | No | No | No Hit | 18 | No | No | No Hit |
| 8 | 5 | No | No | No Hit | 19 | No | No | No Hit |
| 9 | 5 | No | No | No Hit | 8 | No | No | No Hit |
| 10 | 1 | No | No | No Hit | 15 | No | No | No Hit |
| 11 | 9 | No | Yes | No Hit | 21 | No | No | No Hit |
| 12 | 3 | No | No | No Hit | 8 | No | No | No Hit |
| 13 | 5 | No | No | No Hit | 1 | No | No | No Hit |
| 14 | 3 | No | No | No Hit | 40 | Yes | No | No Hit |
| 15 | 1 | No | No | No Hit | 2 | No | No | No Hit |
| 16 | 5 | No | No | No Hit | 6 | No | No | No Hit |
| 17 | 1 | No | No | No Hit | 24 | No | No | No Hit |
| 18 | 1 | No | No | No Hit | 11 | No | No | No Hit |
| 19 | 3 | No | No | No Hit | 0 | No | No | No Hit |
| 20 | 5 | No | No | No Hit | 12 | No | No | No Hit |
| 21 | 13 | No | Yes | No Hit | 25 | No | No | No Hit |
| 22 | 1 | No | No | No Hit | 3 | No | No | No Hit |
| 23 | 3 | No | No | No Hit | 6 | No | No | No Hit |
| 24 | 13 | No | Yes | No Hit | 53 | Yes | No | No Hit |
| 25 | 3 | No | No | No Hit | 15 | No | No | No Hit |
| 26 | 1 | No | No | No Hit | 2 | No | No | No Hit |
| 27 | 3 | No | No | No Hit | 13 | No | No | No Hit |
| 28 | 3 | No | No | No Hit | 25 | No | No | No Hit |
| 29 | 5 | No | No | No Hit | 5 | No | No | No Hit |
| 30 | 1 | No | No | No Hit | 24 | No | No | No Hit |
| 31 | 5 | No | No | No Hit | 7 | No | No | No Hit |
| 32 | 9 | No | Yes | No Hit | 26 | No | No | No Hit |
| 33 | 1 | No | No | No Hit | 19 | No | No | No Hit |
| 41 | 3 | No | No | No Hit | 12 | No | No | No Hit |
| 42 | 5 | No | No | No Hit | 52 | Yes | No | No Hit |
| 43 | 5 | No | No | No Hit | 87 | Yes | No | No Hit |
| 44 | 1 | No | No | No Hit | 58 | Yes | No | No Hit |
| 45 | 5 | No | No | No Hit | 51 | Yes | No | No Hit |
| 46 | 5 | No | No | No Hit | 80 | Yes | No | No Hit |
| 47 | 13 | No | Yes | No Hit | 5 | No | No | No Hit |
| 48 | 21 | Yes | Yes | Hit | 113 | Yes | No | No Hit |
| 49 | 13 | No | Yes | No Hit | 71 | Yes | No | No Hit |
| 50 | 3 | No | No | No Hit | 58 | Yes | No | No Hit |
| 51 | 9 | No | Yes | No Hit | 65 | Yes | No | No Hit |
| 52 | 17 | No | No | No Hit | 47 | Yes | No | No Hit |



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**Table 4-33**
**Community Indices for the West Basin Benthic Infauna Community and Major Taxonomic Groups**

| Station ID | West Basin Benthic Infauna Community Indices | | | | | | |
|---|---|---|---|---|---|---|---|
| | Number of Taxa | Total Abundance | Total Biomass | Shannon-Wiener Diversity Index | Margalef Diversity Index | Evenness | Dominance Index |
| 1 | 32 | 172 | 0.588 | 2.73 | 6.0 | 0.79 | 9 |
| 2 | 42 | 228 | 2.730 | 2.67 | 7.6 | 0.71 | 8 |
| 3 | 24 | 73 | 2.775 | 2.59 | 5.4 | 0.81 | 8 |
| 4 | 32 | 192 | 19.201 | 2.79 | 5.9 | 0.80 | 9 |
| 5 | 56 | 1856 | 4.343 | 1.13 | 7.3 | 0.28 | 1 |
| 6 | 36 | 174 | 3.034 | 2.75 | 6.8 | 0.77 | 10 |
| 7 | 31 | 106 | 1.599 | 2.68 | 6.4 | 0.78 | 11 |
| 8 | 25 | 84 | 1.799 | 2.56 | 5.4 | 0.80 | 8 |
| 9 | 9 | 17 | 0.055 | 1.88 | 2.8 | 0.85 | 5 |
| 10 | 8 | 24 | 0.457 | 1.88 | 2.2 | 0.90 | 4 |
| 11 | 21 | 57 | 1.623 | 2.74 | 4.9 | 0.90 | 11 |
| 12 | 10 | 15 | 1.394 | 2.08 | 3.3 | 0.90 | 7 |
| 13 | 36 | 114 | 1.463 | 3.12 | 7.4 | 0.87 | 14 |
| 14 | 34 | 139 | 2.060 | 3.17 | 6.7 | 0.90 | 14 |
| 15 | 9 | 14 | 0.076 | 2.07 | 3.0 | 0.94 | 6 |
| 16 | 21 | 60 | 0.457 | 2.25 | 4.9 | 0.74 | 7 |
| 17 | 37 | 137 | 2.642 | 3.12 | 7.3 | 0.87 | 14 |
| 18 | 20 | 52 | 2.745 | 2.78 | 4.8 | 0.93 | 10 |
| 19 | 18 | 42 | 7.250 | 2.56 | 4.5 | 0.88 | 8 |
| 20 | 22 | 56 | 0.516 | 2.81 | 5.2 | 0.91 | 11 |
| 21 | 29 | 85 | 2.797 | 2.86 | 6.3 | 0.85 | 12 |
| 22 | 30 | 95 | 5.062 | 2.61 | 6.4 | 0.77 | 10 |
| 23 | 33 | 113 | 3.637 | 3.11 | 6.8 | 0.89 | 13 |
| 24 | 42 | 175 | 3.873 | 2.99 | 7.9 | 0.80 | 13 |
| 25 | 51 | 213 | 7.859 | 3.18 | 9.3 | 0.81 | 15 |
| 26 | 23 | 79 | 10.937 | 2.58 | 5.0 | 0.82 | 8 |
| 27 | 29 | 76 | 0.382 | 2.82 | 6.5 | 0.84 | 12 |
| 28 | 27 | 69 | 0.982 | 2.75 | 6.1 | 0.84 | 12 |
| 29 | 38 | 91 | 1.819 | 3.30 | 8.2 | 0.91 | 17 |
| 30 | 39 | 137 | 3.709 | 3.21 | 7.7 | 0.88 | 15 |
| 31 | 46 | 133 | 12.964 | 3.56 | 9.2 | 0.93 | 22 |
| 32 | 58 | 183 | 2.428 | 3.68 | 10.9 | 0.91 | 25 |
| 33 | 49 | 162 | 8.669 | 3.52 | 9.4 | 0.90 | 21 |
| 41 | 26 | 109 | 2.168 | 2.77 | 5.3 | 0.85 | 10 |
| 42 | 106 | 1266 | 293.701 | 3.55 | 14.7 | 0.76 | 20 |
| 43 | 38 | 635 | 3.240 | 1.90 | 5.7 | 0.52 | 4 |
| 44 | 91 | 1415 | 111.335 | 3.19 | 12.4 | 0.71 | 14 |
| 45 | 79 | 929 | 102.597 | 3.18 | 11.4 | 0.73 | 12 |
| 46 | 78 | 4264 | 66.410 | 1.45 | 9.2 | 0.33 | 2 |
| 47 | 96 | 2345 | 92.349 | 2.84 | 12.2 | 0.62 | 8 |
| 48 | 57 | 1105 | 16.135 | 2.13 | 8.0 | 0.53 | 4 |
| 49 | 49 | 627 | 9.565 | 2.50 | 7.5 | 0.64 | 7 |
| 50 | 97 | 1113 | 159.599 | 3.41 | 13.7 | 0.75 | 15 |
| 51 | 58 | 830 | 50.541 | 2.51 | 8.5 | 0.62 | 6 |
| 52 | 46 | 428 | 9.707 | 2.60 | 7.4 | 0.68 | 7 |

(table continues)



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Table 4-33 (continued)

| Station ID | POLYCHAETES | | | CRUSTACEANS | | | MOLLUSKS | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of Taxa | Abundance | Biomass | Number of Taxa | Abundance | Biomass | Number of Taxa | Abundance | Biomass |
| 1 | 11 | 106 | 0.270 | 12 | 49 | 0.153 | 7 | 15 | 0.164 |
| 2 | 22 | 184 | 0.570 | 6 | 15 | 0.139 | 10 | 18 | 2.006 |
| 3 | 12 | 50 | 0.355 | 4 | 5 | 0.080 | 6 | 16 | 2.339 |
| 4 | 18 | 155 | 0.795 | 7 | 27 | 0.646 | 5 | 5 | 1.273 |
| 5 | 22 | 1614 | 1.416 | 18 | 211 | 0.792 | 11 | 24 | 2.110 |
| 6 | 17 | 88 | 1.064 | 8 | 70 | 0.088 | 8 | 12 | 1.764 |
| 7 | 18 | 73 | 0.942 | 6 | 23 | 0.606 | 6 | 9 | 0.050 |
| 8 | 12 | 66 | 0.764 | 4 | 4 | 0.003 | 8 | 13 | 1.031 |
| 9 | 6 | 14 | 0.049 | 1 | 1 | 0.001 | 2 | 2 | 0.005 |
| 10 | 7 | 23 | 0.453 | 0 | 0 | 0.000 | 1 | 1 | 0.004 |
| 11 | 14 | 44 | 0.575 | 1 | 1 | 0.001 | 3 | 5 | 0.020 |
| 12 | 7 | 11 | 0.093 | 0 | 0 | 0.000 | 1 | 2 | 1.300 |
| 13 | 22 | 66 | 0.438 | 7 | 32 | 0.899 | 6 | 14 | 0.125 |
| 14 | 21 | 110 | 0.742 | 7 | 18 | 0.079 | 5 | 8 | 1.230 |
| 15 | 7 | 11 | 0.049 | 1 | 1 | 0.026 | 0 | 0 | 0.000 |
| 16 | 16 | 52 | 0.229 | 2 | 2 | 0.076 | 2 | 2 | 0.151 |
| 17 | 23 | 105 | 0.483 | 7 | 19 | 0.020 | 4 | 7 | 0.051 |
| 18 | 16 | 46 | 0.871 | 0 | 0 | 0.000 | 3 | 4 | 1.873 |
| 19 | 13 | 36 | 0.412 | 3 | 4 | 6.726 | 1 | 1 | 0.111 |
| 20 | 13 | 44 | 0.271 | 4 | 6 | 0.201 | 3 | 4 | 0.042 |
| 21 | 19 | 71 | 0.674 | 3 | 5 | 1.801 | 5 | 6 | 0.228 |
| 22 | 17 | 81 | 0.434 | 4 | 4 | 1.736 | 7 | 7 | 0.170 |
| 23 | 21 | 91 | 0.811 | 3 | 5 | 0.026 | 5 | 9 | 2.378 |
| 24 | 28 | 137 | 1.411 | 8 | 16 | 0.132 | 3 | 5 | 2.267 |
| 25 | 31 | 159 | 1.968 | 7 | 29 | 0.064 | 9 | 15 | 5.824 |
| 26 | 16 | 45 | 0.962 | 2 | 23 | 9.847 | 4 | 10 | 0.127 |
| 27 | 18 | 64 | 0.329 | 3 | 3 | 0.004 | 5 | 5 | 0.024 |
| 28 | 14 | 50 | 0.320 | 3 | 3 | 0.007 | 7 | 11 | 0.633 |
| 29 | 27 | 57 | 0.998 | 7 | 28 | 0.418 | 1 | 1 | 0.004 |
| 30 | 22 | 86 | 0.775 | 8 | 36 | 2.243 | 5 | 10 | 0.297 |
| 31 | 23 | 73 | 1.255 | 8 | 35 | 2.013 | 9 | 14 | 9.603 |
| 32 | 36 | 109 | 1.167 | 6 | 20 | 0.281 | 8 | 17 | 0.867 |
| 33 | 21 | 75 | 1.226 | 8 | 32 | 0.652 | 14 | 31 | 6.484 |
| 41 | 15 | 61 | 0.700 | 4 | 11 | 0.000 | 4 | 7 | 0.060 |
| 42 | 45 | 530 | 7.086 | 19 | 263 | 1.891 | 24 | 412 | 270.884 |
| 43 | 14 | 263 | 0.539 | 6 | 86 | 0.165 | 10 | 17 | 0.444 |
| 44 | 47 | 830 | 4.578 | 12 | 98 | 0.813 | 18 | 463 | 103.228 |
| 45 | 41 | 422 | 9.730 | 15 | 68 | 2.006 | 16 | 425 | 90.710 |
| 46 | 38 | 580 | 2.511 | 10 | 345 | 0.654 | 15 | 320 | 62.873 |
| 47 | 46 | 1963 | 9.984 | 14 | 127 | 0.237 | 21 | 191 | 64.998 |
| 48 | 36 | 952 | 1.811 | 9 | 132 | 0.410 | 8 | 15 | 1.927 |
| 49 | 27 | 540 | 1.482 | 3 | 6 | 0.056 | 8 | 51 | 4.192 |
| 50 | 47 | 669 | 7.459 | 15 | 34 | 1.099 | 25 | 358 | 140.638 |
| 51 | 30 | 603 | 2.954 | 5 | 17 | 2.183 | 15 | 174 | 32.379 |
| 52 | 17 | 289 | 0.829 | 5 | 22 | 0.350 | 13 | 67 | 1.946 |

(table continues)



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Table 4-33 (continued)

| Station ID | ECHINODERMS | | | OTHERS | | |
|---|---|---|---|---|---|---|
| | Number of Taxa | Abundance | Biomass | Number of Taxa | Abundance | Biomass |
| 1 | 0 | 0 | 0.000 | 2 | 2 | 0.001 |
| 2 | 0 | 0 | 0.000 | 4 | 11 | 0.015 |
| 3 | 0 | 0 | 0.000 | 2 | 2 | 0.001 |
| 4 | 0 | 0 | 0.000 | 2 | 5 | 16.487 |
| 5 | 0 | 0 | 0.000 | 5 | 7 | 0.025 |
| 6 | 0 | 0 | 0.000 | 3 | 4 | 0.118 |
| 7 | 0 | 0 | 0.000 | 1 | 1 | 0.001 |
| 8 | 0 | 0 | 0.000 | 1 | 1 | 0.001 |
| 9 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 10 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 11 | 0 | 0 | 0.000 | 3 | 7 | 1.027 |
| 12 | 0 | 0 | 0.000 | 2 | 2 | 0.001 |
| 13 | 0 | 0 | 0.000 | 1 | 2 | 0.001 |
| 14 | 0 | 0 | 0.000 | 1 | 3 | 0.009 |
| 15 | 0 | 0 | 0.000 | 1 | 2 | 0.001 |
| 16 | 0 | 0 | 0.000 | 1 | 4 | 0.001 |
| 17 | 0 | 0 | 0.000 | 3 | 6 | 2.088 |
| 18 | 0 | 0 | 0.000 | 1 | 2 | 0.001 |
| 19 | 0 | 0 | 0.000 | 1 | 1 | 0.001 |
| 20 | 1 | 1 | 0.001 | 1 | 1 | 0.001 |
| 21 | 0 | 0 | 0.000 | 2 | 3 | 0.094 |
| 22 | 1 | 2 | 0.001 | 1 | 1 | 2.721 |
| 23 | 0 | 0 | 0.000 | 4 | 8 | 0.422 |
| 24 | 0 | 0 | 0.000 | 3 | 17 | 0.063 |
| 25 | 1 | 1 | 0.001 | 3 | 9 | 0.002 |
| 26 | 1 | 1 | 0.001 | 0 | 0 | 0.000 |
| 27 | 0 | 0 | 0.000 | 3 | 4 | 0.025 |
| 28 | 0 | 0 | 0.000 | 3 | 5 | 0.022 |
| 29 | 2 | 4 | 0.397 | 1 | 1 | 0.002 |
| 30 | 0 | 0 | 0.000 | 4 | 5 | 0.394 |
| 31 | 0 | 0 | 0.000 | 6 | 11 | 0.093 |
| 32 | 1 | 1 | 0.108 | 7 | 36 | 0.005 |
| 33 | 2 | 6 | 0.040 | 4 | 18 | 0.267 |
| 41 | 0 | 0 | 0.000 | 3 | 30 | 1.408 |
| 42 | 6 | 29 | 0.411 | 12 | 32 | 13.429 |
| 43 | 0 | 0 | 0.000 | 8 | 269 | 2.092 |
| 44 | 2 | 4 | 0.018 | 12 | 20 | 2.698 |
| 45 | 2 | 8 | 0.040 | 5 | 6 | 0.111 |
| 46 | 2 | 5 | 0.022 | 13 | 3014 | 0.350 |
| 47 | 3 | 10 | 0.325 | 12 | 54 | 16.805 |
| 48 | 0 | 0 | 0.000 | 4 | 6 | 11.987 |
| 49 | 2 | 4 | 0.547 | 9 | 26 | 3.288 |
| 50 | 4 | 34 | 1.316 | 6 | 18 | 9.087 |
| 51 | 1 | 7 | 1.801 | 7 | 29 | 11.224 |
| 52 | 0 | 0 | 0.000 | 11 | 50 | 6.582 |

Note:
Biomass reported in grams.



0 0 3 9 9 3

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**Table 4-34**
**Summary Statistics of Community Indices for Basin Stations for the West Basin Benthic Infauna Community and Major Taxonomic Groups**

| Taxonomic Group / Index | Minimum | Maximum | Mean | Standard Deviation |
|---|---|---|---|---|
| **Total** | | | | |
| Abundance | 14 | 1856 | 157 | 306 |
| Number of Taxa | 8 | 58 | 31 | 13 |
| Biomass | 0.055 | 19 | 3.65 | 4.1 |
| Shannon-Wiener Diversity Index | 1.13 | 3.68 | 2.74 | 0.521 |
| Margalef Diversity Index | 2.20 | 10.94 | 6.27 | 1.953 |
| Evenness | 0.28 | 0.94 | 0.83 | 0.114 |
| Dominance Index | 1.0 | 25.0 | 11.2 | 5.0 |
| **Polychaetes** | | | | |
| Abundance | 11 | 1614 | 119 | 267 |
| Number of Taxa | 6 | 36 | 18 | 7 |
| Biomass | 0.05 | 1.97 | 0.70 | 0.441 |
| **Crustaceans** | | | | |
| Abundance | 0 | 211 | 22 | 37 |
| Number of Taxa | 0 | 18 | 5 | 4 |
| Biomass | 0 | 9.85 | 0.88 | 2.019 |
| **Mollusks** | | | | |
| Abundance | 0 | 31 | 9.1 | 7.0 |
| Number of Taxa | 0 | 14 | 5 | 3 |
| Biomass | 0 | 9.60 | 1.31 | 2.120 |
| **Echinoderms** | | | | |
| Abundance | 0 | 0.5 | 1.3 | 1 |
| Number of Taxa | 0 | 0.3 | 0.6 | 1 |
| Biomass | 0 | 0.40 | 0.02 | 0.070 |
| **Others** | | | | |
| Abundance | 0 | 36 | 6 | 8 |
| Number of Taxa | 0 | 7 | 2 | 2 |
| Biomass | 0 | 16.49 | 0.74 | 2.851 |

Note:
Biomass reported in grams.

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**Table 4-35**
**Summary Statistics of Community Indices for Pier Stations for the West Basin Benthic Infauna Community and Major Taxanomic Groups**

| Taxonomic Group / Index | Minimum | Maximum | Mean | Standard Deviation |
|---|---|---|---|---|
| **Total** | | | | |
| Abundance | 428 | 4264 | 1360 | 1093 |
| Number of Taxa | 38 | 106 | 72 | 24 |
| Biomass | 3.240 | 294 | 83.20 | 86.3 |
| Shannon-Wiener Diversity Index | 1.45 | 3.55 | 2.66 | 0.658 |
| Margalef Diversity Index | 5.73 | 14.70 | 10.07 | 2.944 |
| Evenness | 0.33 | 0.76 | 0.63 | 0.127 |
| Dominance Index | 2.0 | 20.0 | 9.0 | 5.5 |
| **Polychaetes** | | | | |
| Abundance | 263 | 1963 | 695 | 468 |
| Number of Taxa | 14 | 47 | 35 | 12 |
| Biomass | 0.54 | 9.98 | 4.45 | 3.531 |
| **Crustaceans** | | | | |
| Abundance | 6 | 345 | 109 | 107 |
| Number of Taxa | 3 | 19 | 10 | 5 |
| Biomass | 0.06 | 2.18 | 0.90 | 0.787 |
| **Mollusks** | | | | |
| Abundance | 15 | 463 | 227 | 175 |
| Number of Taxa | 8 | 25 | 16 | 6 |
| Biomass | 0.44 | 270.88 | 70.38 | 81.732 |
| **Echinoderms** | | | | |
| Abundance | 0 | 34 | 9 | 12 |
| Number of Taxa | 0 | 6 | 2 | 2 |
| Biomass | 0.00 | 1.80 | 0.41 | 0.610 |
| **Others** | | | | |
| Abundance | 6 | 3014 | 320 | 896 |
| Number of Taxa | 4 | 13 | 9 | 3 |
| Biomass | 0.11 | 16.805 | 7.059 | 5.768 |

Note:
Biomass reported in grams.

0395



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**Table 4-36**
**Most Abundant Benthic Infauna Species for the West Basin**
**(number of individuals per station)**

| Species | Basin Stations | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| *Pseudopolydora paucibranchiata* | 30 | 60 | 3 | 12 | 1464 | 7 | 1 | 2 | | | | | | 3 | | | |
| *Monticellina tesselata* | 13 | 32 | 2 | 9 | 35 | 4 | 4 | 17 | 1 | | 3 | | 4 | 5 | | 5 | 14 |
| *Amphideutopus oculatus* | 25 | | | 18 | 88 | 52 | | 1 | | | | | 15 | 6 | | | 3 |
| *Cossura* sp. A | 6 | 42 | 7 | 15 | 15 | 11 | 3 | 7 | 6 | | 3 | 5 | 1 | 10 | 3 | 27 | 1 |
| *Aphelochaeta multifilis* Type 2 | | 1 | | 7 | 10 | 16 | 37 | 21 | | 4 | 3 | | 13 | 14 | | 1 | 24 |
| *Chaetozone corona* | 3 | 7 | 22 | 15 | 6 | 1 | 1 | | 4 | | 6 | | 1 | 2 | 1 | 1 | 5 |
| *Paraprionospio pinnata* | | 3 | 1 | 3 | | 2 | 7 | 5 | | 6 | 13 | 1 | 4 | 1 | 1 | 4 | 2 |
| *Euchone limnicola* | 36 | 3 | | 5 | 12 | 23 | | | | | | | 13 | 17 | 1 | | 2 |
| *Mediomastus* sp. | 6 | 14 | 1 | 1 | 27 | 2 | | 1 | | | | | 2 | 4 | | | 1 |
| *Euclymene grossa newporti* | | | | | | 5 | | | 1 | | | | | 4 | | | |
| *Phoronida* | | 2 | 1 | | 3 | 1 | | | | | | 1 | | | 2 | 4 | |
| *Marphysa* sp. A | | | | | | 3 | 4 | | | 6 | 2 | 1 | 4 | 9 | | | 3 |
| *Scleroplax granulata* | 2 | 3 | 2 | | 2 | 2 | 8 | 1 | | | | | 10 | 5 | | 1 | 3 |
| *Theora lubrica* | 6 | 7 | 7 | 1 | 14 | 4 | | 4 | | | | | 5 | | | | 3 |
| *Leitoscoloplos pugettensis* | 3 | | | | 8 | | | 2 | | 1 | | | 4 | 5 | | 1 | 7 |
| *Exogone lourei* | | 1 | | 45 | 11 | | | | | | | | | | | | 6 |
| *Diopatra tridentata* | 1 | | 4 | | | | 3 | 2 | | 2 | 2 | | 1 | | 3 | 1 | 1 |
| *Neotrypaea californiensis* | 1 | 3 | | 3 | 1 | 3 | 3 | | | | | | 3 | 2 | 1 | 1 | |
| *Streblosoma* sp. B (SCAMIT) | | | 2 | 7 | | 5 | 2 | 6 | | | 3 | | 1 | | | 2 | 1 |
| *Tanais* sp. | 6 | | | | 42 | 1 | | | | | | | | | | | 7 |
| *Hemiproto* sp. A | | | | | 52 | | | | | | | | 1 | | | | 1 |
| *Cossura candida* | | | | | | | | | | | | | | | | | |
| *Tubulanus polymorphus* | 1 | 3 | 1 | 1 | 1 | 2 | 1 | | | | 3 | 1 | 2 | 3 | | | 2 |
| *Nereis procera* | | 3 | 1 | | | 1 | 1 | | | | 1 | 1 | 3 | | 1 | 2 | 2 |
| *Euphilomedes carcharodonta* | 4 | 6 | | 2 | 3 | 2 | 6 | 1 | 1 | | 1 | | 1 | 1 | | | |
| *Compsomyax subdiaphanus* | | 1 | 5 | 1 | 1 | 1 | | | | | 2 | 2 | | | | 1 | 1 |
| *Spiophanes missionensis* | 3 | 2 | | 4 | 1 | | | | | | 1 | | | 3 | | 1 | 2 |
| *Pectinaria californiensis* | | 1 | 5 | 1 | | | 1 | | | | | | | | | | |
| *Lumbrineris* sp. B | 2 | | | | 2 | 2 | | | | | | 1 | | 5 | 1 | 1 | |
| *Polydora limicola* | | | | 20 | | | | | | | | | 4 | | | | 14 |
| *Glycera americana* | | 1 | | | 1 | | 1 | | | | | | | | | 1 | |
| *Listriella goleta* | | 1 | 1 | 1 | | | 4 | | | | | | | 1 | | | |
| *Monticellina dorsobranchialis* | 2 | 2 | | | | | 1 | | | | | | | 14 | | | |

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Table 4-36 (continued)

| Species | Basin Stations | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 41 |
| *Pseudopolydora paucibranchiata* | | | | | | | 1 | 1 | 1 | | | | 1 | | | | |
| *Monticellina tesselata* | 1 | 5 | 7 | 18 | 10 | 6 | 14 | 20 | 4 | 2 | 21 | 9 | 5 | 3 | 7 | 2 | 5 |
| *Amphideutopus oculatus* | | | | | | | 3 | 12 | 21 | | 1 | | 15 | 4 | 8 | 9 | |
| *Cossura* sp. A | 6 | 9 | 5 | 1 | 2 | 5 | 10 | | 1 | 1 | 1 | 4 | 23 | | 1 | | 7 |
| *Aphelochaeta multifilis* Type 2 | 9 | 6 | 5 | 6 | 1 | 16 | 2 | 3 | 6 | 16 | | 1 | 3 | | 1 | | 5 |
| *Chaetozone corona* | 5 | | 4 | 14 | 35 | 6 | 6 | 6 | 1 | 15 | 6 | 4 | 7 | 7 | 7 | 18 | 11 |
| *Paraprionospio pinnata* | 2 | 4 | 9 | 2 | 4 | 8 | 14 | 8 | 6 | 3 | 1 | 6 | 4 | 2 | 8 | 3 | 3 |
| *Euchone limnicola* | | | | | 4 | | | 7 | 1 | 1 | | 1 | 1 | | | | |
| *Mediomastus* sp. | 1 | | | 1 | | | 46 | 3 | | | | 1 | 3 | | 2 | | 3 |
| *Euclymene grossa newporti* | 1 | | | | | 4 | 1 | 33 | 11 | | 2 | 4 | 13 | 3 | 4 | 16 | |
| *Phoronida* | | 1 | | | | 4 | 14 | | | | 1 | | 1 | 4 | 22 | 5 | 28 |
| *Marphysa* sp. A | 4 | 1 | | 1 | 7 | 14 | 3 | 8 | 2 | 6 | | 1 | 2 | 6 | 1 | 2 | |
| *Scleroplax granulata* | | | 1 | 2 | 1 | | 1 | 6 | | 1 | | 3 | 1 | 7 | 4 | 10 | 4 |
| *Theora lubrica* | | | | 2 | 1 | 4 | | 2 | 6 | | 1 | | 5 | 2 | | 6 | |
| *Leitoscoloplos pugettensis* | | 1 | | 2 | 2 | 8 | 8 | | | 1 | 5 | | 1 | | 11 | 2 | |
| *Exogone lourei* | | | | | | | | | | | | | | | | | 8 |
| *Diopatra tridentata* | 1 | 1 | | 1 | 4 | 3 | 5 | 2 | | 5 | 2 | 2 | | 3 | 6 | 4 | |
| *Neotrypaea californiensis* | | 2 | 2 | 2 | 1 | | 2 | 1 | | | | 5 | 4 | 6 | 3 | 5 | 5 |
| *Streblosoma* sp. B (SCAMIT) | 3 | 2 | 3 | 5 | | | 1 | | 4 | | 1 | 1 | | 2 | | 1 | 4 |
| *Tanais* sp. | | | | | | | | | | | | | | | | | |
| *Hemiproto* sp. A | | | | | | | | | | | | | | | | | |
| *Cossura candida* | | | | | | | | 38 | | | | | | 12 | | | |
| *Tubulanus polymorphus* | 2 | | 1 | 1 | | 2 | 2 | 5 | | 2 | 3 | 1 | 2 | 1 | 4 | 2 | |
| *Nereis procera* | 2 | 1 | | 3 | | 1 | 4 | 1 | | | 3 | 1 | | 9 | 5 | 2 | |
| *Euphilomedes carcharodonta* | | | 2 | 1 | | | | 3 | | 1 | | 1 | 2 | 1 | 2 | 1 | |
| *Compsomyax subdiaphana* | 1 | | 2 | | 1 | 2 | | 2 | | 1 | 2 | | 2 | 1 | 1 | 6 | |
| *Spiophanes missionensis* | | 2 | 2 | 1 | 1 | | 1 | 2 | 1 | | | 2 | 1 | 2 | 2 | 2 | |
| *Pectinaria californiensis* | | | 2 | 6 | 2 | | | | 1 | 3 | | 2 | 1 | 1 | 2 | 1 | 6 |
| *Lumbrineris* sp. B | | | 2 | 2 | 1 | | | 2 | | | 2 | | 5 | 4 | | 2 | |
| *Polydora limicola* | | | | | | | | | | | | | | | | | |
| *Glycera americana* | 2 | 1 | 2 | | 2 | 1 | 2 | 2 | | 1 | 2 | 1 | 1 | 2 | 1 | 3 | 1 |
| *Listriella goleta* | | | | | | | 2 | 1 | | 1 | 1 | 1 | 5 | 6 | 1 | 3 | 1 |
| *Monticellina dorsobranchialis* | | | | | | | | 4 | | | | | 3 | 1 | 1 | | 2 |

(table continues)

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Table 4-36 (continued)

| Species | Pier 16 42 | Pier 15 43 | Pier 12 44 | Pier 12 45 | Pier 12 46 | Pier 9 47 | Pier 7 48 | Pier 6 49 | Pier 3 50 | Pier 2 51 | Pier 1 52 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Nematoda* | | 257 | | | 2997 | | | 6 | | | 33 |
| *Oligochaeta* | 8 | 127 | 23 | 11 | 2 | 505 | 160 | 221 | 105 | 261 | 92 |
| *Exogone lourei* | 95 | 8 | 325 | 91 | 239 | 282 | 47 | 2 | 42 | 6 | 9 |
| *Schistomeringos rudolphi* | 94 | 51 | 114 | 98 | 117 | 83 | 61 | 32 | 81 | 184 | 110 |
| *Pseudopolydora paucibranchiata* | 36 | 1 | 20 | 12 | 6 | 378 | 467 | 51 | 17 | 1 | 1 |
| *Crepidula dorsata* | 205 | | 147 | 140 | 131 | 37 | | | 88 | 1 | |
| *Mediomastus sp.* | 21 | 2 | 22 | 32 | 8 | 318 | 6 | 22 | 69 | 40 | 11 |
| *Nebalia pugettensis* | 80 | 78 | 28 | 3 | 279 | | | | | | 11 |
| *Capitella "capitata"* | 14 | 64 | 31 | 10 | 70 | 18 | 119 | 88 | 7 | 3 | 36 |
| *Cumingia californica* | 26 | 4 | 50 | 100 | | 46 | 4 | 11 | 82 | 113 | 12 |
| *Kellia laperousii* | 12 | | 123 | 107 | 72 | 24 | | | 46 | 5 | |
| *Tanais sp.* | 25 | | 39 | 34 | 42 | 41 | 109 | | 4 | | 7 |
| *Cirratulus cirratus* | 33 | | 24 | 8 | 17 | 114 | 2 | 4 | 7 | 2 | 1 |
| *Grandidierella japonica* | 124 | 4 | 8 | 12 | 2 | 33 | 5 | 3 | | 6 | 2 |
| *Crepidula onyx* | 26 | | 56 | 30 | 37 | 17 | | | 23 | 2 | |
| *Protocirrineris LB2* | | | | | | | 15 | | 163 | 10 | |
| *Mytilus galloprovincialis* | 47 | 3 | 24 | 14 | 30 | 4 | 5 | | 19 | | 17 |
| *Spiophanes missionensis* | 10 | | | 1 | | 30 | 9 | 33 | 58 | 17 | |
| *Neanthes acuminata* | 21 | 3 | 52 | 21 | 11 | 17 | 8 | | 7 | 5 | 3 |
| *Theora lubrica* | 1 | 2 | | 3 | | 4 | | 27 | 23 | 15 | 18 |
| *Chone minuta* | 21 | | 33 | 14 | | 6 | 1 | | 13 | | |
| *Notomastus sp. 1* | | | | | | 58 | 2 | | | | |
| *Ophiodromus pugettensis* | 10 | | 14 | 17 | 7 | 1 | 3 | 1 | 3 | 1 | 1 |
| *Prionospio heterobranchia* | 14 | 1 | 1 | 6 | 3 | 6 | 3 | 3 | 8 | 9 | 1 |
| *Euchone limnicola* | | | | | | 10 | 2 | 31 | 8 | 3 | |
| *Cirriformia luxuriosa* | | | 10 | 5 | 6 | 25 | | 3 | 1 | 2 | |
| *Hiatella arctica* | 23 | 1 | 7 | 1 | 10 | 2 | | | 7 | | 1 |
| *Odostomia spp.* | 4 | | 24 | 2 | 12 | 1 | | 1 | 7 | | |
| *Boccardiella hamata* | 13 | | 12 | 9 | 3 | | 10 | | | | |
| *Caulleriella hamata* | 4 | | 22 | 4 | 15 | | | | | | |
| *Crepidula sp.* | 1 | 1 | | 1 | | 32 | | 1 | 4 | 3 | 2 |
| *Ophiactis sp.* | 21 | | 1 | 6 | 2 | | | | 13 | | |
| *Polydora limicola* | 4 | | 13 | 8 | 7 | | 8 | | | | |
| *Tubulanus polymorphus* | 7 | | | 1 | 2 | 13 | | 8 | 5 | 2 | 1 |
| *Ascidia ceratodes* | 8 | | 3 | | | 16 | 2 | | 6 | 1 | |
| *Sabellaria cementarium* | 11 | | 2 | 19 | 4 | | | | | | |
| *Uselica ovoidea* | 18 | 1 | 5 | 3 | 5 | 1 | | | | | 2 |
| *Piromis sp. A* | 3 | | 1 | 4 | | 15 | 1 | | 7 | 3 | |
| *Lasaea adansoni* | 4 | | | | 3 | | 1 | 5 | 18 | 2 | |
| *Harmothoe imbricata* | 9 | | 11 | 2 | | 6 | 2 | | 1 | | |
| *Naineris dendritica* | 6 | | 15 | | 6 | | 1 | | 2 | | |
| *Spirorbis sp.* | | 1 | 8 | | 4 | | | | | | 17 |
| *Cossura sp. A* | | | | | | 1 | | 26 | | | 1 |
| *Mysella tumida* | | 1 | | | | 2 | | 4 | | 14 | 7 |
| *Pyromaia tuberculata* | 7 | 1 | 4 | 2 | | 1 | 3 | | 2 | 5 | 1 |
| *Halosydna johnsoni* | 11 | | 9 | | 3 | | | | 2 | | |
| *Saxidomus nuttalli* | 17 | | | 8 | | | | | | | |

Note: Blank space indicates none found.



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**Table 4-37**
**Mean TOC and Grain Size Values by Sediment Evaluation Zone**

| Analyte Name | Station 24 | SEZ A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|
| **TOC, percent** | | | | | | | | | |
| Total Organic Carbon | 0.07 | 0.54 | 0.50 | 1.0 | 0.86 | 0.92 | 1.7 | 1.8 | 1.9 |
| **Grain Size, percent** | | | | | | | | | |
| Clay | 1.8 | 18 | 12 | 28 | 20 | 32 | 45 | 41 | 36 |
| Silt | 2.1 | 35 | 33 | 45 | 39 | 42 | 42 | 32 | 33 |
| Sand | 79 | 47 | 54 | 26 | 41 | 26 | 13 | 13 | 21 |
| Gravel | 17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 15 | 10 |
| Fines (clay+silt) | 3.9 | 53 | 45 | 74 | 59 | 74 | 87 | 73 | 70 |
| **Grain Size, µm** | | | | | | | | | |
| Mean | 638 | 29 | 28 | 11 | 18 | 10 | 5.0 | 12 | 29 |
| Median | 398 | 67 | 66 | 20 | 41 | 21 | 4.8 | 9 | 108 |



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Table 4-38
Descriptive Statistics for Sediment Chemistry by Sediment Evaluation Zone

| SEDIMENT EVALUATION ZONE A | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UCL |
| **Sulfides, mg/kg** | | | | | | | |
| Total Sulfide | 6 of 6 | 100 | 15 | 150 | 56 | 48 | 106 |
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 6 of 6 | 100 | 1.6 | 8.8 | 5.6 | 2.6 | 8.2 |
| Beryllium | 6 of 6 | 100 | 0.28 | 0.69 | 0.44 | 0.17 | 0.61 |
| Cadmium | 6 of 6 | 100 | 0.13 | 0.33 | 0.23 | 0.08 | 0.32 |
| Chromium | 6 of 6 | 100 | 21 | 35 | 28 | 6.6 | 35 |
| Copper | 6 of 6 | 100 | 27 | 52 | 40 | 12 | 53 |
| Lead | 6 of 6 | 100 | 16 | 31 | 24 | 6.9 | 31 |
| Mercury | 6 of 6 | 100 | 0.11 | 0.26 | 0.16 | 0.066 | 0.23 |
| Nickel | 6 of 6 | 100 | 16 | 26 | 20 | 4.5 | 25 |
| Selenium | 0 of 6 | 0 | 0 | 0 | 0.41 | 0.038 | 0.45 |
| Silver | 6 of 6 | 100 | 1.3 | 2.2 | 1.7 | 0.38 | 2.1 |
| Zinc | 6 of 6 | 100 | 63 | 120 | 91 | 25 | 117 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 0 of 6 | 0 | 0 | 0 | 0.92 | 0.20 | 1.13 |
| Monobutyltin | 0 of 6 | 0 | 0 | 0 | 0.92 | 0.20 | 1.13 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Benzo(a)pyrene | 2 of 6 | 33 | 19 | 33 | 20 | 12 | 32 |
| Benzo(b)fluoranthene | 2 of 6 | 33 | 19 | 33 | 20 | 12 | 32 |
| Benzo(ghi)perylene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Benzo(k)fluoranthene | 2 of 6 | 33 | 33 | 37 | 23 | 14 | 37 |
| Chrysene | 1 of 6 | 17 | 33 | 33 | 18 | 12 | 31 |
| Dibenzo(a,h)anthracene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Fluoranthene | 1 of 6 | 17 | 16 | 16 | 15 | 10 | 26 |
| Indeno(1,2,3-cd)pyrene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Pyrene | 1 of 6 | 17 | 33 | 33 | 18 | 12 | 31 |
| Total benzofluoranthenes | 2 of 6 | 33 | 56 | 66 | 42 | 25 | 68 |
| Total HPAHs | 2 of 6 | 33 | 75 | 181 | 169 | 100 | 275 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Acenaphthylene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Anthracene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Fluorene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Methylnaphthalenes | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Phenanthrene | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Total LPAHs | 0 of 6 | 0 | 0 | 0 | 14 | 10 | 25 |
| Total PAHs | 2 of 6 | 33 | 75 | 181 | 85 | 61 | 149 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 2 of 6 | 33 | 31 | 51 | 20 | 18 | 38 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 0 of 6 | 0 | 0 | 0 | 0.4 | 0.04 | 0.45 |
| Lindane (gamma-BHC) | 0 of 6 | 0 | 0 | 0 | 0.4 | 0.04 | 0.45 |
| 4,4'-DDD | 4 of 6 | 67 | 3.0 | 5.9 | 3.1 | 2.3 | 5.4 |
| 4,4'-DDE | 6 of 6 | 100 | 18 | 43 | 32 | 9.2 | 42 |
| 4,4'-DDT | 0 of 6 | 0 | 0 | 0 | 0.41 | 0.04 | 0.45 |
| Total DDTs | 6 of 6 | 100 | 18 | 46 | 36 | 10 | 46 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 1 of 6 | 17 | 94 | 94 | 35 | 32 | 68 |
| Bis(2-ethylhexyl)phthalate | 0 of 6 | 0 | 0 | 0 | 83 | 82 | 169 |
| Di-n-octylphthalate | 0 of 6 | 0 | 0 | 0 | 22 | 14 | 36 |

(table continues)



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Table 4-38 (continued)

| SEDIMENT EVALUATION ZONE B | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UCL |
| **Sulfides, mg/kg** | | | | | | | |
| Total Sulfide | 4 of 4 | 100 | 14 | 98 | 46 | 37 | 105 |
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 4 of 4 | 100 | 4.6 | 6.0 | 5.3 | 0.58 | 6.2 |
| Beryllium | 4 of 4 | 100 | 0.30 | 0.33 | 0.31 | 0.015 | 0.34 |
| Cadmium | 4 of 4 | 100 | 0.14 | 0.24 | 0.19 | 0.05 | 0.26 |
| Chromium | 4 of 4 | 100 | 22 | 27 | 25 | 2.2 | 28 |
| Copper | 4 of 4 | 100 | 47 | 67 | 56 | 8.3 | 69 |
| Lead | 4 of 4 | 100 | 21 | 43 | 28 | 10 | 44 |
| Mercury | 4 of 4 | 100 | 0.21 | 0.34 | 0.25 | 0.061 | 0.35 |
| Nickel | 4 of 4 | 100 | 13 | 18 | 16 | 2.2 | 19 |
| Selenium | 0 of 4 | 0 | 0 | 0 | 0.39 | 0.03 | 0.43 |
| Silver | 4 of 4 | 100 | 1.3 | 1.6 | 1.4 | 0.15 | 1.66 |
| Zinc | 4 of 4 | 100 | 85 | 110 | 100 | 12 | 119 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 0 of 4 | 0 | 0 | 0 | 0.88 | 0.25 | 1.27 |
| Monobutyltin | 0 of 4 | 0 | 0 | 0 | 0.88 | 0.25 | 1.27 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 3 of 4 | 75 | 32 | 60 | 37 | 21 | 71 |
| Benzo(a)pyrene | 4 of 4 | 100 | 82 | 120 | 99 | 16 | 124 |
| Benzo(b)fluoranthene | 4 of 4 | 100 | 98 | 150 | 132 | 25 | 171 |
| Benzo(ghi)perylene | 4 of 4 | 100 | 46 | 75 | 58 | 13 | 80 |
| Benzo(k)fluoranthene | 4 of 4 | 100 | 130 | 180 | 158 | 26 | 199 |
| Chrysene | 4 of 4 | 100 | 49 | 100 | 76 | 24 | 114 |
| Dibenzo(a,h)anthracene | 1 of 3 | 33 | 16 | 16 | 12 | 3.5 | 21 |
| Fluoranthene | 2 of 3 | 67 | 30 | 33 | 24 | 13 | 55 |
| Indeno(1,2,3-cd)pyrene | 4 of 4 | 100 | 46 | 75 | 58 | 13 | 80 |
| Pyrene | 2 of 3 | 67 | 30 | 33 | 24 | 13 | 55 |
| Total benzofluoranthenes | 4 of 4 | 100 | 228 | 330 | 290 | 50 | 369 |
| Total HPAHs | 4 of 4 | 100 | 523 | 740 | 664 | 99 | 821 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 0 of 3 | 0 | 0 | 0 | 10 | 0.0 | 10 |
| Acenaphthylene | 2 of 4 | 50 | 15 | 30 | 16 | 9.5 | 31 |
| Anthracene | 4 of 4 | 100 | 32 | 60 | 43 | 13 | 64 |
| Fluorene | 0 of 3 | 0 | 0 | 0 | 10 | 0.0 | 10 |
| Methylnaphthalenes | 0 of 3 | 0 | 0 | 0 | 12 | 2.9 | 19 |
| Phenanthrene | 4 of 4 | 100 | 16 | 45 | 31 | 12 | 50 |
| Total LPAHs | 4 of 4 | 100 | 49 | 135 | 114 | 19 | 145 |
| Total PAHs | 4 of 4 | 100 | 572 | 875 | 777 | 117 | 964 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 4 of 4 | 100 | 63 | 110 | 84 | 23 | 121 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 0 of 4 | 0 | 0 | 0 | 0.39 | 0.03 | 0.43 |
| Lindane (gamma-BHC) | 0 of 4 | 0 | 0 | 0 | 0.39 | 0.03 | 0.43 |
| 4,4'-DDD | 2 of 4 | 50 | 1.9 | 4.1 | 1.7 | 1.7 | 4.5 |
| 4,4'-DDE | 4 of 4 | 100 | 13 | 25 | 19 | 5.2 | 27 |
| 4,4'-DDT | 0 of 4 | 0 | 0 | 0 | 0.39 | 0.03 | 0.43 |
| Total DDTs | 4 of 4 | 100 | 15 | 29 | 21 | 6.2 | 31 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 0 of 3 | 0 | 0 | 0 | 15 | 0 | 15 |
| Bis(2-ethylhexyl)phthalate | 0 of 3 | 0 | 0 | 0 | 50 | 0 | 50 |
| Di-n-octylphthalate | 4 of 4 | 100 | 30 | 49 | 39 | 9.4 | 54.0 |

(table continues)



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Table 4-38 (continued)

| SEDIMENT EVALUATION ZONE C | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UCL |
| **Sulfides, mg/kg** | | | | | | | |
| Total Sulfide | 9 of 9 | 100 | 7.2 | 240 | 91 | 86 | 157 |
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 9 of 9 | 100 | 7.2 | 13 | 10 | 2.2 | 11.7 |
| Beryllium | 9 of 9 | 100 | 0.32 | 0.77 | 0.58 | 0.13 | 0.68 |
| Cadmium | 9 of 9 | 100 | 0.34 | 0.48 | 0.41 | 0.049 | 0.45 |
| Chromium | 9 of 9 | 100 | 32 | 65 | 43 | 9.4 | 50 |
| Copper | 9 of 9 | 100 | 68 | 220 | 111 | 45 | 146 |
| Lead | 9 of 9 | 100 | 37 | 75 | 48 | 11 | 57 |
| Mercury | 9 of 9 | 100 | 0.31 | 0.87 | 0.50 | 0.18 | 0.64 |
| Nickel | 9 of 9 | 100 | 16 | 34 | 26 | 5.3 | 30 |
| Selenium | 0 of 9 | 0 | 0 | 0 | 0.46 | 0.039 | 0.49 |
| Silver | 9 of 9 | 100 | 2.1 | 19 | 4.7 | 5.4 | 8.9 |
| Zinc | 9 of 9 | 100 | 130 | 240 | 168 | 31 | 192 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 0 of 9 | 0 | 0 | 0 | 1.0 | 0 | 1 |
| Monobutyltin | 0 of 9 | 0 | 0 | 0 | 1.0 | 0 | 1 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 3 of 8 | 38 | 16 | 38 | 23 | 15 | 36 |
| Benzo(a)pyrene | 8 of 9 | 89 | 36 | 100 | 61 | 29 | 84 |
| Benzo(b)fluoranthene | 7 of 9 | 78 | 36 | 130 | 66 | 37 | 94 |
| Benzo(ghi)perylene | 3 of 8 | 38 | 36 | 58 | 32 | 19 | 48 |
| Benzo(k)fluoranthene | 8 of 9 | 89 | 36 | 120 | 74 | 35 | 101 |
| Chrysene | 6 of 9 | 67 | 32 | 85 | 42 | 24 | 60 |
| Dibenzo(a,h)anthracene | 1 of 7 | 14 | 19 | 19 | 21 | 15 | 35 |
| Fluoranthene | 5 of 9 | 56 | 16 | 38 | 24 | 13 | 35 |
| Indeno(1,2,3-cd)pyrene | 3 of 8 | 38 | 32 | 58 | 30 | 18 | 45 |
| Pyrene | 5 of 9 | 56 | 18 | 48 | 29 | 15 | 40 |
| Total benzofluoranthenes | 8 of 9 | 89 | 72 | 250 | 140 | 67 | 191 |
| Total HPAHs | 8 of 9 | 89 | 180 | 653 | 388 | 190 | 534 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 0 of 7 | 0 | 0 | 0 | 19 | 16 | 34 |
| Acenaphthylene | 0 of 7 | 0 | 0 | 0 | 19 | 16 | 34 |
| Anthracene | 2 of 8 | 25 | 18 | 32 | 22 | 15 | 34 |
| Fluorene | 0 of 7 | 0 | 0 | 0 | 19 | 16 | 34 |
| Methylnaphthalenes | 0 of 7 | 0 | 0 | 0 | 19 | 16 | 34 |
| Phenanthrene | 1 of 8 | 13 | 24 | 24 | 20 | 15 | 32 |
| Total LPAHs | 3 of 9 | 33 | 18 | 32 | 97 | 92 | 168 |
| Total PAHs | 8 of 9 | 89 | 180 | 653 | 485 | 256 | 681 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 9 of 9 | 100 | 56 | 430 | 171 | 117 | 261 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 1 of 9 | 11 | 2.3 | 2.3 | 0.66 | 0.62 | 1.1 |
| Lindane (gamma-BHC) | 1 of 9 | 11 | 2.5 | 2.5 | 0.68 | 0.68 | 1.2 |
| 4,4'-DDD | 9 of 9 | 100 | 4.5 | 42 | 13 | 12 | 22 |
| 4,4'-DDE | 9 of 9 | 100 | 37 | 100 | 54 | 20 | 69 |
| 4,4'-DDT | 1 of 9 | 11 | 34 | 34 | 4.2 | 11 | 13 |
| Total DDTs | 9 of 9 | 100 | 42 | 136 | 71 | 32 | 96 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 0 of 8 | 0 | 0 | 0 | 40 | 37 | 71 |
| Bis(2-ethylhexyl)phthalate | 0 of 7 | 0 | 0 | 0 | 121 | 122 | 234 |
| Di-n-octylphthalate | 3 of 8 | 38 | 32 | 38 | 46 | 34 | 74 |

(table continues)



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Table 4-38 (continued)

| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UCL |
|---|---|---|---|---|---|---|---|
| **SEDIMENT EVALUATION ZONE D** | | | | | | | |
| **Sulfides, mg/kg** | | | | | | | |
| Total Sulfide | 6 of 6 | 100 | 1.1 | 400 | 79 | 158 | 244 |
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 6 of 6 | 100 | 6.8 | 12 | 9.4 | 2.2 | 12 |
| Beryllium | 6 of 6 | 100 | 0.44 | 0.59 | 0.51 | 0.06 | 0.57 |
| Cadmium | 6 of 6 | 100 | 0.16 | 0.45 | 0.29 | 0.12 | 0.41 |
| Chromium | 6 of 6 | 100 | 29 | 39 | 35 | 4.3 | 40 |
| Copper | 6 of 6 | 100 | 69 | 150 | 109 | 32 | 142 |
| Lead | 6 of 6 | 100 | 37 | 58 | 46 | 8.9 | 55 |
| Mercury | 6 of 6 | 100 | 0.38 | 0.85 | 0.61 | 0.183 | 0.80 |
| Nickel | 6 of 6 | 100 | 16 | 27 | 22 | 3.63 | 26 |
| Selenium | 0 of 6 | 0 | 0 | 0 | 0.43 | 0.041 | 0.48 |
| Silver | 6 of 6 | 100 | 2 | 2.7 | 2.3 | 0.293 | 2.6 |
| Zinc | 6 of 6 | 100 | 110 | 170 | 148 | 24.0 | 174 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 0 of 6 | 0 | 0 | 0 | 1.9 | 2.1 | 4.0 |
| Monobutyltin | 0 of 6 | 0 | 0 | 0 | 1 | 0 | 1 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 4 of 6 | 67 | 36 | 65 | 36 | 23 | 61 |
| Benzo(a)pyrene | 6 of 6 | 100 | 110 | 220 | 165 | 44 | 211 |
| Benzo(b)fluoranthene | 6 of 6 | 100 | 140 | 320 | 205 | 67 | 275 |
| Benzo(ghi)perylene | 5 of 6 | 83 | 65 | 130 | 85 | 43 | 130 |
| Benzo(k)fluoranthene | 6 of 6 | 100 | 140 | 310 | 217 | 67 | 286 |
| Chrysene | 3 of 5 | 60 | 79 | 150 | 68 | 60 | 142 |
| Dibenzo(a,h)anthracene | 0 of 3 | 0 | 0 | 0 | 10 | 0.00 | 10 |
| Fluoranthene | 3 of 5 | 60 | 28 | 81 | 37 | 31 | 75 |
| Indeno(1,2,3-cd)pyrene | 4 of 6 | 67 | 71 | 130 | 72 | 52 | 127 |
| Pyrene | 3 of 5 | 60 | 42 | 65 | 36 | 25 | 68 |
| Total benzofluoranthenes | 6 of 6 | 100 | 280 | 570 | 422 | 119 | 547 |
| Total HPAHs | 6 of 6 | 100 | 613 | 1241 | 903 | 229 | 1143 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 0 of 3 | 0 | 0 | 0 | 10 | 0 | 10 |
| Acenaphthylene | 4 of 6 | 67 | 18 | 32 | 19 | 9 | 28 |
| Anthracene | 4 of 6 | 67 | 36 | 65 | 34 | 21 | 56 |
| Fluorene | 0 of 3 | 0 | 0 | 0 | 10 | 0.00 | 10 |
| Methylnaphthalenes | 0 of 3 | 0 | 0 | 0 | 10 | 0.00 | 10 |
| Phenanthrene | 4 of 6 | 67 | 31 | 39 | 26 | 13 | 40 |
| Total LPAHs | 4 of 6 | 67 | 90 | 129 | 95 | 31 | 127 |
| Total PAHs | 6 of 6 | 100 | 613 | 1370 | 997 | 245 | 1255 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 6 of 6 | 100 | 110 | 370 | 215 | 93 | 312 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 0 of 6 | 0 | 0.0 | 0.0 | 0.43 | 0.041 | 0.48 |
| Lindane (gamma-BHC) | 1 of 6 | 17 | 0.63 | 0.63 | 0.47 | 0.086 | 0.56 |
| 4,4'-DDD | 6 of 6 | 100 | 7.1 | 16 | 10 | 3.5 | 14 |
| 4,4'-DDE | 6 of 6 | 100 | 31 | 72 | 48 | 18 | 67 |
| 4,4'-DDT | 0 of 6 | 0 | 0 | 0 | 0.43 | 0.04 | 0.48 |
| Total DDTs | 6 of 6 | 100 | 40 | 82 | 59 | 18 | 78 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 0 of 3 | 0 | 0 | 0 | 17 | 2.9 | 24 |
| Bis(2-ethylhexyl)phthalate | 0 of 3 | 0 | 0 | 0 | 50 | 0.0 | 50 |
| Di-n-octylphthalate | 3 of 5 | 60 | 38 | 73 | 41 | 25 | 72 |

(table continues)



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Table 4-38 (continued)

| SEDIMENT EVALUATION ZONE E | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UCL |
| **Sulfides, mg/kg** | | | | | | | |
| Total Sulfide | 6 of 6 | 100 | 35 | 360 | 142 | 113 | 260 |
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 6 of 6 | 100 | 7.7 | 17 | 11 | 3.3 | 15 |
| Beryllium | 6 of 6 | 100 | 0.38 | 1.0 | 0.61 | 0.207 | 0.83 |
| Cadmium | 6 of 6 | 100 | 0.35 | 0.91 | 0.58 | 0.217 | 0.80 |
| Chromium | 6 of 6 | 100 | 34 | 71 | 45.7 | 12.9 | 59.2 |
| Copper | 6 of 6 | 100 | 81 | 210 | 136.8 | 48.2 | 187.4 |
| Lead | 6 of 6 | 100 | 38 | 89 | 61.0 | 18.3 | 80.2 |
| Mercury | 6 of 6 | 100 | 0.31 | 1.1 | 0.67 | 0.28 | 0.97 |
| Nickel | 6 of 6 | 100 | 19 | 41 | 25 | 8.2 | 34 |
| Selenium | 0 of 6 | 0 | 0 | 0 | 0.48 | 0.0 | 0.51 |
| Silver | 6 of 6 | 100 | 1.5 | 3.5 | 2.4 | 0.65 | 3.0 |
| Zinc | 6 of 6 | 100 | 140 | 300 | 207 | 54 | 264 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 1 of 6 | 17 | 2.5 | 2.5 | 1.3 | 0.61 | 2.0 |
| Monobutyltin | 0 of 6 | 0 | 0 | 0 | 1.1 | 0.20 | 1.3 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 6 of 6 | 100 | 92 | 150 | 124 | 21 | 146 |
| Benzo(a)pyrene | 6 of 6 | 100 | 180 | 340 | 277 | 58 | 337 |
| Benzo(b)fluoranthene | 6 of 6 | 100 | 220 | 440 | 338 | 86 | 428 |
| Benzo(ghi)perylene | 6 of 6 | 100 | 110 | 220 | 163 | 40 | 206 |
| Benzo(k)fluoranthene | 6 of 6 | 100 | 290 | 400 | 340 | 43 | 386 |
| Chrysene | 6 of 6 | 100 | 150 | 330 | 238 | 61 | 302 |
| Dibenzo(a,h)anthracene | 2 of 5 | 40 | 80 | 120 | 54 | 46 | 111 |
| Fluoranthene | 6 of 6 | 100 | 76 | 250 | 135 | 61 | 199 |
| Indeno(1,2,3-cd)pyrene | 6 of 6 | 100 | 110 | 220 | 163 | 40 | 206 |
| Pyrene | 6 of 6 | 100 | 110 | 250 | 152 | 50 | 205 |
| Total benzofluoranthenes | 6 of 6 | 100 | 510 | 840 | 678 | 118 | 802 |
| Total HPAHs | 6 of 6 | 100 | 1580 | 2220 | 1975 | 217 | 2203 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 0 of 5 | 0 | 0 | 0 | 26 | 20 | 51 |
| Acenaphthylene | 2 of 6 | 33 | 37 | 40 | 33 | 16 | 50 |
| Anthracene | 4 of 6 | 67 | 51 | 150 | 75 | 39 | 116 |
| Fluorene | 0 of 5 | 0 | 0 | 0 | 26 | 20 | 51 |
| Methylnaphthalenes | 0 of 5 | 0 | 0 | 0 | 26 | 20 | 51 |
| Phenanthrene | 4 of 6 | 67 | 60 | 77 | 64 | 14 | 78 |
| Total LPAHs | 4 of 6 | 67 | 127 | 227 | 236 | 49 | 288 |
| Total PAHs | 6 of 6 | 100 | 1580 | 2407 | 2211 | 216 | 2438 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 6 of 6 | 100 | 160 | 410 | 273 | 95 | 373 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 0 of 6 | 0 | 0 | 0 | 0.48 | 0.03 | 0.51 |
| Lindane (gamma-BHC) | 0 of 6 | 0 | 0 | 0 | 0.48 | 0.03 | 0.51 |
| 4,4'-DDD | 5 of 6 | 83 | 7 | 20 | 11 | 7.2 | 19 |
| 4,4'-DDE | 6 of 6 | 100 | 57 | 130 | 88 | 33 | 122 |
| 4,4'-DDT | 0 of 6 | 0 | 0 | 0 | 0.48 | 0.03 | 0.51 |
| Total DDTs | 6 of 6 | 100 | 57 | 146 | 99 | 39 | 140 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 1 of 5 | 20 | 210 | 210 | 91 | 77 | 187 |
| Bis(2-ethylhexyl)phthalate | 1 of 5 | 20 | 250 | 250 | 200 | 141 | 376 |
| Di-n-octylphthalate | 1 of 6 | 17 | 73 | 73 | 56 | 39 | 98 |

(table continues)



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Table 4-38 (continued)

| SEDIMENT EVALUATION ZONE F | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UCL |
| **Sulfides, mg/kg** | | | | | | | |
| Total Sulfide | 3 of 3 | 100 | 60 | 270 | 157 | 106 | 420 |
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 3 of 3 | 100 | 12 | 19 | 16 | 3.5 | 24 |
| Beryllium | 3 of 3 | 100 | 0.68 | 0.75 | 0.71 | 0.038 | 0.80 |
| Cadmium | 3 of 3 | 100 | 0.32 | 1.0 | 0.77 | 0.39 | 1.75 |
| Chromium | 3 of 3 | 100 | 54 | 88 | 70 | 17 | 112 |
| Copper | 3 of 3 | 100 | 210 | 530 | 320 | 182 | 772 |
| Lead | 3 of 3 | 100 | 77 | 180 | 112 | 59 | 259 |
| Mercury | 3 of 3 | 100 | 0.57 | 1.8 | 1.0 | 0.67 | 2.7 |
| Nickel | 3 of 3 | 100 | 32 | 37 | 35 | 2.52 | 41 |
| Selenium | 1 of 3 | 33 | 1.6 | 1.6 | 0.87 | 0.64 | 2.4 |
| Silver | 3 of 3 | 100 | 3 | 3.8 | 3.4 | 0.40 | 4.4 |
| Zinc | 3 of 3 | 100 | 250 | 480 | 343 | 121 | 644 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 0 of 3 | 0 | 0 | 0 | 1.17 | 0.29 | 1.88 |
| Monobutyltin | 0 of 3 | 0 | 0 | 0 | 1.17 | 0.29 | 1.88 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 3 of 3 | 100 | 150 | 280 | 210 | 66 | 373 |
| Benzo(a)pyrene | 3 of 3 | 100 | 440 | 540 | 493 | 50 | 618 |
| Benzo(b)fluoranthene | 3 of 3 | 100 | 500 | 680 | 563 | 101 | 815 |
| Benzo(ghi)perylene | 3 of 3 | 100 | 300 | 380 | 340 | 40 | 439 |
| Benzo(k)fluoranthene | 3 of 3 | 100 | 480 | 660 | 563 | 91 | 789 |
| Chrysene | 3 of 3 | 100 | 380 | 550 | 440 | 95 | 677 |
| Dibenzo(a,h)anthracene | 0 of 2 | 0 | 0 | 0 | 50 | 0 | 50 |
| Fluoranthene | 3 of 3 | 100 | 150 | 320 | 210 | 95 | 447 |
| Indeno(1,2,3-cd)pyrene | 3 of 3 | 100 | 300 | 400 | 353 | 50 | 478 |
| Pyrene | 3 of 3 | 100 | 180 | 350 | 290 | 95 | 527 |
| Total benzofluoranthenes | 3 of 3 | 100 | 1060 | 1160 | 1127 | 58 | 1270 |
| Total HPAHs | 3 of 3 | 100 | 3300 | 3600 | 3497 | 150 | 3870 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 0 of 2 | 0 | 0 | 0 | 50 | 0 | 50 |
| Acenaphthylene | 1 of 3 | 33 | 68 | 68 | 56 | 10 | 82 |
| Anthracene | 2 of 3 | 67 | 160 | 180 | 130 | 70 | 304 |
| Fluorene | 0 of 2 | 0 | 0 | 0 | 50 | 0 | 50 |
| Methylnaphthalenes | 0 of 2 | 0 | 0 | 0 | 50 | 0 | 50 |
| Phenanthrene | 2 of 3 | 67 | 110 | 160 | 107 | 55 | 243 |
| Total LPAHs | 2 of 3 | 67 | 338 | 340 | 393 | 129 | 713 |
| Total PAHs | 3 of 3 | 100 | 3300 | 3940 | 3889 | 275 | 4573 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 3 of 3 | 100 | 230 | 880 | 550 | 325 | 1358 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 0 of 3 | 0 | 0 | 0 | 0.50 | 0.00 | 0.50 |
| Lindane (gamma-BHC) | 1 of 3 | 33 | 6.8 | 6.8 | 2.6 | 3.6 | 12 |
| 4,4'-DDD | 3 of 3 | 100 | 11 | 33 | 21 | 11 | 49 |
| 4,4'-DDE | 3 of 3 | 100 | 88 | 180 | 120 | 52 | 249 |
| 4,4'-DDT | 0 of 3 | 0 | 0 | 0 | 0.50 | 0.00 | 0.50 |
| Total DDTs | 3 of 3 | 100 | 103 | 213 | 142 | 62 | 296 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 0 of 2 | 0 | 0 | 0 | 125 | 35 | 443 |
| Bis(2-ethylhexyl)phthalate | 0 of 2 | 0 | 0 | 0 | 425 | 35 | 743 |
| Di-n-octylphthalate | 1 of 3 | 33 | 91 | 91 | 114 | 32 | 193 |

(table continues)

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Table 4-38 (continued)

| SEDIMENT EVALUATION ZONE G | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UCL |
| **Sulfides, mg/kg** | | | | | | | |
| Total Sulfide | 6 of 6 | 100 | 3600 | 5400 | 4167 | 653 | 4852 |
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 6 of 6 | 100 | 8.4 | 13 | 10 | 1.7 | 12 |
| Beryllium | 6 of 6 | 100 | 0.54 | 0.88 | 0.72 | 0.14 | 0.86 |
| Cadmium | 6 of 6 | 100 | 0.49 | 1.5 | 0.83 | 0.36 | 1.21 |
| Chromium | 6 of 6 | 100 | 44 | 63 | 52 | 7.0 | 59 |
| Copper | 6 of 6 | 100 | 120 | 260 | 167 | 57 | 227 |
| Lead | 6 of 6 | 100 | 55 | 89 | 70 | 13 | 83 |
| Mercury | 6 of 6 | 100 | 0.27 | 0.50 | 0.42 | 0.086 | 0.51 |
| Nickel | 6 of 6 | 100 | 24 | 34 | 30 | 3.6 | 34 |
| Selenium | 0 of 6 | 0 | 0 | 0 | 0.75 | 0.27 | 1.0 |
| Silver | 6 of 6 | 100 | 2.1 | 2.9 | 2.5 | 0.29 | 2.8 |
| Zinc | 6 of 6 | 100 | 190 | 340 | 242 | 56 | 300 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 0 of 6 | 0 | 0 | 0 | 1.58 | 0.20 | 1.80 |
| Monobutyltin | 0 of 6 | 0 | 0 | 0 | 1.58 | 0.20 | 1.80 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 0 of 6 | 0 | 0 | 0 | 56 | 37 | 95 |
| Benzo(a)pyrene | 4 of 6 | 67 | 230 | 510 | 260 | 180 | 449 |
| Benzo(b)fluoranthene | 4 of 6 | 67 | 270 | 620 | 317 | 229 | 557 |
| Benzo(ghi)perylene | 3 of 6 | 50 | 140 | 200 | 122 | 51 | 175 |
| Benzo(k)fluoranthene | 4 of 6 | 67 | 240 | 620 | 297 | 225 | 533 |
| Chrysene | 4 of 6 | 67 | 170 | 580 | 227 | 188 | 424 |
| Dibenzo(a,h)anthracene | 0 of 6 | 0 | 0 | 0 | 56 | 37 | 95 |
| Fluoranthene | 3 of 6 | 50 | 86 | 250 | 123 | 70 | 196 |
| Indeno(1,2,3-cd)pyrene | 3 of 6 | 50 | 140 | 200 | 128 | 56 | 187 |
| Pyrene | 3 of 6 | 50 | 180 | 870 | 298 | 322 | 636 |
| Total benzofluoranthenes | 4 of 6 | 67 | 510 | 1240 | 613 | 454 | 1090 |
| Total HPAHs | 4 of 6 | 67 | 920 | 3770 | 1883 | 1191 | 3132 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 0 of 6 | 0 | 0 | 0 | 56 | 37 | 95 |
| Acenaphthylene | 2 of 6 | 33 | 29 | 72 | 67 | 29 | 97 |
| Anthracene | 2 of 6 | 33 | 110 | 290 | 117 | 89 | 210 |
| Fluorene | 1 of 6 | 17 | 36 | 36 | 59 | 35 | 95 |
| Methylnaphthalenes | 0 of 6 | 0 | 0 | 0 | 106 | 68 | 178 |
| Phenanthrene | 2 of 6 | 33 | 86 | 250 | 106 | 74 | 184 |
| Total LPAHs | 2 of 6 | 33 | 225 | 648 | 510 | 175 | 693 |
| Total PAHs | 4 of 6 | 67 | 920 | 4418 | 2392 | 1228 | 3681 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 0 of 6 | 0 | 0 | 0 | 16 | 2.0 | 18 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 0 of 6 | 0 | 0 | 0 | 0.75 | 0.27 | 1.0 |
| Lindane (gamma-BHC) | 0 of 6 | 0 | 0 | 0 | 0.75 | 0.27 | 1.0 |
| 4,4'-DDD | 0 of 6 | 0 | 0 | 0 | 0.75 | 0.27 | 1.0 |
| 4,4'-DDE | 6 of 6 | 100 | 91 | 110 | 99 | 8.7 | 108 |
| 4,4'-DDT | 0 of 6 | 0 | 0 | 0 | 0.75 | 0.27 | 1.04 |
| Total DDTs | 6 of 6 | 100 | 91 | 110 | 101 | 9.0 | 110 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 0 of 6 | 0 | 0 | 0 | 111 | 61 | 175 |
| Bis(2-ethylhexyl)phthalate | 0 of 6 | 0 | 0 | 0 | 375 | 194 | 579 |
| Di-n-octylphthalate | 2 of 6 | 33 | 170 | 220 | 165 | 28 | 194 |

(table continues)



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Table 4-38 (continued)

| SEDIMENT EVALUATION ZONE H | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte Name | Detects | Frequency (percent) | Minimum | Maximum | Mean | Standard Deviation | 95% UCL |
| **Sulfides, mg/kg** | | | | | | | |
| Total Sulfide | 4 of 4 | 100 | 3000 | 4900 | 4050 | 810 | 5339 |
| **Metals, mg/kg** | | | | | | | |
| Arsenic | 4 of 4 | 100 | 11 | 15 | 13 | 1.9 | 16 |
| Beryllium | 4 of 4 | 100 | 0.27 | 0.73 | 0.56 | 0.21 | 0.89 |
| Cadmium | 4 of 4 | 100 | 0.55 | 1.3 | 0.86 | 0.34 | 1.4 |
| Chromium | 4 of 4 | 100 | 43 | 330 | 123 | 139 | 343 |
| Copper | 4 of 4 | 100 | 170 | 330 | 248 | 67 | 353 |
| Lead | 4 of 4 | 100 | 77 | 94 | 84 | 7.4 | 96 |
| Mercury | 4 of 4 | 100 | 0.33 | 0.71 | 0.55 | 0.16 | 0.80 |
| Nickel | 4 of 4 | 100 | 28 | 35 | 31 | 3 | 35 |
| Selenium | 0 of 4 | 0 | 0 | 0 | 0.63 | 0.25 | 1.0 |
| Silver | 4 of 4 | 100 | 2.2 | 4.1 | 2.9 | 0.84 | 4.2 |
| Zinc | 4 of 4 | 100 | 300 | 620 | 403 | 151 | 643 |
| **Butyltins, µg/kg** | | | | | | | |
| Dibutyltin | 0 of 4 | 0 | 0 | 0 | 1.5 | 0.41 | 2.1 |
| Monobutyltin | 1 of 4 | 25 | 3.6 | 3.6 | 1.9 | 1.2 | 3.7 |
| **HPAH, µg/kg** | | | | | | | |
| Benzo(a)anthracene | 4 of 4 | 100 | 500 | 1900 | 1250 | 624 | 2244 |
| Benzo(a)pyrene | 4 of 4 | 100 | 870 | 1500 | 1113 | 275 | 1550 |
| Benzo(b)fluoranthene | 4 of 4 | 100 | 1200 | 1800 | 1425 | 263 | 1843 |
| Benzo(ghi)perylene | 4 of 4 | 100. | 180 | 440 | 295 | 118 | 483 |
| Benzo(k)fluoranthene | 4 of 4 | 100 | 870 | 1300 | 1058 | 187 | 1356 |
| Chrysene | 4 of 4 | 100 | 820 | 2100 | 1455 | 561 | 2348 |
| Dibenzo(a,h)anthracene | 2 of 4 | 50 | 270 | 330 | 159 | 165 | 421 |
| Fluoranthene | 4 of 4 | 100 | 520 | 4400 | 2630 | 1725 | 5374 |
| Indeno(1,2,3-cd)pyrene | 4 of 4 | 100 | 220 | 550 | 343 | 152 | 584 |
| Pyrene | 4 of 4 | 100 | 1800 | 3300 | 2475 | 699 | 3588 |
| Total benzofluoranthenes | 4 of 4 | 100 | 2070 | 3100 | 2483 | 437 | 3178 |
| Total HPAHs | 4 of 4 | 100 | 8270 | 17620 | 12201 | 4253 | 18969 |
| **LPAH, µg/kg** | | | | | | | |
| Acenaphthene | 2 of 4 | 50 | 180 | 360 | 141 | 166 | 405 |
| Acenaphthylene | 3 of 4 | 75 | 81 | 500 | 178 | 218 | 525 |
| Anthracene | 4 of 4 | 100 | 300 | 1400 | 888 | 504 | 1689 |
| Fluorene | 3 of 4 | 75 | 46 | 550 | 202 | 244 | 590 |
| Methylnaphthalenes | 1 of 4 | 25 | 83 | 83 | 32 | 34 | 86 |
| Phenanthrene | 4 of 4 | 100 | 250 | 2700 | 1068 | 1112 | 2837 |
| Total LPAHs | 4 of 4 | 100 | 706 | 5593 | 2508 | 2157 | 5940 |
| Total PAHs | 4 of 4 | 100 | 8976 | 23213 | 14709 | 6161 | 24513 |
| **PCB, µg/kg** | | | | | | | |
| Aroclor 1260 | 1 of 3 | 33 | 390 | 390 | 140 | 217 | 678 |
| **Pesticides, µg/kg** | | | | | | | |
| Aldrin | 0 of 3 | 0 | 0 | 0 | 0.50 | 0.00 | 0.50 |
| Lindane (gamma-BHC) | 0 of 3 | 0 | 0 | 0 | 0.50 | 0.00 | 0.50 |
| 4,4'-DDD | 2 of 3 | 67 | 13 | 36 | 17 | 18 | 61 |
| 4,4'-DDE | 4 of 4 | 100 | 13 | 110 | 70 | 41 | 136 |
| 4,4'-DDT | 0 of 3 | 0 | 0 | 0 | 0.50 | 0.00 | 0.50 |
| Total DDTs | 4 of 4 | 100 | 13 | 146 | 83 | 56 | 172 |
| **SVOCs, µg/kg** | | | | | | | |
| Phenol | 0 of 4 | 0 | 0 | 0 | 29 | 4.8 | 36 |
| Bis(2-ethylhexyl)phthalate | 0 of 4 | 0 | 0 | 0 | 113 | 25 | 152 |
| Di-n-octylphthalate | 3 of 4 | 75 | 190 | 230 | 169 | 91 | 313 |

Note: When compound was not detected, the statistical values were calculated from one half the sample PQL.
UCL indicates upper confidence limit.



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**Table 4-39**
**Mean Analyte Concentrations by Sediment Evaluation Zone**

| Analyte Name | ER-L | Station Reference | 24 | SEZ A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sulfides, mg/kg** | | | | | | | | | | | |
| Total Sulfide | | 122 | 11 | 56 | 46 | 91 | 79 | 142 | 157 | 4167 | 4050 |
| **Metals, mg/kg** | | | | | | | | | | | |
| Arsenic | 8.2 | 8.3 | 4.6 | 5.6 | 5.3 | 10.1 | 9.4 | 11.2 | 15.7 | 10.1 | 12.5 |
| Beryllium | | 0.40 | 0.13 | 0.44 | 0.31 | 0.58 | 0.51 | 0.61 | 0.71 | 0.72 | 0.56 |
| Cadmium | 1.2 | 1.1 | 0.078 | 0.23 | 0.19 | 0.41 | 0.29 | 0.58 | 0.77 | 0.83 | 0.86 |
| Chromium | 81 | 37 | 9.8 | 28 | 25 | 43 | 35 | 46 | 70 | 52 | 123 |
| Copper | 34 | 75 | 13 | 40 | 56 | 111 | 109 | 137 | 320 | 167 | 248 |
| Lead | 46.7 | 40 | 5.2 | 24 | 28 | 48 | 46 | 61 | 112 | 70 | 84 |
| Mercury | 0.15 | 0.30 | | 0.16 | 0.25 | 0.50 | 0.61 | 0.67 | 1.04 | 0.42 | 0.55 |
| Nickel | 20.9 | 24 | 7.8 | 20 | 16 | 26 | 22 | 25 | 35 | 30 | 31 |
| Selenium | | 0.90 | | | | | | | 0.87 | | |
| Silver | 1 | 1.8 | | 1.7 | 1.4 | 4.7 | 2.3 | 2.4 | 3.4 | 2.5 | 2.9 |
| Zinc | 150 | 153 | 33 | 91 | 100 | 168 | 149 | 207 | 343 | 242 | 403 |
| **Butyltins, µg/kg** | | | | | | | | | | | |
| Dibutyltin | | 1.2 | | | | | | 1.3 | | | |
| Monobutyltin | | | | | | | | | | | 1.9 |
| **HPAH, µg/kg** | | | | | | | | | | | |
| Benzo(a)anthracene | 261 | | | | 37 | 23 | 36 | 124 | 210 | | 1250 |
| Benzo(a)pyrene | 430 | 53 | | 20 | 99 | 61 | 165 | 277 | 493 | 260 | 1113 |
| Benzo(b)fluoranthene | | 61 | | 20 | 132 | 66 | 205 | 338 | 563 | 317 | 1425 |
| Benzo(ghi)perylene | 540[a] | 26 | | | 58 | 32 | 85 | 163 | 340 | 122 | 295 |
| Benzo(k)fluoranthene | | 69 | | 23 | 158 | 74 | 217 | 340 | 563 | 297 | 1058 |
| Chrysene | 384 | 38 | | 18 | 76 | 42 | 68 | 238 | 440 | 227 | 1455 |
| Dibenzo(a,h)anthracene | 63.4 | | | | 12 | 21 | | 54 | | | 159 |
| Fluoranthene | 600 | 62 | | 15 | 24 | 24 | 37 | 135 | 210 | 123 | 2630 |
| Indeno(1,2,3-cd)pyrene | 69[a] | 24 | | | 58 | 30 | 72 | 163 | 353 | 128 | 343 |
| Pyrene | 665 | 62 | | 18 | 24 | 29 | 37 | 152 | 290 | 298 | 2475 |
| Total benzofluoranthenes | 800[a] | 131 | | 42 | 290 | 140 | 422 | 678 | 1127 | 613 | 2483 |
| Total HPAHs | 1700 | 417 | | 169 | 664 | 388 | 903 | 1975 | 3497 | 1883 | 12201 |
| **LPAH, µg/kg** | | | | | | | | | | | |
| Acenaphthene | 16 | | | | | | | | | | 141 |
| Acenaphthylene | 44 | | | | 16 | | 19 | 33 | 56 | 67 | 178 |
| Anthracene | 85.3 | 19 | | | 43 | 22 | 34 | 75 | 130 | 117 | 888 |
| Fluorene | 19 | | | | | | | | | 59 | 202 |
| Methylnaphthalenes | 70 | | | | | | | | | | 32 |
| Phenanthrene | 240 | 19 | | | 31 | 20 | 26 | 64 | 107 | 106 | 1068 |
| Total LPAHs | 552 | 85 | | | 114 | 97 | 95 | 236 | 393 | 510 | 2508 |
| Total PAHs | 4022 | 502 | | 254 | 777 | 485 | 997 | 2211 | 3889 | 2392 | 14709 |
| **PCB, µg/kg** | | | | | | | | | | | |
| Aroclor 1260 | 22.7[b] | | | 20 | 84 | 171 | 215 | 273 | 550 | | 140 |
| **Pesticides, µg/kg** | | | | | | | | | | | |
| Aldrin | 5[a] | | | | | 0.66 | | | | | |
| Lindane (gamma-BHC) | 5[a] | | | | | 0.68 | 0.47 | | 2.60 | | |
| 4,4'-DDD | | 13 | | 3.1 | 1.7 | 13 | 10 | 11 | 21 | | 17 |
| 4,4'-DDE | 2.2 | 119 | 6.0 | 32 | 19 | 54 | 48 | 88 | 120 | 99 | 70 |
| 4,4'-DDT | | | | | | 4.2 | | | | | |
| Total DDTs | 1.58 | 122 | 6.7 | 36 | 21 | 71 | 59 | 99 | 142 | 101 | 83 |
| **SVOCs, µg/kg** | | | | | | | | | | | |
| Phenol | 120[a] | | | 35 | | | | 91 | | | |
| Bis(2-ethylhexyl)phthalate | 1900[a] | 120 | | | | | | 200 | | | |
| Di-n-octylphthalate | 68,000[a] | 69 | | | 39 | 46 | 41 | 56 | 114 | 165 | 169 |

Notes:

[a] PSDDA (U.S. ACOE 1988) SL value used in place of unavailable ER-L.

[b] ER-L (Long et al. 1995) value for total PCBs.

Blank space indicates sample analyzed for compound, but none detected.



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## Table 4-40
## Mean Analyte Concentrations by Sediment Evaluation Zone, Exceeding Reference Value

| Analyte Name | ER-L | Reference | Station 24 | SEZ A | SEZ B | SEZ C | SEZ D | SEZ E | SEZ F | SEZ G | SEZ H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sulfides, mg/kg** | | | | | | | | | | | |
| Total Sulfide | | 122 | | | | | | | | 4167 | 4050 |
| **Metals, mg/kg** | | | | | | | | | | | |
| Arsenic | 8.2 | 8.3 | | | | | | | 15.7 | | |
| Beryllium | | 0.40 | | | | | | | 0.71 | | |
| Chromium | 81 | 37 | | | | | | | | | 123 |
| Copper | 34 | 75 | | | | | | | 320 | | 248 |
| Lead | 46.7 | 40 | | | | | | | 112 | | 84 |
| Mercury | 0.15 | 0.30 | | | | | | | 1.04 | | |
| Zinc | 150 | 153 | | | | | | | 343 | | 403 |
| **Butyltins, µg/kg** | | | | | | | | | | | |
| Monobutyltin | | | | | | | | | | | 1.9 |
| **HPAH, µg/kg** | | | | | | | | | | | |
| Benzo(a)anthracene | 261 | | | | 37 | 23 | 36 | 124 | 210 | | 1250 |
| Benzo(a)pyrene | 430 | 53 | | | | | 165 | 277 | 493 | 260 | 1113 |
| Benzo(b)fluoranthene | | 61 | | | | | | 338 | 563 | 317 | 1425 |
| Benzo(ghi)perylene | 540[a] | 26 | | | | | | 163 | 340 | 122 | 295 |
| Benzo(k)fluoranthene | | 69 | | | | | 217 | 340 | 563 | 297 | 1058 |
| Chrysene | 384 | 38 | | | | | | 238 | 440 | 227 | 1455 |
| Dibenzo(a,h)anthracene | 63.4 | | | | 12 | 21 | | 54 | | | 159 |
| Fluoranthene | 600 | 62 | | | | | | | 210 | | 2630 |
| Indeno(1,2,3-cd)pyrene | 69[a] | 24 | | | | | | 163 | 353 | 128 | 343 |
| Pyrene | 665 | 62 | | | | | | | 290 | | 2475 |
| Total benzofluoranthenes | 800[a] | 131 | | | | | 422 | 678 | 1127 | 613 | 2483 |
| Total HPAHs | 1700 | 417 | | | | | 903 | 1975 | 3497 | 1883 | 12201 |
| **LPAH, µg/kg** | | | | | | | | | | | |
| Acenaphthene | 16 | | | | | | | | | | 141 |
| Acenaphthylene | 44 | | | | 16 | | 19 | 33 | 56 | 67 | 178 |
| Anthracene | 85.3 | 19 | | | | | | 75 | 130 | 117 | 888 |
| Fluorene | 19 | | | | | | | | | 59 | 202 |
| Methylnaphthalenes | 70 | | | | | | | | | | 32 |
| Phenanthrene | 240 | 19 | | | | | | 64 | 107 | 106 | 1068 |
| Total LPAHs | 552 | 85 | | | | | | | 393 | 510 | 2508 |
| Total PAHs | 4022 | 502 | | | | | | 2211 | 3889 | 2392 | 14709 |
| **PCB, µg/kg** | | | | | | | | | | | |
| Aroclor 1260 | 22.7[b] | | 20 | 84 | 171 | 215 | 273 | 550 | | | 140 |
| **Pesticides, µg/kg** | | | | | | | | | | | |
| Aldrin | 5[a] | | | | 0.66 | | | | | | |
| Lindane (gamma-BHC) | 5[a] | | | | 0.68 | 0.47 | | 2.60 | | | |
| 4,4'-DDT | 1.58[c] | | | | 4.2 | | | | | | |
| **SVOCs, µg/kg** | | | | | | | | | | | |
| Phenol | 120[a] | | 35 | | | | | 91 | | | |

Notes:

[a] PSDDA (U.S. ACOE 1988) SL value used in place of unavailable ER-L.

[b] ER-L (Long et al. 1995) value for total PCBs.

[c] ER-L (Long et al. 1995) value for total DDTs.

Blank space indicates SEZ mean concentration not significantly greater than reference mean concentration.

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R0063018

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## Table 4-41
## Mean Analyte Concentrations by Sediment Evaluation Zone Exceeding Mean Reference Concentrations and ER-L Values

| Analyte Name | ER-L | Reference | Station 24 | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sulfides, mg/kg** | | | | | | | | | | | |
| Total Sulfide | | 122 | | | | | | | | 4167 | 4050 |
| **Metals, mg/kg** | | | | | | | | | | | |
| Arsenic | 8.2 | 8.3 | | | | | | | 15.7 | | |
| Beryllium | | 0.40 | | | | | | | 0.71 | | |
| Chromium | 81 | 37 | | | | | | | | | 123 |
| Copper | 34 | 75 | | | | | | | 320 | | 248 |
| Lead | 46.7 | 40 | | | | | | | 112 | | 84 |
| Mercury | 0.15 | 0.30 | | | | | | | 1.04 | | |
| Zinc | 150 | 153 | | | | | | | 343 | | 403 |
| **Butyltins, µg/kg** | | | | | | | | | | | |
| Monobutyltin | | | | | | | | | | | 1.9 |
| **HPAH, µg/kg** | | | | | | | | | | | |
| Benzo(a)anthracene | 261 | | | | 37 | 23 | 36 | 124 | 210 | | 1250 |
| Benzo(a)pyrene | 430 | 53 | | | | | | | 493 | 260 | 1113 |
| Benzo(b)fluoranthene | | 61 | | | | | | 338 | 563 | 317 | 1425 |
| Benzo(ghi)perylene | 540[a] | 26 | | | | | | | | | |
| Benzo(k)fluoranthene | | 69 | | | | | | 340 | 563 | 297 | 1058 |
| Chrysene | 384 | 38 | | | | | | | 440 | 227 | 1455 |
| Dibenzo(a,h)anthracene | 63.4 | | | | 12 | 21 | | 54 | | | 159 |
| Fluoranthene | 600 | 62 | | | | | | | | | 2630 |
| Indeno(1,2,3-cd)pyrene | 69[a] | 24 | | | | | | 163 | 353 | 128 | 343 |
| Pyrene | 665 | 62 | | | | | | | | | 2475 |
| Total benzofluoranthenes | 800[a] | 131 | | | | | | 678 | 1127 | 613 | 2483 |
| Total HPAHs | 1700 | 417 | | | | | | 1975 | 3497 | 1883 | 12201 |
| **LPAH, µg/kg** | | | | | | | | | | | |
| Acenaphthene | 16 | | | | | | | | | | 141 |
| Acenaphthylene | 44 | | | | 16 | | 19 | 33 | 56 | 67 | 178 |
| Anthracene | 85.3 | 19 | | | | | | 75 | 130 | 117 | 888 |
| Fluorene | 19 | | | | | | | | | 59 | 202 |
| Methylnaphthalenes | 70 | | | | | | | | | | 32 |
| Phenanthrene | 240 | 19 | | | | | | | 107 | | 1068 |
| Total LPAHs | 552 | 85 | | | | | | | 393 | 510 | 2508 |
| Total PAHs | 4022 | 502 | | | | | | | 3889 | | 14709 |
| **PCB, µg/kg** | | | | | | | | | | | |
| Aroclor 1260 | 22.7[b] | | 20 | 84 | 171 | 215 | 273 | 550 | | | 140 |
| **Pesticides, µg/kg** | | | | | | | | | | | |
| Aldrin | 5[a] | | | | 0.66 | | | | | | |
| Lindane (gamma-BHC) | 5[a] | | | | 0.68 | 0.47 | | 2.60 | | | |
| 4,4'-DDT | 1.58[c] | | | | 4.2 | | | | | | |
| **SVOCs, µg/kg** | | | | | | | | | | | |
| Phenol | 120[a] | | 35 | | | | 91 | | | | |

Notes:

Table values are means, however 95% UCLs were compared to ER-L values.

[a] PSDDA (U.S. ACOE 1988) SL value used in place of unavailable ER-L.

[b] ER-L (Long et al. 1995) value for total PCBs.

[c] ER-L (Long et al. 1995) value for total DDTs.

Blank indicates mean SEZ concentration not significantly greater than mean reference concentration or SEZ 95% UCL not greater than ER-L.



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**Table 4-42**
**Mean Sediment Evaluation Zone and Reference Station Bioassay Results**

| Sediment Evaluation Zone | Bioassay | | | | | |
|---|---|---|---|---|---|---|
| | Echinoderm[a] | | Amphipod | | Polychaete | |
| | Survival (percent) | Normal Development (percent) | Survival (percent) | Reburial (percent) | Survival (percent) | Growth (mg/day) |
| Station 24[b] | 60.3 | 0.0 | 92.0 | 100.0 | 84.0 | 0.134 |
| A | 65.7 | 38.4 | 86.6 | 95.6 | 94.0 | 0.0950 |
| B | 53.1 | 1.9 | 89.3 | 94.8 | 95.0 | 0.114 |
| C | 84.3 | 66.0 | 88.9 | 96.0 | 96.4 | 0.0880 |
| D | 77.8 | 14.3 | 89.3 | 95.9 | 96.5 | 0.0940 |
| E | 88.4 | 68.0 | 86.0 | 91.9 | 94.0 | 0.0900 |
| F | 81.9 | 60.7 | 88.0 | 96.6 | 92.0 | 0.0780 |
| G | 60.8 | 0.1 | 45.2 | 63.1 | 90.0 | 0.139 |
| H | 82.6 | 0.0 | 62.3 | 80.2 | 88.0 | 0.160 |
| Reference | 84.8 | 83.7 | 84.6 | 96.4 | 96.8 | 0.0880 |

Notes:

[a] 100 percent pore water concentration data

[b] Dissolved oxygen levels fell below 60 percent saturation during pore water bioassay

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**Table 4-43**
**Determination of Sediment Toxicity by Echinoderm[1] Bioassay for West Basin Sediment Evaluation Zones**

| Sediment Evaluation Zone | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect[2] |
|---|---|---|---|---|
| | | **Survival** | | |
| Station 24[3] | 29 | Yes | Yes | No Hit |
| A | 22 | Yes | No | No Hit |
| B | 37 | Yes | No | No Hit |
| C | 0 | No | No | No Hit |
| D | 8 | No | No | No Hit |
| E | 5 | No | No | No Hit |
| F | 3 | No | No | No Hit |
| G | 28 | Yes | No | No Hit |
| H | 2 | No | No | No Hit |
| | | **Normal Development** | | |
| Station 24[3] | 100 | Yes | Yes | No Hit |
| A | 54 | Yes | No | No Hit |
| B | 98 | Yes | No | Hit |
| C | 21 | Yes | No | No Hit |
| D | 83 | Yes | No | No Hit |
| E | 19 | No | No | No Hit |
| F | 28 | Yes | No | No Hit |
| G | 100 | Yes | No | Hit |
| H | 100 | Yes | Yes | Hit |

Notes:
[1] 100 percent pore water concentration.
[2] Anomalous toxicity effects are discussed in text.
[3] Dissolved oxygen levels fell below 60 percent saturation during bioassay.



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**Table 4-44**
**Determination of Sediment Toxicity by Amphipod Bioassay for West Basin Sediment Evaluation Zones**

| Sediment Evaluation Zone | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect |
|---|---|---|---|---|
| | | **Survival** | | |
| Station 24 | 9 | No | No | No Hit |
| A | 2 | No | No | No Hit |
| B | 6 | No | No | No Hit |
| C | 5 | No | No | No Hit |
| D | 6 | No | No | No Hit |
| E | 2 | No | No | No Hit |
| F | 4 | No | No | No Hit |
| G | 47 | Yes | No | No Hit |
| H | 26 | Yes | No | No Hit |
| | | **Reburial** | | |
| Station 24 | 4 | No | No | No Hit |
| A | 1 | No | No | No Hit |
| B | 2 | No | No | No Hit |
| C | 0 | No | No | No Hit |
| D | 1 | No | No | No Hit |
| E | 5 | No | No | No Hit |
| F | 0 | No | No | No Hit |
| G | 35 | Yes | No | No Hit |
| H | 17 | No | No | No Hit |

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**Table 4-45**
**Determination of Sediment Toxicity by Polychaete Bioassay for West Basin Sediment Evaluation Zones**

| Sediment Evaluation Zone | Relative Percent Difference | Relative Percent Difference Exceeded | Statistical Significance Exceeded | Occurrence of Toxicity Effect |
|---|---|---|---|---|
| | | **Survival** | | |
| Station 24 | 3 | No | No | No Hit |
| A | 3 | No | No | No Hit |
| B | 2 | No | No | No Hit |
| C | 0 | No | No | No Hit |
| D | 0 | No | No | No Hit |
| E | 3 | No | No | No Hit |
| F | 5 | No | No | No Hit |
| G | 7 | No | No | No Hit |
| H | 9 | No | No | No Hit |
| | | **Growth** | | |
| Station 24 | 53 | No | No | No Hit |
| A | 8 | No | No | No Hit |
| B | 31 | No | No | No Hit |
| C | 0 | No | No | No Hit |
| D | 7 | No | No | No Hit |
| E | 3 | No | No | No Hit |
| F | 11 | No | No | No Hit |
| G | 59 | No | No | No Hit |
| H | 82 | No | No | No Hit |



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**Table 4-46**
**Mean Community Indices for West Basin Infauna Community and Major Taxonomic Groups by Sediment Evaluation Zone**

| Taxonomic Group / Index | Station: Reference | 24 | SEZ: A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|
| **Benthic Infauna Community Indices** | | | | | | | | | | |
| Total Abundance | 268 | 175 | 153 | 563 | 71 | 112 | 462 | 82 | 1522 | 870 |
| Number of Taxa | 33 | 42 | 47 | 38 | 22 | 28 | 38 | 25 | 76 | 60 |
| Total Biomass | 2.956 | 3.873 | 6.241 | 2.809 | 2.598 | 4.503 | 17.931 | 1.965 | 105.715 | 47.135 |
| Shannon-Wiener Diversity Index | 2.62 | 2.99 | 3.41 | 2.40 | 2.49 | 2.66 | 2.81 | 2.62 | 2.75 | 2.48 |
| Margalef Diversity Index | 6.3 | 7.9 | 9.1 | 6.5 | 5.1 | 5.7 | 6.7 | 5.3 | 10.6 | 8.7 |
| Evenness | 0.76 | 0.80 | 0.89 | 0.69 | 0.84 | 0.83 | 0.83 | 0.87 | 0.64 | 0.61 |
| Dominance Index | 10 | 13 | 19 | 8 | 9 | 10 | 10 | 10 | 10 | 8 |
| **Polychaetes** | | | | | | | | | | |
| Abundance | 168 | 137 | 93 | 470 | 56 | 77 | 381 | 66 | 542 | 606 |
| Number of Taxa | 14 | 28 | 27 | 18 | 14 | 15 | 22 | 16 | 36 | 31 |
| Biomass | 0.781 | 1.411 | 1.232 | 0.997 | 0.355 | 0.482 | 2.229 | 0.537 | 4.615 | 2.823 |
| **Crustaceans** | | | | | | | | | | |
| Abundance | 65 | 16 | 30 | 76 | 6 | 23 | 25 | 8 | 136 | 65 |
| Number of Taxa | 7 | 8 | 7 | 9 | 3 | 6 | 4 | 3 | 11 | 8 |
| Biomass | 1.444 | 0.132 | 0.945 | 0.241 | 1.892 | 0.397 | 0.333 | 0.607 | 1.316 | 0.433 |
| **Mollusks** | | | | | | | | | | |
| Abundance | 25 | 5 | 15 | 14 | 6 | 10 | 37 | 5 | 310 | 110 |
| Number of Taxa | 8 | 3 | 8 | 8 | 4 | 5 | 7 | 3 | 17 | 13 |
| Biomass | 0.570 | 2.267 | 3.847 | 1.534 | 0.344 | 0.875 | 11.583 | 0.094 | 93.670 | 36.800 |
| **Echinoderms** | | | | | | | | | | |
| Abundance | 2 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 9 | 10 |
| Number of Taxa | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 2 |
| Biomass | 0.112 | 0.000 | 0.091 | 0.000 | 0.000 | 0.000 | 0.054 | 0.000 | 0.382 | 0.466 |
| **Others** | | | | | | | | | | |
| Abundance | 9 | 17 | 13 | 4 | 3 | 2 | 17 | 3 | 525 | 80 |
| Number of Taxa | 2 | 3 | 4 | 3 | 2 | 2 | 4 | 2 | 10 | 7 |
| Biomass | 0.049 | 0.063 | 0.127 | 0.038 | 0.007 | 2.749 | 3.731 | 0.727 | 5.732 | 6.614 |

Note:
Biomass reported in grams.

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## Table 4-47
## Chemicals of Potential Health Concern

| California Halibut | | | |
|---|---|---|---|
| Fillet | | Whole Body | |
| West Basin | Reference | West Basin | Reference |
| Arsenic | Arsenic | Arsenic | Arsenic |
| Copper | Copper | Copper | Copper |
| Mercury | Mercury | Lead | Lead |
| Zinc | Selenium | Mercury | Mercury |
| Dibutyltin | Zinc | Selenium | Nickel |
| Tributyltin | 4,4'-DDE | Zinc | Zinc |
| 4,4'-DDE | | Dibutyltin | Dibutyltin |
| | | Tributyltin | Tributyltin |
| | | Endosulfan II | Endosulfan II |
| | | 4,4'-DDD | 4,4'-DDD |
| | | 4,4'-DDE | 4,4'-DDE |

| White Croaker | | | |
|---|---|---|---|
| Fillet | | Whole Body | |
| West Basin | Reference | West Basin | Reference |
| Arsenic | Arsenic | Arsenic | Arsenic |
| Copper | Mercury | Beryllium | Copper |
| Lead | Zinc | Chromium | Mercury |
| Mercury | Tributyltin | Copper | Selenium |
| Selenium | 4,4'-DDD | Mercury | Zinc |
| Zinc | 4,4'-DDE | Selenium | Tributyltin |
| Tributyltin | | Zinc | Endosulfan II |
| Endosulfan II | | Dibutyltin | 4,4'-DDD |
| Endrin | | Tributyltin | 4,4'-DDE |
| 4,4'-DDD | | α-BHC | |
| 4,4'-DDE | | Endosulfan II | |
| | | Endrin | |
| | | 4,4'-DDD | |
| | | 4,4'-DDE | |

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**Table 4-48**
**Fish Chemicals of Potential Ecological Concern**

| Fish COPECs |
|---|
| **Metals** |
| Arsenic |
| Beryllium |
| Chromium |
| Copper |
| **Butyltins** |
| Dibutyltin |
| Tributyltin |
| **Pesticides** |
| α-BHC |
| Endrin |

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Table 4-49
Sediment Chemicals of Potential Ecological Concern (COPEC) by West Basin Sediment Evaluation Zone

| Sediment Evaluation Zone | | | |
|---|---|---|---|
| **A** | **B** | **C** | **D** |
| **PCB** | **HPAH** | **HPAH** | **HPAH** |
| Aroclor 1260 | Benzo(a)anthracene | Benzo(a)anthracene | Benzo(a)anthracene |
| **SVOC** | Dibenzo(a,h)anthracene | Dibenzo(a,h)anthracene | Benzo(a)pyrene |
| Phenol | **LPAH** | **PCB** | Benzo(k)fluoranthene |
| | Acenaphthylene | Aroclor 1260 | **LPAH** |
| | **PCB** | **Pesticides** | Acenaphthylene |
| | Aroclor 1260 | Aldrin | **PCB** |
| | | Lindane | Aroclor 1260 |
| | | 4,4'-DDT | **Pesticide** |
| | | | Lindane |

| Sediment Evaluation Zone | | | |
|---|---|---|---|
| **E** | **F** | **G** | **H** |
| **HPAH** | **Metals** | **Physical** | **Physical** |
| Benzo(a)anthracene | Arsenic | Sulfide | Sulfide |
| Benzo(a)pyrene | Beryllium | **HPAH** | **Metals** |
| Benzo(b)fluoranthene | Copper | Benzo(a)pyrene | Chromium |
| Benzo(ghi)perylene | Lead | Benzo(b)fluoranthene | Copper |
| Benzo(k)fluoranthene | Mercury | Benzo(ghi)perylene | Lead |
| Chrysene | Zinc | Benzo(k)fluoranthene | Zinc |
| Dibenzo(a,h)anthracene | **HPAH** | Chrysene | **Butyltin** |
| Indeno(1,2,3,-cd)pyrene | Benzo(a)anthracene | Indeno(1,2,3,-cd)pyrene | Monobutyltin |
| **LPAH** | Benzo(a)pyrene | **LPAH** | **HPAH** |
| Acenaphthylene | Benzo(b)fluoranthene | Acenaphthylene | Benzo(a)anthracene |
| Anthracene | Benzo(ghi)perylene | Anthracene | Benzo(a)pyrene |
| Phenanthrene | Benzo(k)fluoranthene | Fluorene | Benzo(b)fluoranthene |
| **PCB** | Chrysene | Phenanthrene | Benzo(ghi)perylene |
| Aroclor 1260 | Fluoranthene | | Benzo(k)fluoranthene |
| **SVOC** | Indeno(1,2,3,-cd)pyrene | | Chrysene |
| Phenol | Pyrene | | Dibenzo(a,h)anthracene |
| | **LPAH** | | Fluoranthene |
| | Acenaphthylene | | Indeno(1,2,3,-cd)pyrene |
| | Anthracene | | Pyrene |
| | Phenanthrene | | **LPAH** |
| | **PCB** | | Acenaphthene |
| | Aroclor 1260 | | Acenaphthylene |
| | **Pesticide** | | Anthracene |
| | Lindane | | Fluorene |
| | | | Methylnaphthalenes |
| | | | Phenanthrene |
| | | | **PCB** |
| | | | Aroclor 1260 |

Note:
No chemical of potential ecological concern at Station 24.



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**Table 4-80**
**Evaluation Matrix for Characterizing Sediment Evaluation Zones within West Basin**

| Sediment Bioassay | | | | | |
|---|---|---|---|---|---|
| Sediment Chemistry | Solid Phase | Pore Water | Benthic Community Analysis | Sediment Bioaccumulation[a] | Preliminary Status[b] |
| +[c] | +[d] | +[d] | +[e] | – | AOPC; further characterization or remediation required |
| – | + | + | + | – | AOPC; further characterization or remediation required |
| – | – | + | + | +[c] | AOPC; further characterization or remediation required |
| + | + | + | + | + | AOPC; further characterization or remediation required |
| + | + | + | – | + | AOPC; further characterization or remediation required |
| – | + | + | + | + | AOPC; further characterization or remediation required |
| + | + | – | + | + | AOPC; further characterization or remediation required |
| + | – | – | + | – | AOPC; further characterization or remediation required |
| – | + | – | + | – | AOPC; further characterization or remediation required |
| + | – | + | + | + | AOPC; further characterization or remediation required |
| + | – | + | + | – | AOPC; further characterization or remediation required |
| + | + | – | + | – | AOPC; further characterization or remediation required |
| + | – | + | – | – | AOPC; characterize water column for source identification |
| – | + | – | – | + | AOPC; characterize water column for source identification |
| – | + | – | + | + | AOPC; characterize water column for source identification |
| – | + | + | – | + | AOPC; characterize water column for source identification |
| + | – | + | – | + | AOPC; characterize water column for source identification |
| – | – | + | – | + | AOPC; characterize water column for source identification |
| – | + | + | – | – | AOPC; characterize water column for source identification |
| + | + | + | – | – | AOPC; characterize water column for source identification |
| + | – | – | + | + | AOPC; characterize water column for source identification |
| + | + | – | – | + | AOPC; characterize water column for source identification |
| – | – | + | + | – | AOPC; characterize water column for source identification |
| – | – | – | + | + | AOPC; characterize water column for source identification |
| + | – | – | – | + | AOPC; characterize water column for source identification |



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(table continues)

Table 4-60 (continued)

| Sediment Chemistry | Sediment Bioassay: Solid Phase | Sediment Bioassay: Pore Water | Benthic Community Analysis | Sediment Bioaccumulation[a] | Preliminary Status[b] |
|---|---|---|---|---|---|
| + | – | – | – | – | No action zone (not an AOPC) |
| – | – | – | + | – | No action zone (not an AOPC) |
| – | – | – | – | – | No action zone (not an AOPC) |
| – | – | – | – | + | No action zone (not an AOPC) |
| + | + | – | – | – | No action zone (not an AOPC) |
| – | + | – | – | – | No action zone (not an AOPC) |
| – | – | + | – | – | No action zone (not an AOPC) |

[a] Sampled at approximately 1 in 4 stations.
[b] Fish tissue data will be used for this purpose on a supportive basis only, due to mobility of fish.
[c] Chemistry hit = Exceedance of a statistically significant ($P < 0.05$) difference between test and reference stations.
[d] Bioassay hit = Exceedance of both a relative percent and statistically significant ($P < 0.05$) difference between test and reference stations.
[e] Benthic community analysis hit = A statistically significant ($P < 0.05$) difference between test and reference stations for various measurement indices.



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**Table 4-61**
**Evaluation Matrix Showing Preliminary Status of Sediment Evaluation Zones**

| SEZ | Sediment Chemistry | Sediment Bioassay: Polychaete and Amphipod (solid phase) | Sediment Bioassay: Echinoderm (pore water) | Benthic Community Analysis | Sediment Bioaccumulation | Preliminary SEZ Status |
|---|---|---|---|---|---|---|
| Station 24 | – | – | – | – | – | No Action Zone (not an AOPEC) |
| A | + | – | – | – | – | No Action Zone (not an AOPEC) |
| B | + | – | + | – | – | AOPEC; characterize water column for source identification |
| C | + | – | – | – | –* | No Action Zone (not an AOPEC) |
| D | + | – | – | – | –* | No Action Zone (not an AOPEC) |
| E | + | – | – | – | –* | No Action Zone (not an AOPEC) |
| F | + | – | – | – | –* | No Action Zone (not an AOPEC) |
| G | + | – | + | – | + | AOPEC; characterize water column for source identification |
| H | + | – | + | – | + | AOPEC; characterize water column for source identification |

Notes:

+ Significant adverse EFFECT noted at the SEZ.

- No significant adverse effect noted at the SEZ.

* No bioaccumulation samples collected in this SEZ.



R0063030

## Table 5-1
## Summary of Acute and Chronic Toxicological Properties for Chemicals of Potential Health Concern

| Chemical Name | CAS Number | Acute Toxicity Endpoint[a] | Value | Units | Exposure Route/Species | Chronic Toxicity Endpoint | Value | Units | Exposure Route/Species | Critical Effect | Uncertainty Factor | Modification Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 7440-38-2 | $LD_{50}$ | 1.4 | mg/kg | oral/human | NOAEL[b] | $8.0 \times 10^{-4}$ | mg/kg | oral/human | hyperpigmentation, keratosis | | |
| | | $LD_{50}$ | $2.0 \times 10^{+1}$ | mg/kg | oral/rat (trioxide) | RfD[b] | $3.0 \times 10^{-4}$ | mg/kg | oral/human | keratosis | 3 | 1 |
| Beryllium | 7440-41-7 | $LD_{50}$ | $8.2 \times 10^{+1}$ | mg/kg | oral/rat (sulfate) | NOAEL[b] | $5.4 \times 10^{-1}$ | mg/kg | oral/rat | no effects | | |
| | | | | | | RfD[b] | $5.0 \times 10^{-3}$ | mg/kg | oral/rat | no effects | 100 | 1 |
| Chromium III | 16065-83-1 | $LD_{50}$ | $1.9 \times 10^{+3}$ | mg/kg | oral/rat (chloride) | NOEL[b] | $1.8 \times 10^{+4}$ | mg/kg | oral/rat | no effects | | |
| | | LDLo | $2.0 \times 10^{+2}$ | mg/kg | skin/guinea pig | RfD[b] | 1.0 | mg/kg | oral/rat | no effects | 100 | 10 |
| Chromium VI | 18540-29-9 | $LD_{50}$ | $1.7 \times 10^{+1}$ | mg/kg | oral/rat | NOAEL[b] | 2.4 | mg/kg | oral/rat | no effects | | |
| | | $LD_{50}$ | 33 | $mg/m^3$ | inhalation/rat | RfD[b] | $5.0 \times 10^{-3}$ | mg/kg | oral/rat | no effects | 500 | 1 |
| Copper | 7440-50-8 | TDLo | $1.1 \times 10^{+1}$ | mg/kg | oral/human (gastrointestinal) | LOAEL[b] | 5.3 | mg/kg | oral/human | gastrointestinal irritation | | |
| | | $LD_{50}$ | $3.0 \times 10^{+2}$ | mg/kg | oral/rat (sulfate) | RfD[b] | $3.7 \times 10^{-2}$ | mg/kg | oral/human | gastrointestinal irritation | not reported | not reported |
| DDD | 72-54-8 | $LD_{50}$ | no information | | | RfD[b] | not established | | | | | |
| DDE | 72-55-9 | $LD_{50}$ | no information | | | RfD[b] | not established | | | | | |
| Endosulfan II | 33213-65-9 | | | | | NOAEL[b] | $6.0 \times 10^{-1}$ | mg/kg | oral/rat | reduced weight gain, glomerunephrosis | | |
| | | | | | | RfD[b] | $6.0 \times 10^{-3}$ | mg/kg | oral/rat | | 100 | 1 |
| Endrin | 72-20-8 | $LD_{50}$ | 3.0 | mg/kg | oral/rat | NOEL[b] | $2.5 \times 10^{-2}$ | mg/kg | oral/dog | liver lesions; occasional convulsions | | |
| | | $LD_{50}$ | $1.2 \times 10^{+1}$ | mg/kg | skin/rat | RfD[b] | $3.0 \times 10^{-4}$ | mg/kg | oral/dog | | 100 | 1 |
| Lindane (gamma-BHC) | 58-89-9 | $LD_{50}$ | $7.6 \times 10^{+1}$ | mg/kg | oral/rat | NOAEL[b] | $3.3 \times 10^{-1}$ | mg/kg | oral/rat | liver/kidney toxicity | | |
| | | TDLo | $1.1 \times 10^{+2}$ | mg/kg | oral/child (systemic) | RfD[b] | $3.0 \times 10^{-4}$ | mg/kg | oral/rat | liver/kidney toxicity | 1000 | 1 |
| | | $LD_{50}$ | $5.0 \times 10^{+2}$ | mg/kg | skin/rabbit | | | | | | | |

(table continues)





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Table 5-1 (continued)

| Chemical Name | CAS Number | Acute Toxicity Endpoint[a] | Value | Units | Exposure Route/Species | Chronic Toxicity Endpoint | Value | Units | Exposure Route/Species | Critical Effect | Uncertainty Factor | Modification Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury (inorganic) | 7439-97-6 | $LD_{50}$ | $1.8 \times 10^{+1}$ | mg/kg | oral/rat (oxide) | NOAEL[c] | no information | | parenteral/rat | kidney effects | | |
| | | LCLo | 29 | $mg/m^3$ | inhalation/rabbit (metal) | RfD[c] | $3.0 \times 10^{-4}$ | mg/kg | parenteral/rat | kidney effects | 1000 | 1 |
| Methyl mercury | 22967-92-6 | | | | | NOAEL[b] | no information | | | | | |
| | | | | | | RfD[b] | $3.0 \times 10^{-4}$ | mg/kg | oral/human | CNS effects | 10 | 1 |
| Nickel | 7440-02-0 | LDLo | 5.0 | mg/kg | oral/guinea pig (metal) | NOAEL[b] | 5.0 | mg/kg | oral/rat | reduced body and organ weight | | |
| | | TDLo | $1.6 \times 10^{+2}$ | mg/kg | oral rat (metal) | RfD[b] | $2.0 \times 10^{-2}$ | mg/kg | oral/rat | reduced body and organ weight | 300 | 1 |
| | | $LD_{50}$ | $1.1 \times 10^{+2}$ | mg/kg | oral/rat (chloride) | | | | | | | |
| Selenium | 7782-49-2 | LDLo | $3.3 \times 10^{+1}$ | mg/kg | inhalation/rat (metal) | NOAEL[b] | $1.5 \times 10^{-2}$ | mg/kg | oral/human | selenosis (hair, nail loss) | | |
| | | LDLo | $1.8 \times 10^{+2}$ | mg/kg | oral/rat (sulfide) | RfD[b] | $5.0 \times 10^{-3}$ | mg/kg | oral/human | selenosis (hair, nail loss) | 3 | 1 |
| | | LDLo | $1.0 \times 10^{+1}$ | mg/kg | skin/rabbit (oxychloride) | | | | | | | |
| Tin (dibutyl oxide) | 818-08-6 | $LD_{50}$ | $4.5 \times 10^{+1}$ | mg/kg | oral/rabbit | RfD | not established | | | | | |
| Tin (tributyl oxide) | 563-5-9 | $LD_{50}$ | $8.7 \times 10^{+1}$ | mg/kg | oral/rat | NOAEL | IRIS not reviewed | | | | | |
| | | $LD_{50}$ | $9.0 \times 10^{+2}$ | mg/kg | skin/rabbit | RfD[d] | $3.0 \times 10^{-5}$ | mg/kg | | | | |
| Zinc | 7440-66-6 | LDLo | $2.2 \times 10^{+2}$ | mg/kg | oral/rat (sulfate) | LOAEL[b] | $6.0 \times 10^{+1}$ | mg/kg | oral/human | reduced enzyme activity (erythrocyte superoxide dismutase) | | |
| | | TDLo | $4.5 \times 10^{+1}$ | mg/kg | oral/human (gastrointestinal) | RfD[b] | $3.0 \times 10^{-1}$ | mg/kg | oral/human | | 3 | 1 |

(table continues)





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**Table 5-1** (continued)

[a] Source: Sax 1984

[b] Source: Integrated Risk Information System Database (IRIS)

[c] Source: U.S. EPA 1994

[d] Source: U.S. EPA Region IX 1995

Notes:

IRIS – Integrated Risk Information System

$LD_{50}$ – 50 percent lethal dose

LDLo – lowest lethal dose

LOAEL – lowest observed adverse effect level

NOAEL – no observed adverse effect level

NOEL – no observed effect level

RfD – reference dose

TDLo – lowest toxic dose





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## Table 5-2
## Summary of Carcinogenic Properties for Chemicals of Potential Health Concern

| Chemical Name | CAS Number | Class | Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$ | Species | Type of Neoplasm | Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$ | Species | Type of Neoplasm |
|---|---|---|---|---|---|---|---|---|
| Arsenic | 7440-38-2 | A | 1.75 | human | skin cancer | $1.5 \times 10^{+1}$ | human | lung cancer |
| Beryllium | 7440-41-7 | B2 | 4.30 | rat | lung, bone sarcomas | 8.4 | human | lung cancer |
| Chromium III | 16065-83-1 | D | | | | | | |
| Chromium VI | 18540-29-9 | A | no evidence for carcinogenicity by oral route | | | $2.9 \times 10^{+2}$ | human | lung cancer |
| Copper | 7440-50-8 | D | | | | | | |
| 4,4'-DDD | 72-54-8 | B2 | $2.40 \times 10^{-1}$ | mouse | liver carcinoma | | | |
| 4,4'-DDE | 72-55-9 | B2 | $3.40 \times 10^{-1}$ | mouse | liver carcinoma | | | |
| Endosulfan II | 33213-65-9 | D | | | | | | |
| Endrin | 72-20-8 | D | | | | | | |
| Lindane (gamma - BHC) | 58-89-9 | B2 | not established | | | | | |
| Mercury (inorganic) | 7439-97-6 | | | | | | | |
| Mercury, methyl- | 22967-92-6 | D | | | | | | |
| Nickel | 7440-02-0 | D | | | | | | |
| Selenium | 7782-49-2 | D | | | | | | |
| Tin, dibutyl oxide | 818-08-6 | | | | | | | |
| Tin, tributyl oxide | 563-5-9 | D | | | | | | |
| Zinc | 7440-66-6 | D | | | | | | |

Source: Integrated Risk Information System Database

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**Table 5-3**
**Oral Cancer Slope Factor and Reference Dose for COPHCs**

| COPHC | Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$ | Oral Reference Dose (mg/kg-day) |
|---|---|---|
| **Metals** | | |
| Arsenic | 1.75 | $3.00 \times 10^{-4}$ |
| Beryllium | 4.30 | $5.00 \times 10^{-3}$ |
| Chromium (total) | na | $5.00 \times 10^{-3}$ |
| Copper | na | $3.71 \times 10^{-2}$ |
| Mercury (methyl) | na | $3.00 \times 10^{-4}$ |
| Nickel | na | $2.00 \times 10^{-2}$ |
| Selenium | na | $5.00 \times 10^{-3}$ |
| Zinc | na | $3.00 \times 10^{-1}$ |
| **Butyltin** | | |
| Dibutyltin | na | ne |
| Tributyltin | na | $3.00 \times 10^{-5}$ |
| **Pesticides** | | |
| α-BHC | 6.30 | $3.00 \times 10^{-4}$ |
| Endosulfan II | na | $5.00 \times 10^{-5}$ |
| Endrin | na | $3.00 \times 10^{-4}$ |
| 4,4'DDD | $2.40 \times 10^{-1}$ | ne |
| 4,4'DDE | $3.40 \times 10^{-1}$ | ne |

Notes:

na – not applicable, chemical is not a carcinogen
ne – not established

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**Table 5-4**
**Exposure Conditions**

| Exposure Factor | Unit | Subsistence Fish Consumers | Recreational Fish Consumers |
|---|---|---|---|
| Fish consumption rate ($IR_f$), adults | kg/day | 0.132 | 0.054 |
| Fish consumption rate ($IR_f$) , child | kg/day | 0.028 | 0.011 |
| Fraction of consumed fish from West Basin (F) | unitless | 1 | 0.33 |
| Exposure frequency (EF) | days/yr | 350 | 350 |
| Exposure duration (ED), adult | yr | 30 | 30 |
| Exposure duration (ED), child | yr | 6 | 6 |
| Averaging time (AT), cancer | days | 25,550 | 25,550 |
| Averaging time (AT), adult, noncancer | days | 10,950 | 10,950 |
| Averaging time (AT), child, noncancer | days | 2,190 | 2,190 |
| Body weight (BW), adult | kg | 70 | 70 |
| Body weight (BW), child | kg | 15 | 15 |

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**Table 5-5**
**Summary of Human Health Risk**

| Consumer | California Halibut | | White Croaker | |
|---|---|---|---|---|
| | West Basin | Reference | West Basin | Reference |
| Recreational (fillet only) | | | | |
| Cancer Risk (adult ) | $8.9 \times 10^{-5}$ | $1.6 \times 10^{-4}$ | $2.5 \times 10^{-4}$ | $3.7 \times 10^{-4}$ |
| Hazard Index (adult) | 0.52 | 0.90 | 1.5 | 1.4 |
| Cancer Risk (child) | $1.8 \times 10^{-5}$ | $3.2 \times 10^{-5}$ | $5.0 \times 10^{-5}$ | $7.4 \times 10^{-5}$ |
| Hazard Index (child) | 0.52 | 0.90 | 1.5 | 1.4 |
| Recreational (whole body only) | | | | |
| Cancer Risk (adult ) | $8.4 \times 10^{-5}$ | $8.8 \times 10^{-5}$ | $3.0 \times 10^{-4}$ | $2.2 \times 10^{-4}$ |
| Hazard Index (adult) | 0.58 | 0.74 | 1.5 | 1.1 |
| Cancer Risk (child) | $1.7 \times 10^{-5}$ | $1.7 \times 10^{-5}$ | $5.9 \times 10^{-5}$ | $4.3 \times 10^{-5}$ |
| Hazard Index (child) | 0.58 | 0.74 | 1.5 | 1.1 |
| Subsistence (fillet only) | | | | |
| Cancer Risk (adult ) | $6.6 \times 10^{-4}$ | $1.2 \times 10^{-3}$ | $1.9 \times 10^{-3}$ | $2.7 \times 10^{-3}$ |
| Hazard Index (adult) | 3.8 | 6.7 | 11 | 10 |
| Cancer Risk (child) | $1.3 \times 10^{-4}$ | $2.4 \times 10^{-4}$ | $3.7 \times 10^{-4}$ | $5.4 \times 10^{-4}$ |
| Hazard Index (child) | 3.8 | 6.7 | 11 | 10 |
| Subsistence (whole body only) | | | | |
| Cancer Risk (adult) | $6.3 \times 10^{-4}$ | $6.5 \times 10^{-4}$ | $2.2 \times 10^{-3}$ | $1.6 \times 10^{-3}$ |
| Hazard Index (adult) | 4.3 | 5.4 | 11 | 8.4 |
| Cancer Risk (child) | $1.2 \times 10^{-4}$ | $1.3 \times 10^{-4}$ | $4.4 \times 10^{-4}$ | $3.2 \times 10^{-4}$ |
| Hazard Index (child) | 4.3 | 5.4 | 11 | 8.4 |



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**Table 5-6**
**Total Upper-Bound Cancer Risk Adjusted to Account for Noncarcinogenicity of "Fish Arsenic" in West Basin California Halibut and White Croaker**

| Fish Species and Sample Type | Recreational Angler: Total Risk | Risk from Arsenic | Percent of Total Risk Due to Arsenic | Adjusted Total Risk |
|---|---|---|---|---|
| **Halibut** | | | | |
| Fillet | $8.9 \times 10^{-5}$ | $8.4 \times 10^{-5}$ | 94% | $5.0 \times 10^{-6}$ |
| Whole Body | $8.4 \times 10^{-5}$ | $7.9 \times 10^{-5}$ | 94% | $5.0 \times 10^{-6}$ |
| **Croaker** | | | | |
| Fillet | $2.5 \times 10^{-4}$ | $2.2 \times 10^{-4}$ | 88% | $3.0 \times 10^{-5}$ |
| Whole Body | $3.0 \times 10^{-4}$ | $2.5 \times 10^{-4}$ | 83% | $5.0 \times 10^{-5}$ |

| Fish Species and Sample Type | Subsistence Angler: Total Risk | Risk from Arsenic | Percent of Total Risk Due to Arsenic | Adjusted Total Risk |
|---|---|---|---|---|
| **Halibut** | | | | |
| Fillet | $6.6 \times 10^{-4}$ | $6.2 \times 10^{-4}$ | 94% | $4.0 \times 10^{-5}$ |
| Whole Body | $6.3 \times 10^{-4}$ | $5.8 \times 10^{-4}$ | 92% | $5.0 \times 10^{-5}$ |
| **Croaker** | | | | |
| Fillet | $1.9 \times 10^{-3}$ | $1.7 \times 10^{-3}$ | 89% | $2.0 \times 10^{-4}$ |
| Whole Body | $2.2 \times 10^{-3}$ | $1.9 \times 10^{-3}$ | 86% | $3.0 \times 10^{-4}$ |

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## Table 6-1
## Assessment Endpoint Species

| Assessment Endpoint Species | Ecological Relevance | Regulatory or Social Significance | Susceptibility to COPECs | Measurability/Predictability |
|---|---|---|---|---|
| Benthic Invertebrates<br><br>Communitywide assessment | Primary consumers/ decomposers and base of food chain for other wildlife. Dominant taxa of infauna. | Often considered key indicator species of pollution by regulatory agencies. | Vulnerable to exposure through ingestion and direct dermal exposure. Benthic invertebrates are in direct contact with sediments and can be sensitive indicators of toxic chemical contaminations. | Levels of COPECs in sediments were measured and toxicity and bioaccumulation tests of invertebrates in West Basin sediments and pore water were performed. An analysis was performed of the types of infauna taxa present, their biomass, and numbers. |
| Fish:<br><br>California halibut<br><br>White croaker | Important food chain elements. Occur in wide range of habitats, including beneath piers. California halibut is a major predatory fish. White croaker is the most common fish in West Basin. | Fish are important as a community because of significance as a food item for other species, including humans. | Susceptible to direct exposure due to consumption of contaminated food. Consumption of small vertebrates and invertebrates as primary food in study area are representative of worst-case exposure for large predatory fish (halibut). Consumption of small vertebrates as primary food item and year-round presence in West Basin are representative of worst-case exposure for small fish (croaker). | Levels of COPECs in fish tissue, including whole body, fillets, and bile (halibut only), were measured and can be related to published toxicity benchmarks or related to existing data from other sites. Number of fish caught during sampling indicates prominence in West Basin. |
| Mammalian carnivore:<br><br>Harbor seal | Top mammalian predator in West Basin aquatic food chain. Common marine carnivore. | Of recreational and aesthetic importance. | Could be exposed through consumption of contaminated food items. Consumption of small vertebrates as primary food item and possible year-round presence in study area are representative of worst-case exposure for aquatic mammalian carnivores. | Levels of COPECs in fish tissue were measured and can be related to published toxicity benchmarks for prey items. Can predict dietary intake of COPECs from concentrations in fish tissue. |

Note: COPEC - Chemical of Potential Ecological Concern

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**Table 6-2**
**Habitat Exposure Scenarios for Ecological Receptors in the West Basin**

| Assessment Endpoint Functional Group | Assessment Endpoint Species | Exposure Media | Potentially Important Exposure Routes |
|---|---|---|---|
| Benthic Invertebrates | Communitywide | Sediment | Sediment dermal contact, sediment exposure, ingestion of sediment dwelling organisms. |
| Fish | White croaker | Sediment, sediment dwelling invertebrates | Dietary |
| Marine Mammal | Harbor seal | White croaker | Dietary |

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**Table 6-3**
**Toxicity Reference Values and Their Derivation for the Harbor Seal**

| Fish COPEC | Test Species | Body Weight of Test Species (kg) | NOAEL[1] of Test Species (mg/kg-day) | Reference | Toxicity Reference Value[2] for Harbor Seal (mg/kg-day) |
|---|---|---|---|---|---|
| Arsenic (arsenite) | Mouse | 0.030 | 0.126 | Opresko et al. 1995 | 0.00892 |
| Beryllium (sulfate) | Rat | 0.35 | 0.660 | Opresko et al. 1995 | 0.106 |
| Chromium VI ($K_2Cr_2O_4$) | Rat | 0.35 | 3.28 | Opresko et al. 1995 | 0.527 |
| Copper (sulfate) | Mink | 1.0 | 11.7 | Opresko et al. 1995 | 2.67 |
| Dibutyltin | NA[3] | | | | |
| Tributyltin (oxide) | Mouse | 0.030 | 23.4 | IRIS 1994 | 1.66 |
| α-BHC[4] | Rat | 0.35 | 8.00 | IRIS 1994 | 1.28 |
| Endrin | Mouse | 0.030 | 0.0920 | Opresko et al. 1995 | 0.00651 |

Note:

[1] NOAEL - No observed adverse effects level.

[2] Toxicity reference value = NOAEL * (body weight of test species / body weight of harbor seal)$^{1/3}$

[3] NA - not available

[4] BHC - Hexachlorocyclohexane. NOAEL unavailable; risk based on NOAEL for lindane (gamma-BHC).

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**Table 6-4**
**Matrix of Pearson Correlation Coefficients (for r>0.4) for Log-transformed Chemical Values for West Basin and Reference Stations**

| | Arsenic | Beryllium | Cadmium | Chromium | Copper | Lead | Mercury | Nickel | Selenium | Silver | Zinc | Dibutyltin | Monobutyltin |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 1.0 | – | – | – | – | – | – | – | – | – | – | – | – |
| Beryllium | 0.7 | 1.0 | – | – | – | – | – | – | – | – | – | – | – |
| Cadmium | 0.6 | 0.5 | 1.0 | – | – | – | – | – | – | – | – | – | – |
| Chromium | 0.8 | 0.7 | 0.6 | 1.0 | – | – | – | – | – | – | – | – | – |
| Copper | 0.8 | 0.6 | 0.6 | 0.8 | 1.0 | – | – | – | – | – | – | – | – |
| Lead | 0.8 | 0.8 | 0.7 | 0.8 | 0.9 | 1.0 | – | – | – | – | – | – | – |
| Mercury | 0.5 | 0.4 | 0.4 | 0.6 | 0.9 | 0.8 | 1.0 | – | – | – | – | – | – |
| Nickel | 0.8 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.6 | 1.0 | – | – | – | – | – |
| Selenium | -0.5 | | -0.8 | | | | | -0.6 | 1.0 | – | – | – | – |
| Silver | 0.7 | 0.5 | | 0.5 | 0.6 | 0.6 | 0.5 | 0.7 | 0.5 | 1.0 | – | – | – |
| Zinc | 0.8 | 0.6 | 0.8 | 0.8 | 0.9 | 0.9 | 0.7 | 0.9 | | 0.6 | 1.0 | – | – |
| Dibutyltin | | | | | | | | | | | | 1.0 | – |
| Monobutyltin | | | | | | | | | | | | | 1.0 |
| Benzo(a)anthracene | 0.5 | | 0.6 | 0.7 | 0.7 | 0.6 | | 0.5 | | | 0.8 | | |
| Benzo(a)pyrene | 0.6 | | | 0.6 | 0.8 | 0.7 | 0.5 | 0.4 | | | 0.7 | | |
| Benzo(b)fluoranthene | 0.5 | | | 0.6 | 0.7 | 0.6 | 0.5 | | | | 0.7 | | |
| Benzo(ghi)perylene | 0.6 | 0.5 | | 0.6 | 0.8 | 0.7 | 0.4 | | | | 0.6 | | |
| Benzo(k)fluoranthene | 0.5 | | | 0.5 | 0.7 | 0.6 | 0.5 | | | | 0.7 | | |
| Chrysene | 0.5 | | | 0.6 | 0.7 | 0.6 | 0.4 | 0.4 | | | 0.7 | | |
| Dibenzo(a,h)anthracene | 0.7 | | 0.7 | 0.7 | 0.9 | 0.8 | 0.6 | | | | 0.8 | | |
| Fluoranthene | 0.4 | | 0.4 | 0.6 | 0.6 | 0.6 | | 0.4 | | | 0.7 | | |
| Indeno(1,2,3-cd)pyrene | 0.6 | 0.5 | | 0.6 | 0.6 | 0.7 | | | | | 0.6 | | |
| Pyrene | 0.5 | | 0.4 | 0.6 | 0.7 | 0.6 | | 0.5 | | | 0.8 | | |
| Benzofluoranthenes | 0.5 | | | 0.6 | 0.7 | 0.6 | 0.5 | | | | 0.7 | | |
| Total HPAH[1] | 0.5 | | | 0.6 | 0.8 | 0.6 | 0.6 | | | | 0.7 | | |
| Acenaphthene | 1.0 | -1.0 | -1.0 | 1.0 | 1.0 | 1.0 | -1.0 | -1.0 | | -1.0 | 1.0 | | |
| Acenaphthylene | 0.7 | | 0.5 | 0.9 | 0.7 | 0.7 | | 0.5 | | | 0.7 | | |
| Anthracene | 0.4 | | 0.4 | 0.6 | 0.7 | 0.7 | | 0.4 | 0.7 | 0.4 | 0.8 | | |
| Fluorene | | -0.5 | | 0.7 | 0.5 | 1.0 | | | | | 0.6 | | |
| Methylnaphthalenes | | | | | | | | | | | | | |
| Phenanthrene | 0.5 | | 0.5 | 0.7 | 0.7 | 0.6 | | 0.4 | 0.7 | 0.4 | 0.8 | | |
| Total LPAH[1] | | | | 0.6 | 0.6 | 0.5 | | | 0.7 | | 0.7 | | |
| Total PAH | 0.5 | | | 0.6 | 0.7 | 0.5 | 0.6 | | | | 0.7 | | |
| Aroclor 1260 | 0.6 | | 0.6 | 0.7 | 0.9 | 0.8 | 0.8 | 0.5 | | | 0.8 | | |
| Aldrin | | | | | | | | | | | | | |
| Lindane (gamma-BHC[2]) | 0.7 | 0.8 | 0.5 | 1.0 | 0.9 | 1.0 | -0.4 | 0.9 | | | 1.0 | | |
| 4,4'-DDD | 0.6 | 0.5 | 0.5 | 0.7 | 0.6 | 0.7 | 0.6 | 0.5 | 0.7 | | 0.7 | | |
| 4,4'-DDE | 0.6 | 0.6 | 0.8 | 0.6 | 0.6 | 0.7 | 0.4 | 0.6 | | | 0.6 | | |
| 4,4'-DDT | | | | | | | | | | | | | |
| Total DDTs | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.7 | 0.5 | 0.6 | | | 0.6 | | |
| Phenol | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | | |
| Bis(2-ethylhexyl)phthalate | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | | -1.0 | -1.0 | | |
| Di-n-octylphthalate | 0.7 | | 0.8 | 0.6 | 0.7 | 0.7 | | 0.7 | -1.0 | | 0.8 | | |
| Clay | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.9 | 0.5 | 0.8 | | 0.5 | 0.8 | | |
| Silt | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.6 | 0.4 | 0.6 | | 0.4 | 0.5 | | |
| Sand | -0.7 | -0.7 | -0.8 | -0.7 | -0.7 | -0.7 | -0.5 | -0.8 | -0.7 | -0.5 | -0.7 | | |
| Gravel | | | | | | | | | 1.0 | | | | |
| Mean Grain Size | -0.7 | -0.8 | -0.6 | -0.6 | -0.7 | -0.8 | -0.6 | -0.7 | | -0.5 | -0.6 | | |
| Median Grain Size | -0.7 | -0.8 | -0.6 | -0.7 | -0.6 | -0.7 | -0.5 | -0.7 | | -0.4 | -0.6 | | |
| Sulfide, Total | | 0.4 | 0.5 | 0.5 | 0.4 | 0.5 | | 0.4 | 0.9 | | 0.5 | | |
| Total Organic Carbon | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 | 0.6 | 0.8 | | 0.4 | 0.8 | | |
| Fines | 0.6 | 0.8 | 0.6 | 0.7 | 0.7 | 0.8 | 0.6 | 0.8 | 0.6 | 0.5 | 0.7 | | |
| Dominance | | | | | -0.5 | | -0.5 | | | | -0.4 | | |
| Evenness | | | | | | | | | | | | | |
| Margalef Diversity | | | | | | | | | 0.5 | | | | |
| Number of Species | | | | | | | | | 0.4 | | | | |
| Shannon-Wiener Diversity | | | | | | | | | | | | | |
| Total Biomass | | | | | | | | | | | | | |
| Total Abundance | | | | | | | | | | | | | |
| Amphipod Survival | | | | -0.4 | | | | | 1.0 | | | | |
| Amphipod Reburial | | | | -0.4 | | | | | | | | | |
| Polychaete Survival | | | | | | | | | | | | | |
| Polychaete Growth | | | | | | | | | | | | | |
| Echinoderm Survival | | | | | | | | | | | | | |
| Echinoderm Normal Development | | | | | | | | | | | | | |
| Acid Volatile Sulfide | | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | | 0.5 | 0.8 | | 0.6 | | |
| Cadmium, Extractable | | | 0.8 | | | | | 0.6 | | | 0.4 | | |
| Copper, Extractable | 0.7 | 0.5 | 0.6 | 0.8 | 0.9 | 0.9 | 0.8 | 0.7 | 0.5 | 0.5 | 0.9 | | |
| Lead, Extractable | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 1.0 | 0.7 | 0.7 | | 0.5 | 0.9 | | |
| Mercury, Extractable | | | | | | | | | | | | | |
| Zinc, Extractable | 0.8 | 0.6 | 0.8 | 0.8 | 0.9 | 0.9 | 0.8 | 0.8 | 0.6 | 0.5 | 1.0 | | |
| Cadmium, SEM/AVS[3] | | | | | | -0.5 | | | -0.7 | | | | |
| Copper, SEM/AVS | | | | | | | | | -0.9 | | | | |
| Lead, SEM/AVS | | | | | | | | | -0.9 | | | | |
| Mercury, SEM/AVS | | | | -0.4 | | -0.4 | | -0.4 | | | -0.5 | | |
| Zinc, SEM/AVS | | | | | | | | | -0.8 | | | | |
| Total SEM | | | | | | | | | -0.8 | | | | |

(table continues)



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Table 6-4 (continued)

| | Benzo(a)-anthracene | Benzo(a)-pyrene | Benzo(b)-fluoranthene | Benzo(ghi)-perylene | Benzo(k)-fluoranthene | Chrysene | Dibenzo-(a,h)-anthracene | Fluor-anthene | Indeno-(1,2,3-cd)-pyrene | Pyrene | Benzo-fluor-anthenes | Total HPAH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | – | – | – | – | – | – | – | – | – | – | – | – |
| Beryllium | – | – | – | – | – | – | – | – | – | – | – | – |
| Cadmium | – | – | – | – | – | – | – | – | – | – | – | – |
| Chromium | – | – | – | – | – | – | – | – | – | – | – | – |
| Copper | – | – | – | – | – | – | – | – | – | – | – | – |
| Lead | – | – | – | – | – | – | – | – | – | – | – | – |
| Mercury | – | – | – | – | – | – | – | – | – | – | – | – |
| Nickel | – | – | – | – | – | – | – | – | – | – | – | – |
| Selenium | – | – | – | – | – | – | – | – | – | – | – | – |
| Silver | – | – | – | – | – | – | – | – | – | – | – | – |
| Zinc | – | – | – | – | – | – | – | – | – | – | – | – |
| Dibutyltin | – | – | – | – | – | – | – | – | – | – | – | – |
| Monobutyltin | – | – | – | – | – | – | – | – | – | – | – | – |
| Benzo(a)anthracene | 1.0 | – | – | – | – | – | – | – | – | – | – | – |
| Benzo(a)pyrene | 1.0 | 1.0 | – | – | – | – | – | – | – | – | – | – |
| Benzo(b)fluoranthene | 1.0 | 1.0 | 1.0 | – | – | – | – | – | – | – | – | – |
| Benzo(ghi)perylene | 0.8 | 0.9 | 0.8 | 1.0 | – | – | – | – | – | – | – | – |
| Benzo(k)fluoranthene | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | – | – | – | – | – | – | – |
| Chrysene | 1.0 | 1.0 | 1.0 | 0.8 | 0.9 | 1.0 | – | – | – | – | – | – |
| Dibenzo(a,h)anthracene | 0.9 | 1.0 | 0.9 | 1.0 | 1.0 | 1.0 | 1.0 | – | – | – | – | – |
| Fluoranthene | 1.0 | 0.9 | 0.9 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | – | – | – | – |
| Indeno(1,2,3-cd)pyrene | 0.8 | 0.9 | 0.8 | 1.0 | 0.9 | 0.9 | 1.0 | 0.7 | 1.0 | – | – | – |
| Pyrene | 1.0 | 0.9 | 0.9 | 0.7 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 1.0 | – | – |
| Benzofluoranthenes | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | – |
| Total HPAH[1] | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Acenaphthene | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Acenaphthylene | 0.9 | 0.9 | 0.9 | 0.8 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Anthracene | 1.0 | 0.9 | 0.9 | 0.8 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 |
| Fluorene | 1.0 | 0.7 | 0.7 | 0.6 | 0.8 | 1.0 | 1.0 | 1.0 | 0.7 | 0.8 | 0.8 | 0.9 |
| Methylnaphthalenes | | | | | | | | | | | | |
| Phenanthrene | 1.0 | 0.9 | 0.9 | 0.8 | 0.9 | 0.9 | 0.8 | 0.9 | 0.8 | 0.9 | 0.9 | 0.9 |
| Total LPAH[2] | 1.0 | 0.9 | 0.9 | 0.8 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Total PAH | 1.0 | 1.0 | 1.0 | 0.8 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Aroclor 1260 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.9 | 0.5 | 0.7 | 0.6 | 0.6 | 0.6 |
| Aldrin | | | | | | | | | | | | |
| Lindane (gamma-BHC[3]) | 0.8 | 0.7 | 0.8 | 0.8 | 0.9 | 0.7 | | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 |
| 4,4'-DDD | 0.6 | 0.5 | 0.6 | 0.6 | | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | |
| 4,4'-DDE | | | | | | | 0.7 | | | | | |
| 4,4'-DDT | | | | | | | | | | | | |
| Total DDTs | | | | | | | 0.7 | | | | | |
| Phenol | | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | | | | |
| Di-n-octylphthalate | 0.9 | 0.8 | 0.8 | 0.7 | 0.8 | 0.8 | 1.0 | 0.8 | 0.7 | 1.0 0.9 | 0.8 | 1.0 0.8 |
| Clay | 0.5 | | | 0.6 | | 0.5 | 0.7 | 0.4 | 0.6 | 0.5 | | |
| Silt | | | | | | | | | | | | |
| Sand | 0.5 | | | | | | | | | | | |
| Gravel | 0.8 | 0.6 | 0.5 | 0.7 | 0.5 | 0.8 | 0.9 | 0.6 | 0.7 | 0.6 0.7 | 0.5 | 0.5 |
| Mean Grain Size | | | | | | | | | | | | |
| Median Grain Size | | | | 0.4 | | | | | | | | |
| Sulfide, Total | 0.9 | 0.5 | 0.5 | 0.6 | 0.4 | 0.6 | 0.9 | 0.6 | 0.6 | 0.7 | 0.5 | 0.5 |
| Total Organic Carbon | 0.6 | 0.5 | 0.5 | | 0.5 | 0.5 | 0.5 | 0.6 | | 0.6 | 0.5 | 0.5 |
| Fines | | | | | | | 0.4 | | | | | |
| Dominance | | | | | | | 0.7 | | | | | |
| Evenness | | | | | | | 0.7 | 0.6 | | 0.6 | | 0.6 |
| Margalef Diversity | | | | | | | 0.5 | | | | | |
| Number of Species | 0.4 | | | | | 0.4 | 0.6 | 0.5 | | 0.5 | | |
| Shannon-Wiener Diversity | | | | | | | 0.7 | | | | | |
| Total Biomass | | | | | | | 0.4 | 0.4 | | 0.4 | | |
| Total Abundance | | | | | | | 0.7 | 0.5 | | 0.5 | | |
| Amphipod Survival | -0.6 | | | | | -0.4 | 0.7 | 0.5 | | 0.5 | | |
| Amphipod Rebound | -0.5 | | | | | | 0.7 | | | | | |
| Polychaete Survival | -0.5 | -0.4 | -0.4 | -0.4 | -0.4 | -0.5 | 0.8 | 0.6 | 0.6 | 0.5 | 0.4 | 0.5 |
| Polychaete Growth | 0.5 | 0.6 | 0.6 | | 0.6 | 0.6 | 0.6 | 0.7 | | 0.7 | 0.6 | 0.6 |
| Echinoderm Survival | | | | | | | | | | | | |
| Echinoderm Normal Development | | | -0.4 | | | | | | | | | |
| Acid Volatile Sulfide | 0.9 | 0.5 | 0.5 | 0.6 | 0.5 | 0.7 | 0.9 | 0.6 | 0.6 | 0.7 | 0.5 | 0.5 |
| Cadmium, Extractable | 0.8 | | | | | | 1.0 | 0.6 | | | | |
| Copper, Extractable | 0.7 | 0.8 | 0.8 | 0.7 | 0.7 | 0.8 | 0.9 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 |
| Lead, Extractable | 0.7 | 0.6 | 0.6 | 0.7 | 0.5 | 0.6 | 0.9 | 0.6 | 0.7 | 0.6 | 0.6 | 0.5 |
| Mercury, Extractable | | | | | | | | | | | | |
| Zinc, Extractable | 0.7 | 0.7 | 0.7 | 0.6 | 0.7 | 0.7 | 0.9 | 0.8 | 0.6 | 0.8 | 0.7 | 0.7 |
| Cadmium, SEM/AVS[4] | -0.9 | -0.5 | -0.5 | -0.6 | -0.5 | -0.6 | -1.0 | -0.5 | -0.6 | -0.6 | -0.5 | -0.5 |
| Copper, SEM/AVS | -0.7 | | | -0.4 | | -0.5 | -0.8 | -0.4 | -0.5 | -0.5 | | |
| Lead, SEM/AVS | -0.7 | | | -0.4 | | -0.6 | -0.8 | -0.5 | -0.5 | -0.7 | | |
| Mercury, SEM/AVS | -0.8 | | | -0.7 | | -0.7 | -1.0 | -0.6 | -0.7 | -0.7 | | -0.5 |
| Zinc, SEM/AVS | -0.7 | | | -0.5 | | -0.5 | -0.9 | -0.5 | -0.5 | -0.6 | | |
| Total SEM | -0.7 | | | -0.5 | | -0.5 | -0.8 | -0.5 | -0.5 | -0.6 | | |

(table continues)



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Table 6-4 (continued)

| | Acenaph-thene | Acenaph-thylene | Anthra-cene | Fluorene | Methyl-naph-thalenes | Phenan-threne | Total LPAH | Total PAH | Aroclor 1260 | Aldrin | Lindane (gamma-BHC) | 4,4'-DDD | 4,4'-DDE | 4,4'-DDT | Total DDTs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Beryllium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Copper | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Lead | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nickel | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Selenium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Silver | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Zinc | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibutyltin | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Monobutyltin | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(a)anthracene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(a)pyrene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(b)fluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(ghi)perylene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(k)fluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenzo(a,h)anthracene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno(1,2,3-cd)pyrene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzofluoranthenes | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total HPAH[1] | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthene | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | 1.0 | 0.9 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | | 0.8 | 1.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methylnaphthalenes | | | | | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenanthrene | 1.0 | 0.9 | 1.0 | 1.0 | | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total LPAH[2] | 1.0 | 0.9 | 1.0 | 1.0 | | 1.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| Total PAH | 1.0 | 0.9 | 1.0 | 0.9 | | 1.0 | 1.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- |
| Aroclor 1260 | | 0.7 | 0.6 | | | 0.6 | | 0.6 | 1.0 | -- | -- | -- | -- | -- | -- |
| Aldrin | | | | | | | | | | 1.0 | -- | -- | -- | -- | -- |
| Lindane (gamma-BHC[3]) | | 1.0 | 1.0 | | | 1.0 | 1.0 | 0.7 | 0.7 | | 1.0 | -- | -- | -- | -- |
| 4,4'-DDD | | 0.7 | 0.6 | 1.0 | | 0.6 | 0.3 | | 0.7 | | 0.5 | 1.0 | -- | -- | -- |
| 4,4'-DDE | 1.0 | 0.6 | | | | | | | 0.8 | | 1.0 | 0.7 | 1.0 | -- | -- |
| 4,4'-DDT | | | | | | | | | | | | | | 1.0 | -- |
| Total DDTs | 1.0 | 0.6 | | 0.4 | | | | | 0.7 | | 1.0 | 0.8 | 1.0 | | 1.0 |
| Phenol | | | | | | | | | | | | 1.0 | 1.0 | | 1.0 |
| Bis(2-ethylhexyl)phthalate | | | | | | | | -1.0 | | | | 1.0 | -1.0 | | -1.0 |
| Di-n-octylphthalate | | 0.7 | 0.7 | -0.8 | | 0.7 | 0.7 | 0.8 | 0.6 | | 0.8 | 0.5 | 0.8 | | 0.7 |
| Clay | -1.0 | 0.5 | 0.5 | | | 0.5 | | | 0.5 | | 1.0 | 0.6 | 0.7 | | 0.7 |
| Silt | -1.0 | | | -0.5 | | | | | | | | | 0.4 | | 0.5 |
| Sand | 1.0 | | -0.4 | 0.5 | | | | | | | -0.9 | -0.5 | -0.6 | | -0.6 |
| Gravel | 1.0 | 0.9 | 0.8 | 0.6 | | 0.7 | 0.8 | 0.5 | 0.5 | | -1.0 | 0.6 | | | |
| Mean Grain Size | 1.0 | | | 0.6 | | | | | -0.5 | | -1.0 | -0.5 | -0.5 | | -0.5 |
| Median Grain Size | 1.0 | | | | | | | | -0.5 | | -1.0 | -0.6 | -0.6 | | -0.6 |
| Sulfide, Total | -1.0 | 0.6 | 0.8 | | | 0.7 | 0.7 | 0.5 | | | 1.0 | | | | |
| Total Organic Carbon | 1.0 | 0.7 | 0.6 | | | 0.6 | 0.5 | 0.5 | 0.7 | | 1.0 | 0.7 | 0.7 | | 0.7 |
| Fines | -1.0 | | | -0.4 | | | | | | | 0.9 | 0.5 | 0.6 | | 0.6 |
| Dominance | | | | | | | | | | | -0.9 | | | | |
| Evenness | 1.0 | | | | | | | -0.4 | | | 1.0 | | | | |
| Margalef Diversity | 1.0 | | 0.5 | | | 0.4 | 0.5 | | | | -0.9 | | | | |
| Number of Species | 1.0 | 0.5 | 0.6 | | | 0.5 | 0.5 | | | | -1.0 | | | | |
| Shannon-Wiener Diversity | 1.0 | | | | | | | | | | -0.9 | | | | |
| Total Biomass | 1.0 | | 0.6 | | | 0.5 | 0.5 | | | | | | | | |
| Total Abundance | 1.0 | 0.4 | 0.5 | 0.8 | | | 0.4 | | | | -1.0 | | | | |
| Amphipod Survival | -1.0 | -0.8 | -0.7 | -0.8 | | -0.7 | -0.6 | | | | 1.0 | | | | |
| Amphipod Reburial | -1.0 | -0.8 | -0.5 | -0.7 | | -0.6 | -0.6 | | | | 1.0 | | | | |
| Polychaete Survival | -1.0 | -0.6 | -0.5 | | | -0.5 | -0.5 | -0.5 | | | -0.9 | | | | |
| Polychaete Growth | 1.0 | 0.8 | 0.8 | 0.7 | | 0.7 | 0.6 | 0.6 | | | -0.8 | | | | |
| Echinoderm Survival | 1.0 | | | 0.8 | | | | | | | | | | | |
| Echinoderm Normal Development | | | | | | | | -0.4 | | | 0.9 | | | | |
| Acid Volatile Sulfide | -1.0 | 0.6 | 0.8 | | | 0.8 | 0.7 | 0.5 | | | 0.9 | 0.5 | | | |
| Cadmium, Extractable | | 0.7 | | | | | | | 0.6 | | | | 0.6 | | 0.5 |
| Copper, Extractable | 1.0 | 0.8 | 0.8 | 0.6 | | 0.7 | 0.6 | 0.8 | 0.9 | | 0.7 | 0.6 | 0.5 | | 0.5 |
| Lead, Extractable | 1.0 | 0.8 | 0.7 | 1.0 | | 0.7 | 0.6 | 0.5 | 0.8 | | 1.0 | 0.7 | 0.7 | | 0.7 |
| Mercury, Extractable | | 0.5 | | 0.9 | | | | | | | -1.0 | | | | |
| Zinc, Extractable | 1.0 | 0.8 | 0.8 | 0.9 | | 0.8 | 0.7 | 0.7 | 0.9 | | 0.9 | 0.8 | 0.7 | | 0.7 |
| Cadmium, SEM/AVS[4] | 1.0 | -0.7 | -0.7 | -0.5 | | -0.7 | -0.7 | -0.5 | | | | | | | |
| Copper, SEM/AVS | 1.0 | -0.5 | -0.7 | 0.4 | | -0.7 | -0.7 | | | | -1.0 | | | | |
| Lead, SEM/AVS | 1.0 | -0.5 | -0.8 | 0.8 | | -0.7 | -0.7 | | | | -0.9 | | | | |
| Mercury, SEM/AVS | | -0.7 | -0.8 | 0.8 | | -0.7 | -0.8 | -0.5 | | | -1.0 | | | | |
| Zinc, SEM/AVS | 1.0 | -0.5 | -0.7 | 0.9 | | -0.7 | -0.7 | | | | -0.9 | | | | |
| Total SEM | 1.0 | -0.5 | -0.7 | 0.8 | | -0.7 | -0.7 | | | | -1.0 | | | | |

(table continues)



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Table 6-4 (continued)

| | Phenol | Bis(2-ethylhexyl)-phthalate | Di-n-octyl-phthalate | Clay | Silt | Sand | Gravel | Mean Grain Size | Median Grain Size | Sulfide, Total | Total Organic Carbon | Fines | Dominance | Evenness | Margalef Diversity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Beryllium | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Cadmium | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Chromium | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Copper | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Lead | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Mercury | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Nickel | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Selenium | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Silver | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Zinc | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Dibutyltin | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Monobutyltin | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Benzo(a)anthracene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Benzo(a)pyrene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Benzo(b)fluoranthene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Benzo(ghi)perylene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Benzo(k)fluoranthene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Chrysene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Dibenzo(a,h)anthracene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Fluoranthene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Indeno(1,2,3-cd)pyrene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Pyrene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Benzofluoranthenes | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total HPAH[1] | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Acenaphthene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Acenaphthylene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Anthracene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Fluorene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Methylnaphthalenes | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Phenanthrene | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total LPAH[2] | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total PAH | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Aroclor 1260 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Aldrin | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Lindane (gamma-BHC[3]) | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 4,4'-DDD | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 4,4'-DDE | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 4,4'-DDT | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total DDTs | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Phenol | 1.0 | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Bis(2-ethylhexyl)phthalate | – | 1.0 | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Di-n-octylphthalate | – | – | 1.0 | – | – | – | – | – | – | – | – | – | – | – | – |
| Clay | 1.0 | -1.0 | 0.6 | 1.0 | – | – | – | – | – | – | – | – | – | – | – |
| Silt | -1.0 | -1.0 | – | 0.7 | 1.0 | – | – | – | – | – | – | – | – | – | – |
| Sand | -1.0 | 1.0 | -0.7 | -0.8 | -0.5 | 1.0 | – | – | – | – | – | – | – | – | – |
| Gravel | – | – | 0.7 | – | -0.4 | – | 1.0 | – | – | – | – | – | – | – | – |
| Mean Grain Size | -1.0 | 1.0 | – | -0.9 | -0.8 | 0.8 | – | 1.0 | – | – | – | – | – | – | – |
| Median Grain Size | -1.0 | 1.0 | – | -0.9 | -0.8 | 0.8 | – | 0.8 | 1.0 | – | – | – | – | – | – |
| Sulfide, Total | 1.0 | 1.0 | 0.7 | 0.5 | – | -0.5 | 0.7 | – | -0.4 | 1.0 | – | – | – | – | – |
| Total Organic Carbon | 1.0 | 1.0 | 0.8 | 0.8 | 0.5 | -0.7 | – | -0.7 | -0.7 | 0.5 | 1.0 | – | – | – | – |
| Fines | 1.0 | -1.0 | 0.5 | 0.9 | 0.9 | -0.7 | – | -0.9 | -0.8 | – | 0.7 | 1.0 | – | – | – |
| Dominance | -1.0 | 1.0 | – | – | – | – | -0.4 | – | – | – | -0.4 | – | 1.0 | – | – |
| Evenness | -1.0 | 1.0 | – | – | – | – | 0.7 | 0.4 | – | 0.4 | – | – | 0.6 | 1.0 | – |
| Margalef Diversity | 1.0 | 1.0 | – | – | -0.5 | – | 0.8 | – | – | 0.5 | – | – | 0.6 | – | 1.0 |
| Number of Species | 1.0 | 1.0 | 0.5 | – | -0.4 | – | – | – | – | – | – | – | – | -0.4 | 0.9 |
| Shannon-Wiener Diversity | -1.0 | 1.0 | – | – | – | – | 0.4 | – | – | 0.5 | – | – | 0.9 | 0.6 | 0.6 |
| Total Biomass | 1.0 | -1.0 | 0.4 | – | – | – | 0.6 | – | – | 0.5 | – | – | – | – | 0.7 |
| Total Abundance | 1.0 | 1.0 | 0.4 | – | – | – | 0.6 | – | – | 0.5 | – | – | – | -0.7 | 0.5 |
| Amphipod Survival | -1.0 | -1.0 | -0.6 | – | – | – | -0.6 | – | – | -0.7 | -0.4 | – | – | 0.5 | -0.5 |
| Amphipod Reburial | -1.0 | 1.0 | – | – | – | – | -0.6 | – | – | -0.6 | – | – | – | 0.4 | -0.5 |
| Polychaete Survival | -1.0 | 1.0 | -0.5 | – | – | – | -0.6 | – | – | – | – | – | – | – | – |
| Polychaete Growth | -1.0 | 1.0 | 0.5 | – | – | – | 0.6 | – | – | 0.6 | – | – | – | -0.6 | – |
| Echinoderm Survival | 1.0 | -1.0 | – | – | 0.5 | – | -0.5 | – | – | – | – | – | – | – | -0.5 |
| Echinoderm Normal Development | – | -1.0 | – | – | – | – | – | – | – | – | – | – | – | – | -0.5 |
| Acid Volatile Sulfide | 1.0 | 1.0 | 0.6 | 0.6 | – | -0.5 | 0.7 | – | -0.5 | 0.9 | 0.6 | – | – | – | – |
| Cadmium, Extractable | – | 1.0 | 0.8 | – | – | -0.6 | – | – | – | – | 0.7 | 0.5 | – | – | – |
| Copper, Extractable | 1.0 | -1.0 | 0.7 | 0.7 | 0.6 | -0.6 | – | -0.6 | -0.5 | 0.5 | 0.8 | 0.6 | -0.5 | – | – |
| Lead, Extractable | 1.0 | -1.0 | 0.6 | 0.8 | 0.5 | -0.6 | – | -0.7 | -0.7 | 0.5 | 0.8 | 0.7 | – | – | – |
| Mercury, Extractable | – | – | – | – | – | – | 0.5 | – | – | – | – | – | – | – | – |
| Zinc, Extractable | 1.0 | -1.0 | 0.8 | 0.7 | 0.5 | -0.7 | – | -0.6 | -0.6 | 0.5 | 0.8 | 0.7 | -0.5 | – | – |
| Cadmium, SEM:AVS[4] | – | 1.0 | – | -0.5 | 0.7 | – | -0.8 | – | – | -0.9 | – | – | – | – | -0.6 |
| Copper, SEM:AVS | -1.0 | -1.0 | -0.5 | -0.4 | – | – | -0.7 | – | – | -0.9 | – | – | – | – | – |
| Lead, SEM:AVS | -1.0 | -1.0 | -0.5 | – | – | – | -0.8 | – | – | -0.9 | – | – | – | – | – |
| Mercury, SEM:AVS | – | – | -0.6 | -0.6 | 0.4 | 0.5 | -0.9 | – | – | -0.9 | -0.4 | – | – | – | -0.5 |
| Zinc, SEM:AVS | -1.0 | -1.0 | -0.5 | -0.4 | – | – | -0.7 | – | – | -0.9 | – | – | – | – | – |
| Total SEM | -1.0 | -1.0 | -0.5 | -0.4 | – | – | -0.7 | – | – | -0.9 | – | – | – | – | – |

(table continues)



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Table 6-4 (continued)

| | Number of Species | Shannon-Wiener Diversity | Total Biomass | Total Abundance | Amphipod Survival | Amphipod Reburial | Polychaete Survival | Polychaete Growth | Echinoderm Survival | Echinoderm Normal Development |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Beryllium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Copper | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Lead | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nickel | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Selenium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Silver | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Zinc | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibutyltin | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Monobutyltin | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(a)anthracene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(a)pyrene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(b)fluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(ghi)perylene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(k)fluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenzo(a,h)anthracene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno(1,2,3-cd)pyrene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzofluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total HPAH[1] | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methylnaphthalenes | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenanthrene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total LPAH[2] | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total PAH | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Aroclor 1260 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Aldrin | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Lindane (gamma-BHC[3]) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 4,4'-DDD | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 4,4'-DDE | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 4,4'-DDT | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total DDTs | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Bis(2-ethylhexyl)phthalate | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Di-n-octylphthalate | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Clay | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Silt | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sand | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Gravel | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mean Grain Size | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Median Grain Size | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sulfide, Total | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Organic Carbon | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fines | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dominance | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Evenness | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Margalef Diversity | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Number of Species | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Shannon-Wiener Diversity | | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Biomass | 0.8 | | 1.0 | -- | -- | -- | -- | -- | -- | -- |
| Total Abundance | 0.7 | | 0.5 | 1.0 | -- | -- | -- | -- | -- | -- |
| Amphipod Survival | -0.6 | | -0.6 | -0.7 | 1.0 | -- | -- | -- | -- | -- |
| Amphipod Reburial | -0.6 | | -0.6 | -0.6 | 0.9 | 1.0 | -- | -- | -- | -- |
| Polychaete Survival | | | | | | | 1.0 | -- | -- | -- |
| Polychaete Growth | 0.5 | | | 0.5 | -0.6 | -0.5 | | 1.0 | -- | -- |
| Echinoderm Survival | -0.5 | | | | | | | | 1.0 | -- |
| Echinoderm Normal Development | -0.5 | | | | | | | | | |
| Acid Volatile Sulfide | 0.4 | | 0.5 | 0.4 | -0.6 | -0.6 | | -0.6 | 0.7 | 1.0 |
| Cadmium, Extractable | | | | | | | | 0.5 | | |
| Copper, Extractable | | | | | | | | | | |
| Lead, Extractable | | | | | | | | | | |
| Mercury, Extractable | | | | | -0.4 | -0.5 | | 0.4 | | -0.4 |
| Zinc, Extractable | | | | | | | | | | |
| Cadmium, SEM/AVS[4] | -0.6 | | -0.5 | -0.4 | 0.6 | 0.6 | 0.5 | -0.6 | | 0.6 |
| Copper, SEM/AVS | -0.5 | | -0.5 | | 0.6 | 0.5 | | -0.5 | | |
| Lead, SEM/AVS | -0.5 | | -0.5 | -0.5 | 0.6 | 0.4 | | -0.6 | | |
| Mercury, SEM/AVS | -0.5 | | -0.5 | -0.4 | 0.6 | 0.4 | | -0.5 | | |
| Zinc, SEM/AVS | -0.5 | | -0.5 | -0.4 | 0.6 | 0.6 | | -0.6 | | |
| Total SEM | -0.5 | | -0.5 | -0.4 | 0.6 | 0.6 | | -0.6 | | |

(table continues)



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Table 6-4 (continued)

| | Acid Volatile Sulfide | Cadmium, Extractable | Copper, Extractable | Lead, Extractable | Mercury, Extractable | Zinc, Extractable | Cadmium, SEM/AVS | Copper, SEM/AVS | Lead, SEM/AVS | Mercury, SEM/AVS | Zinc, SEM/AVS | Total SEM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | - | - | - | - | - | - | - | - | - | - | - | - |
| Beryllium | - | - | - | - | - | - | - | - | - | - | - | - |
| Cadmium | - | - | - | - | - | - | - | - | - | - | - | - |
| Chromium | - | - | - | - | - | - | - | - | - | - | - | - |
| Copper | - | - | - | - | - | - | - | - | - | - | - | - |
| Lead | - | - | - | - | - | - | - | - | - | - | - | - |
| Mercury | - | - | - | - | - | - | - | - | - | - | - | - |
| Nickel | - | - | - | - | - | - | - | - | - | - | - | - |
| Selenium | - | - | - | - | - | - | - | - | - | - | - | - |
| Silver | - | - | - | - | - | - | - | - | - | - | - | - |
| Zinc | - | - | - | - | - | - | - | - | - | - | - | - |
| Dibutyltin | - | - | - | - | - | - | - | - | - | - | - | - |
| Monobutyltin | - | - | - | - | - | - | - | - | - | - | - | - |
| Benzo(e)anthracene | - | - | - | - | - | - | - | - | - | - | - | - |
| Benzo(a)pyrene | - | - | - | - | - | - | - | - | - | - | - | - |
| Benzo(b)fluoranthene | - | - | - | - | - | - | - | - | - | - | - | - |
| Benzo(ghi)perylene | - | - | - | - | - | - | - | - | - | - | - | - |
| Benzo(k)fluoranthene | - | - | - | - | - | - | - | - | - | - | - | - |
| Chrysene | - | - | - | - | - | - | - | - | - | - | - | - |
| Dibenzo(a,h)anthracene | - | - | - | - | - | - | - | - | - | - | - | - |
| Fluoranthene | - | - | - | - | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | - | - | - | - | - | - | - | - | - | - | - | - |
| Pyrene | - | - | - | - | - | - | - | - | - | - | - | - |
| Benzofluoranthenes | - | - | - | - | - | - | - | - | - | - | - | - |
| Total HPAH[1] | - | - | - | - | - | - | - | - | - | - | - | - |
| Acenaphthene | - | - | - | - | - | - | - | - | - | - | - | - |
| Acenaphthylene | - | - | - | - | - | - | - | - | - | - | - | - |
| Anthracene | - | - | - | - | - | - | - | - | - | - | - | - |
| Fluorene | - | - | - | - | - | - | - | - | - | - | - | - |
| Methylnaphthalenes | - | - | - | - | - | - | - | - | - | - | - | - |
| Phenanthrene | - | - | - | - | - | - | - | - | - | - | - | - |
| Total LPAH[2] | - | - | - | - | - | - | - | - | - | - | - | - |
| Total PAH | - | - | - | - | - | - | - | - | - | - | - | - |
| Aroclor 1260 | - | - | - | - | - | - | - | - | - | - | - | - |
| Aldrin | - | - | - | - | - | - | - | - | - | - | - | - |
| Lindane (gamma-BHC[3]) | - | - | - | - | - | - | - | - | - | - | - | - |
| 4,4'-DDD | - | - | - | - | - | - | - | - | - | - | - | - |
| 4,4'-DDE | - | - | - | - | - | - | - | - | - | - | - | - |
| 4,4'-DDT | - | - | - | - | - | - | - | - | - | - | - | - |
| Total DDTs | - | - | - | - | - | - | - | - | - | - | - | - |
| Phenol | - | - | - | - | - | - | - | - | - | - | - | - |
| Bis(2-ethylhexyl)phthalate | - | - | - | - | - | - | - | - | - | - | - | - |
| Di-n-octylphthalate | - | - | - | - | - | - | - | - | - | - | - | - |
| Clay | - | - | - | - | - | - | - | - | - | - | - | - |
| Silt | - | - | - | - | - | - | - | - | - | - | - | - |
| Sand | - | - | - | - | - | - | - | - | - | - | - | - |
| Gravel | - | - | - | - | - | - | - | - | - | - | - | - |
| Mean Grain Size | - | - | - | - | - | - | - | - | - | - | - | - |
| Median Grain Size | - | - | - | - | - | - | - | - | - | - | - | - |
| Sulfide, Total | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon | - | - | - | - | - | - | - | - | - | - | - | - |
| Fines | - | - | - | - | - | - | - | - | - | - | - | - |
| Dominance | - | - | - | - | - | - | - | - | - | - | - | - |
| Evenness | - | - | - | - | - | - | - | - | - | - | - | - |
| Margalef Diversity | - | - | - | - | - | - | - | - | - | - | - | - |
| Number of Species | - | - | - | - | - | - | - | - | - | - | - | - |
| Shannon-Wiener Diversity | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Biomass | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Abundance | - | - | - | - | - | - | - | - | - | - | - | - |
| Amphipod Survival | - | - | - | - | - | - | - | - | - | - | - | - |
| Amphipod Rebound | - | - | - | - | - | - | - | - | - | - | - | - |
| Polychaete Survival | - | - | - | - | - | - | - | - | - | - | - | - |
| Polychaete Growth | - | - | - | - | - | - | - | - | - | - | - | - |
| Echinoderm Survival | - | - | - | - | - | - | - | - | - | - | - | - |
| Echinoderm Normal Development | - | - | - | - | - | - | - | - | - | - | - | - |
| Acid Volatile Sulfide | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Cadmium, Extractable | - | 1.0 | - | - | - | - | - | - | - | - | - | - |
| Copper, Extractable | 0.6 | - | 1.0 | - | - | - | - | - | - | - | - | - |
| Lead, Extractable | 0.6 | - | 0.8 | 1.0 | - | - | - | - | - | - | - | - |
| Mercury, Extractable | - | - | - | - | 1.0 | - | - | - | - | - | - | - |
| Zinc, Extractable | 0.6 | 0.5 | 0.9 | 0.9 | - | 1.0 | - | - | - | - | - | - |
| Cadmium, SEM/AVS[4] | -1.0 | - | -0.4 | -0.5 | -0.3 | - | 1.0 | - | - | - | - | - |
| Copper, SEM/AVS | -0.9 | - | - | - | - | - | 0.9 | 1.0 | - | - | - | - |
| Lead, SEM/AVS | -0.9 | - | - | - | - | - | 0.9 | 1.0 | 1.0 | - | - | - |
| Mercury, SEM/AVS | -1.0 | - | - | -0.5 | - | -0.5 | 0.9 | 1.0 | 1.0 | 1.0 | - | - |
| Zinc, SEM/AVS | -0.9 | - | - | - | - | - | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 | - |
| Total SEM | -0.9 | - | - | - | - | - | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 |



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Table 6-4 (continued)

Notes
[1] HPAH - High molecular weight polynuclear aromatic hydrocarbon
[2] LPAH - Low molecular weight polynuclear aromatic hydrocarbon
[3] BHC - Hexachlorocyclohexane
[4] SEM/AVS - Simultaneously extracted metals/acid volatile sulfide
-- indicates coefficient not shown since it is presented elsewhere in the table.
Blank space indicates correlation coefficient < 0.4

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## Table 6-5
## Surface Sediment Chemical Concentrations and Selected Related Toxicity Test Results

| Analyte Name | Highest Concentration At Open Water Stations With No Toxicity Test 'Hit'' | Highest Concentration At Pier Stations With Only Echinoderm Development Toxicity Test 'Hit' | Mean Zone Concentration (95% UCL Zone Concentration) | | | | | | | | ER-L | ER-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | G | H | | |
| **Physical, mg/kg** | | | | | | | | | | | | |
| Total sulfide | 270 | 5,400 | 56 (106) | 46 (105) | 91 (157) | 79 (244) | 142 (260) | 157 (420) | 4,167 (4,852) | 4,050 (5,339) | - | - |
| **Metals, mg/kg** | | | | | | | | | | | | |
| Arsenic | 17.0 | b | 5.6 (8.2) | 5.3 (6.2) | 10.0 (11.7) | 9.4 (11.8) | 11.0 (14.6) | 16.0 (24.4) | 10.0 (11.9) | 13.0 (15.5) | 8.2 | 70.0 |
| Beryllium | 1.0 | b | 0.4 (0.61) | 0.31 (0.34) | 0.58 (0.68) | 0.51 (0.57) | 0.61 (0.83) | 0.71 (0.8) | 0.72 (0.86) | 0.56 (0.89) | - | - |
| Cadmium | 1.0 | b | 0.2 (0.32) | 0.19 (0.26) | 0.41 (0.45) | 0.29 (0.41) | 0.58 (0.8) | 0.77 (1.75) | 0.83 (1.21) | 0.86 (1.4) | 1.2 | 9.6 |
| Chromium | 71 | b | 27.7 (35) | 25 (28.4) | 43 (50.1) | 35 (39.8) | 46 (59) | 70 (112) | 52 (58.9) | 123 (343) | 81 | 370 |
| Copper | 220 | 260 | 40.2 (53) | 56 (68.8) | 111 (146) | 109 (142) | 137 (187) | 320 (772) | 167 (227) | 248 (353) | 34 | 270 |
| Lead | 89 | b | 23.5 (31) | 28 (44) | 48 (57) | 46 (55.2) | 61 (80) | 112 (259) | 70 (83) | 84 (95.5) | 46.7 | 223 |
| Mercury | 0.87 | b | 0.16 (0.23) | 0.25 (0.35) | 0.50 (0.64) | 0.61 (0.80) | 0.7 (0.97) | 1.0 (2.69) | 0.42 (0.51) | 0.55 (0.80) | 0.15 | 0.71 |
| Nickel | 41 | b | 20 (25) | 16 (19.4) | 26 (30.1) | 22 (25.8) | 25 (33.6) | 35 (40.9) | 30 (34.1) | 31 (35.4) | 20.9 | 51.6 |
| Selenium | 1.6 | b | | | | | | 0.87 (2.44) | | | - | - |
| Silver | 19.0 | b | 1.7 (2.1) | 1.4 (1.66) | 4.7 (8.9) | 2.3 (2.62) | 2.4 (3.05) | 3.4 (4.39) | 2.5 (2.75) | 2.9 (4.22) | 1.0 | 3.7 |
| Zinc | 300 | 620 | 91 (117) | 100 (119) | 168 (192) | 148 (174) | 207 (264) | 343 (644) | 242 (300) | 403 (643) | 150 | 410 |
| **Butyltins, µg/kg** | | | | | | | | | | | | |
| Dibutyltin | - | 2.5 | | | | | 1.3 (1.97) | | | | - | - |
| Monobutyltin | - | 3.6 | | | | | | | | 1.9 (3.7) | - | - |

(table continues)





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Table 6-5 (continued)

| Analyte Name | Highest Concentration At Open Water Stations With No Toxicity Test 'Hit'[b] | Highest Concentration At Pier Stations With Only Echinoderm Development Toxicity Test 'Hit' | Mean Zone Concentration (95% UCL Zone Concentration) | | | | | | | | ER-L | ER-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | G | H | | |
| HPAH[c], µg/kg | | | | | | | | | | | | |
| Benzo(a)anthracene | 280 | 1,600 | | 37 (71) | 23 (36) | 36 (61) | 124 (146) | 210 (373) | | 1,250 (2,244) | 261 | 1,600 |
| Benzo(a)pyrene | 540 | 1,100 | 20 (32) | 99 (124) | 61 (84) | 165 (211) | 277 (337) | 493 (618) | 260 (449) | 1,113 (1,550) | 430 | 1,600 |
| Benzo(b)fluoranthene | 510 | 1,400 | 20 (32) | 132 (171) | 66 (94) | 205 (275) | 338 (428) | 563 (815) | 317 (557) | 1,425 (1,843) | - | - |
| Benzo(ghi)perylene | 340 | b | | 58 (80) | 32 (48) | 85 (130) | 163 (206) | 340 (439) | 122 (175) | 295 (483) | - | 540[e] |
| Benzo(k)fluoranthene | 660 | 1,100 | 23 (37) | 158 (199) | 74 (101) | 217 (286 | 340 (386) | 563 (789) | 297 (533) | 1,058 (1,356) | - | - |
| Chrysene | 550 | 1,700 | 18 (31) | 76 (114) | 42 (60) | 68 (142) | 238 (302) | 440 (677) | 227 (424) | 1,455 (2,348) | 384 | 2,800 |
| Dibenzo(a,h)anthracene | 120 | 270 | | 12 (21) | 21 (35) | | 54 (111) | | | 159 (421) | - | - |
| Fluoranthene | 320 | 3,600 | 15 (26) | 24 (55) | 24 (35) | 37 (75) | 135 (199) | 210 (447) | 123 (196) | 2,630 (5,374) | 600 | 5,100 |
| Indeno(1,2,3-cd)pyrene | 360 | b | | 58 (80) | 30 (45) | 72 (127) | 163 (206) | 353 (478) | 128 (187) | 343 (584) | - | 69[e] |
| Pyrene | 350 | 2,800 | 18 (31) | 24 (55) | 29 (40) | 36 (68) | 152 (205) | 290 (527) | 298 (636) | 2,475 (3,588) | 665 | 2,600 |
| Benzofluoranthenes | 1,160 | 2,400 | 42 (68) | 290 (369) | 140 (191) | 422 (547) | 678 (802) | 1,127 (1,270) | 613 (1,090) | 2,483 (3,178) | - | - |
| LPAH[d], µg/kg | | | | | | | | | | | | |
| Acenaphthene | - | 180 | | | | | | | | 141 (405) | 16 | 500 |
| Acenaphthylene | 68 | 110 | | 16 (31) | | 19 (28) | 33 (50) | 56 (82) | 67 (97) | 178 (525) | 44 | 640 |
| Anthracene | 180 | 1,200 | | 43 (64) | 22 (34) | 34 (56) | 75 (116) | 130 (304) | 117 (210) | 888 (1,689) | 85.3 | 1,100 |
| Fluorene | - | 190 | | | | | | | 59 (95) | 202 (590) | 19 | 540 |
| Methylnaphthalenes | - | - | | | | | | | | 32 (86) | 70 | 670 |
| Phenanthrene | 160 | 810 | | 31 (50) | 20 (32) | 26 (40) | 64 (78) | 107 (243) | 106 (184) | 1,068 (2,837) | 240 | 1,500 |

(table continues)





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Table 6-5 (continued)

| Analyte Name | Highest Concentration At Open Water Stations With No Toxicity Test 'Hit'[a] | Highest Concentration At Pier Stations With Only Echinoderm Development Toxicity Test 'Hit' | Mean Zone Concentration (95% UCL Zone Concentration) | | | | | | | | ER-L | ER-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | G | H | | |
| **PCBs[e], µg/kg** | | | | | | | | | | | | |
| Aroclor-1260 | 540 | b | 20 (38) | 85 (121) | 171 (261) | 215 (312) | 273 (373) | 550 (1,358) | | 140 (678) | - | - |
| **Pesticides, µg/kg** | | | | | | | | | | | | |
| Aldrin | 2.3 | b | | | 0.66 (1.13) | | | | | | - | 5* |
| Lindane (gamma-bhc) | 6.8 | b | | | 0.68 (1.20) | 0.47 (0.56) | | 3.6 (11.6) | | | - | 5* |
| 4,4'-DDD | 42.0 | b | 3.1 (5.4) | 1.7 (4.5) | 13.0 (22.0) | 10.0 (14.1) | 11.0 (18.6) | 21.0 (49.0) | | 17.0 (61.0) | - | - |
| 4,4'-DDE | 130 | b | 32 (41.8) | 19 (27.2) | 54 (69) | 48 (67) | 88 (122) | 120 (249) | 99 (108.5) | 70 (136) | 2.2 | 27 |
| 4,4'-DDT | 34.0 | b | | | 4.2 (13.0) | | | | | | - | - |
| Total DDT | 146 | b | 35.6 (46.2) | 21.1 (30.9) | 71.3 (96.0) | 59.2 (77.7) | 99.0 (140.2) | 141.8 (296.0) | 100.8 (110.3) | 82.8 (171.7) | 1.6 | 46.1 |
| **SVOCs[f], µg/kg** | | | | | | | | | | | | |
| Phenol | - | 210 | 35 (68) | | | | 91 (187) | | | | - | 120* |
| Bis(2-ethylhexyl) phthalate | 250 | b | | | | | 200 (376) | | | | - | 1,900* |
| Di-n-octylphthalate | 91 | b | | 39 (54) | 46 (74) | 41 (72) | 56 (98) | 114 (193) | 165 (194) | 169 (313) | - | 68,000* |

Notes:

[a] A toxicity test 'hit' is a test result which was different than project reference in an adverse manner (see Section 4.4).
[b] Pier value did not exceed open water highest 'no hit' concentration value.
[c] HPAH - High molecular weight polynuclear aromatic hydrocarbon.
[d] LPAH - Low molecular weight polynuclear aromatic hydrocarbon.
[e] PCBs - Polychlorinated biphenyls.
[f] SVOCs - Semi-volatile organic compounds.
Blank space indicates samples were analyzed for compound, but not detected.
Also shown for comparison are Mean Zone, Zone 95% upper confidence level and, when available, effects range-low (ER-L) and effects range-median (ER-M) values (Long et al., 1995).
* Puget Sound Dredge Disposal Analyses (PSDDA) screening level values (U.S. ACOE 1988).





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**Table 6-6**
**Estimated Risk Associated with Consumption of White Croaker from the West Basin by the Harbor Seal**

| Fish COPEC[1] | Toxicity Reference Value[2] for Harbor Seal (mg/kg-day) | White Croaker Whole Body 95% UCL[3] (mg/kg) | Dose[4] (mg/kg-day) | Hazard Quotient[5] |
|---|---|---|---|---|
| Arsenic | 0.00892 | 1.4 | 0.098 | 11 |
| Beryllium | 0.106 | 0.060 | 0.0042 | 0.040 |
| Chromium | 0.527 | 0.42 | 0.029 | 0.056 |
| Copper | 2.67 | 3.1 | 0.22 | 0.081 |
| Tributyltin | 1.66 | 0.012 | 0.00084 | 0.00051 |
| α-BHC | 1.28 | 0.0032 | 0.00022 | 0.00017 |
| Endrin | 0.00651 | 0.0094 | 0.00066 | 0.10 |
| | | | $HI_1$ = | 11 |
| | | | $HI_2$ = | 0.28 |

Notes:
[1] COPEC – chemical of potential ecological concern
[2] Toxicity reference value from Table 6-3
[3] 95% UCL – 95% upper confidence level
[4] Dose = (ingestion rate of 0.07 kg/kg-day) * (concentration of analyte in fish)
[5] Hazard quotient = (dose) / (toxicity reference value)
$HI_1$ – Hazard Index for all COPECs
$HI_2$ – Hazard Index for all COPECs with Hazard Quotients less than 1.0 (i.e. excluding arsenic)

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**Table 6-7**
**Evaluation Matrix for West Basin Sediment Evaluation Zones**

| Sediment Evaluation Zone | Sediment Chemistry | Sediment Bioassay | | Benthic Community Analysis | Sediment Bioaccumulation | SEZ Status |
|---|---|---|---|---|---|---|
| | | Polychaete and Amphipod (solid phase) | Echinoderm (pore water) | | | |
| Station 24 | – | – | – | – | – | No Action |
| A | + | – | – | – | – | No Action |
| B | + | – | – | – | – | No Action |
| C | + | – | – | – | –* | No Action |
| D | + | – | – | – | –* | No Action |
| E | + | – | – | – | –* | No Action |
| F | + | – | – | – | –* | No Action |
| G | + | – | – | – | – | No Action |
| H | + | – | – | – | – | No Action |

Notes:
– No significant adverse effect noted at the SEZ
\+ Significant adverse effect noted at the SEZ
* No bioaccumulation samples collected in this SEZ

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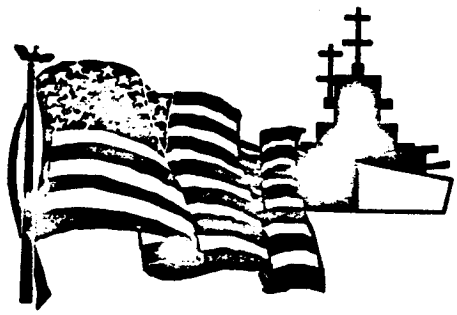

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**REMEDIAL INVESTIGATION (RI) REPORT**
**INSTALLATION RESTORATION PROGRAM**
**FOR SITE 7**
**NAVAL STATION LONG BEACH**
**LONG BEACH, CALIFORNIA**
**CTO-0026**

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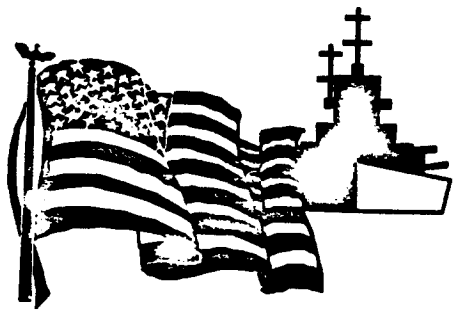

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# NAVAL STATION LONG BEACH
# LONG BEACH, CALIFORNIA
# CTO-0026

BOX 12

Submitted to:

Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

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## APPENDIX P

# PROJECT DATABASE

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## Table P-1
## Sediment Sample Analyses Conducted by Station
## Long Beach Naval Complex – West Basin (Site 7)

| Station ID | Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| | Surface Chemistry[a] | Subsurface Chemistry[a] | Surface Physical[b] | Subsurface Physical[b] | Bioassay[c] | Clam Bio-accumulation[d] | Benthic Community |
| 1 | X[e] | | X[e] | | X | | X |
| 2 | X | | X | | X | | X |
| 3 | X | | X | | X | | X |
| 4 | X | | X | | X | | X |
| 5 | X | | X | | X | | X |
| 6 | X | X[f] | X | X[f] | X | X | X |
| 7 | X | | X | | X | | X |
| 8 | X | X[g] | X | X[g] | X | X | X |
| 9 | X | | X | | X | | X |
| 10 | X | | X | | X | | X |
| 11 | X | | X | | X | | X |
| 12 | X | | X | | X | | X |
| 13 | X | | X | | X | | X |
| 14 | X | X[g] | X | X[g] | X | X | X |
| 15 | X | | X | | X | | X |
| 16 | X | | X | | X | | X |
| 17 | X | | X | | X | | X |
| 18 | X | | X | | X | | X |
| 19 | X | | X | | X | | X |
| 20 | X | | X | | X | | X |
| 21 | X | | X | | X | | X |
| 22 | X | | X | | X | | X |
| 23 | X | | X | | X | | X |
| 24 | X | X[g] | X | X[g] | X | X | X |
| 25 | X | | X | | X | | X |
| 26 | X | | X | | X | | X |
| 27 | X | | X | | X | | X |
| 28 | X | | X | | X | | X |
| 29 | X | X[g] | X | X[g] | X | X | X |
| 30 | X | | X | | X | | X |
| 31 | X | | X | | X | | X |
| 32 | X | | X | | X | | X |
| 33 | X | | X | | X | | X |
| 41 | X | | X | | X | | X |
| 42 | X | | X | | X | | X |

(table continues)



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**Table P-1 (continued)**

| Station ID | Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| | Surface Chemistry[a] | Subsurface Chemistry[a] | Surface Physical[b] | Subsurface Physical[b] | Bioassay[c] | Clam Bio-accumulation[d] | Benthic Community |
| 43 | X | X[f] | X | X[f] | X | X | X |
| 44 | X | | X | | X | | X |
| 45 | X | | X | | X | | X |
| 46 | X | X[f] | X | X[f] | X | X | X |
| 47 | X | | X | | X | | X |
| 48 | X | | X | | X | | X |
| 49 | X | | X | | X | X | X |
| 50 | X | | X | | X | | X |
| 51 | X | X[f] | X | X[f] | X | X | X |
| 52 | X | | X | | X | | X |
| 40010.1 | X | X[h] | X[e] | X[h] | X[e] | X | X[e] |
| 40010.2 | X | | X[e] | | X[e] | X | X[e] |
| 40010.3 | X[e] | | X[e] | | X[e] | X | X[e] |
| 40018.1 | X | | X | | X | | X |
| 40018.2 | X | | X | | X | | X |
| 40018.3 | X | X[f] | X[e] | X[f] | X[e] | X | X[e] |
| 40020.1 | | | X | | | | |
| 40020.2 | | | X | | | | |
| 40020.3 | | | X | | | | |
| 40032.1 | X | | X | | X | X | X |
| 40032.2 | | | X | | | | |
| 40032.3 | | | X | | | | |

Notes:

[a] Semivolatile organic compounds, pesticides, polychlorinated biphenyls, moisture content, priority pollutant metals, butyltins, acid volatile sulfides, simultaneously extracted metals, total sulfides

[b] Grain size, total organic carbon

[c] Pore water and solid phase

[d] Semivolatile organic compounds, pesticides, polychlorinated biphenyls, priority pollutant metals, butyltins, lipid content

[e] Three field replicates collected and analyzed

[f] Five-meter core

[g] Three-meter core

[h] Five-meter core attempted, three-meter core actually collected



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## Table P-2
## Variable Code Descriptions for Analytical Results Electronic Database
## Long Beach Naval Complex - West Basin (Site 7)

| Station ID | Description |
|---|---|
| R1 | Fish sampling transect located at reference station 40010 |
| R2 | Fish sampling transect located at reference station 40018 |
| T | Fish sampling transects located located within West Basin |

| Sample Type | Description |
|---|---|
| DUP | Duplicate Sample |
| FDB | Field Blank |
| REG | Regular Sample |
| REP1 | First Field Replicate |
| REP2 | Second Field Replicate |
| REP3 | Third Field Replicate |
| RSB | Rinsate Blank |

| Result and Detection Units | Description |
|---|---|
| MG/KG | milligram per kilogram |
| MG/L | milligram per liter |
| UG/KG | microgram per kilogram |
| UM | micrometer |

| Laboratory Qualifier | Description |
|---|---|
| NSF | Insufficient Sample Quantity |
| U | Not detected above the reported sample quantitation limit (concentration reported is the Practical Quantitation Limit [PQL]) |

| Review Qualifier | Description |
|---|---|
| J | Reported value is estimated |
| R | Sample results are rejected; presence or absence of analyte cannot be verified |
| U | Not detected above the reported sample quantitation limit (concentration reported is the PQL) |
| UJ | Reported value is estimated as not detected above the reported sample quantitation limit (concentration reported is the PQL) |

| Qualification Code | Description |
|---|---|
| 1 | Holding Times |
| 5A | Calibration (Initial) |
| 5B | Calibration (Continuing) |
| 7 | Laboratory Blanks |
| 8 | Matrix Spike |
| 9 | Duplicate of Matrix Spike |
| 10 | Laboraty Control Standard |
| 11 | Detection Limit |
| 13 | Surrogates |
| 15 | Furnace Quality Control |
| 19 | Internal Standards |

(table continues)



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**Table P-2 (continued)**

| Result Type and Matrix | Description |
|---|---|
| CLAM | Clam |
| FAU | Fauna |
| FB1 | Fish Bile |
| FF1 | California Halibut Filet |
| FF2 | White Croaker Filet |
| FW1 | California Halibut Whole Body |
| FW2 | White Croaker Whole Body |
| LIQ | Liquid |
| SED | Sediment |
| SED-D | Dry Weight Sediment |
| SED-W | Wet Weight Sediment |

| Method | Description |
|---|---|
| EPA 160.3 | Moisture Content |
| EPA 608 | Organochlorine Pesticides/Polychlorinated Biphenyls by Gas Chromatography |
| EPA 6010 | Inductively-Coupled Plasma Emission Spectrometry - Priority Pollutant Metal Scan |
| EPA 7041 | Graphite Furnace Atomic Absorption Spectrometry - Antimony |
| EPA 7060 | Graphite Furnace Atomic Absorption Spectrometry - Arsenic |
| EPA 7131 | Graphite Furnace Atomic Absorption Spectrometry - Cadmium |
| EPA 7191 | Graphite Furnace Atomic Absorption Spectrometry - Chromium |
| EPA 7421 | Graphite Furnace Atomic Absorption Spectrometry - Lead |
| EPA 7470 | Cold-Vapor Atomic Absorption Spectrometry - Mercury |
| EPA 7740 | Graphite Furnace Atomic Absorption Spectrometry - Selenium |
| EPA 7760 | Flame Atomic Absorption Spectrometry - Silver |
| EPA 7761 | Graphite Furnace Atomic Absorption Spectrometry - Silver |
| EPA 7841 | Graphite Furnace Atomic Absorption Spectrometry - Thallium |
| EPA 8080 | Organochlorine Pesticides/Polychlorinated Biphenyls by Gas Chromatography |
| EPA 8270 | Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry: Capillary Column Technique |
| EPA 9030 | Total Sulfide |
| EPA 9071 | Lipid Content |
| EPA DRAFT | Acid Volatile Sulfide / Simultaneously Extracted Metals |
| GC-FPD | Gas Chromatography/Flame Photometric Detection (Organotins) |
| GC/MS | Gas Chromatography/Mass Spectrometry, Selective Ion Mode for Polynuclear Aromatic Hydrocarbons |
| KRAHN 1986 MOD | Polynuclear Aromatic Hydrocarbons Parent Compounds |
| MENZEL&VACCARO | Total Organic Carbon |
| PLUMB 1981 | Grain Size |

| Collection | Description |
|---|---|
| BOXCORE | Box Corer |
| TRAWL | Otter Trawl |
| VBCORE | Vibra-Corer |

| Station Type | Description |
|---|---|
| MFAUNA | Marine Fauna |
| SEDIMENT | Sediment |

| Usage | Description |
|---|---|
| VU | Verified, Unvalidated |
| VV | Verified, Validated |



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## Table P-3
## Sample ID Decoder for Data Package (Sorted by Sample ID)
## Long Beach Naval Complex - West Basin (Site 7)

| Sample ID[a] | Station ID | Notes |
|---|---|---|
| 0159507 | 41 | |
| 0260001 | 27 | |
| 0260002 | 28 | |
| 0260003 | 31 | |
| 0260004 | 33 | |
| 0260005 | 30 | |
| 0260006 | 32 | |
| 0260007 | 26 | |
| 0260008 | 25 | |
| 0260009 | 21 | |
| 0260010 | 20 | |
| 0260011 | 17 | |
| 0260012 | 22 | |
| 0260013 | 23 | |
| 0260014 | 19 | |
| 0260015 | 18 | |
| 0260016 | 13 | |
| 0260017 | 15 | |
| 0260018 | 16 | |
| 0260019 | 12 | |
| 0260020 | 11 | |
| 0260021 | 10 | |
| 0260022 | 22 | |
| 0260023 | 9 | |
| 0260024 | 4 | |
| 0260025 | 3 | |
| 0260026 | 2 | |
| 0260027 | 1 | Field replicate 1 |
| 0260028 | 1 | Field replicate 2 |
| 0260029 | 1 | Field replicate 3 |
| 0260030 | 5 | |
| 0260031 | 8 | Sample[b] 1 |
| 0260032 | 8 | Sample 2 |
| 0260033 | 14 | Sample 1 |
| 0260034 | 14 | Sample 2 |
| 0260035 | 24 | Sample 1 |
| 0260036 | 24 | Sample 2 |
| 0260037 | 29 | Sample 1 |
| 0260038 | 29 | Sample 2 |
| 0260039 | 6 | Sample 1 |
| 0260040 | 6 | Sample 2 |
| 0260041 | 6 | Sample 3 |
| 0260042 | 6 | Sample 4 |
| 0260043 | 6 | Sample 5 |
| 0260049 | 40010.1 | Sample 1 |
| 0260050 | 40010.1 | Sample 2 |
| 0260051 | 40018.3 | Sample 1 |
| 0260052 | 40018.3 | Sample 2 |
| 0260053 | 40018.3 | Sample 3 |
| 0260054 | 40018.3 | Sample 4 |
| 0260055 | 40018.3 | Sample 5 |
| 0260058 | 8 | |
| 0260059 | 6 | |
| 0260060 | 29 | |
| 0260061 | 24 | |
| 0260062 | 14 | |
| 0260063 | 40018.3 | Field replicate 1 |
| 0260064 | 40018.3 | Field replicate 2 |
| 0260065 | 40018.3 | Field replicate 3 |
| 0260066 | 40010.2 | Field replicate 1 |
| 0260067 | 40010.3 | Field replicate 1 |
| 0260068 | 40010.1 | Field replicate 1 |
| 0260069 | 40010.1 | Field replicate 2 |
| 0260070 | 40010.1 | Field replicate 3 |
| 0260071 | 40010.2 | Field replicate 2 |
| 0260072 | 40010.2 | Field replicate 3 |
| 0260073 | 40010.3 | Field replicate 2 |
| 0260074 | 40010.3 | Field replicate 3 |
| 0260076 | 40020.1 | |
| 0260077 | 40020.2 | |
| 0260078 | 40020.3 | |
| 0260081 | 43 | |
| 0260082 | 47 | |
| 0260085 | 40018.1 | |
| 0260086 | 40018.2 | |
| 0260087 | 40032.1 | |
| 0260088 | 40032.2 | |
| 0260089 | 40032.3 | |
| 0260093 | 46 | Rinsate blank |
| 0260094 | 46 | Field blank |
| 0260095 | 46 | Sample 5 |
| 0260096 | 46 | Sample 4 |
| 0260097 | 46 | Sample 2 |
| 0260098 | 46 | |
| 0260099 | 45 | |
| 0260100 | 44 | |
| 0260101 | 42 | |
| 0260102 | 52 | |
| 0260103 | 51 | |
| 0260104 | 50 | |
| 0260105 | 49 | |
| 0260106 | 48 | |
| 0260200 | 43 | Sample 1 |
| 0260202 | 43 | Sample 2 |
| 0260299 | 43 | Sample 3 |
| 0260204 | 43 | Sample 4 |
| 0260205 | 43 | Sample 5 |
| 0260206 | 51 | Sample 1 |
| 0260207 | 51 | Sample 2 |
| 0260208 | 51 | Sample 3 |
| 0260209 | 51 | Sample 4 |
| 0260210 | 43 | Sample 3 duplicate |
| 0260211 | 51 | Rinsate blank |
| 0260212 | 51 | Field blank |
| 0260213 | 51 | Sample 5 |
| 0260300 | TI[c] | |

(table continues)



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Table P-3 (continued)

| Sample ID[a] | Station ID | Notes |
|---|---|---|
| 0260301 | T2 | |
| 0260302 | T1 | |
| 0260303 | T1 | |
| 0260304 | T2 | |
| 0260305 | T1 | |
| 0260306 | R1[d] | |
| 0260308 | R2 | |
| 0260309 | R2 | |
| 0260310 | R2 | |
| 0260311 | R1 | |
| 0260312 | R1 | |
| 0260313 | R1 | |
| 0260314 | R1 | |
| 0260315 | R2 | |
| 0260316 | R2 | |
| 0260317 | R2 | |
| 0260321 | T1 | |
| 0260322 | T1 | |
| 0260323 | T1 | |
| 0260324 | R1 | |
| 0260325 | R1 | |
| 0260326 | R1 | |
| 0260327 | T3 | |
| 0260328 | T3 | |
| 0260329 | T3 | |
| 0260330 | T3 | |
| 0260331 | T3 | |
| 0260332 | T4 | |
| 0260333 | T4 | |
| 0260334 | T4 | Archival |
| 0260335 | T4 | |
| 0260336 | T4 | |
| 0260337 | T3 | Archival |
| 0260338 | T4 | Archival |
| 0260339 | T4 | |
| 0260340 | T4 | |
| 0260341 | T4 | |
| 0260342 | T5 | |
| 0260343 | T5 | |
| 0260344 | T5 | |
| 0260345 | T5 | |
| 0260346 | T5 | |
| 0260347 | T4 | |
| 0260348 | T5 | |
| 0260349 | T5 | |
| 0260350 | T5 | |
| 0260351 | T6 | |
| 0260352 | T6 | |
| 0260353 | T6 | |
| 0260354 | T6 | |
| 0260355 | T6 | |
| 0260356 | T6 | |
| 0260357 | R1 | |
| 0260358 | R1 | |
| 0260359 | R1 | |
| 0260360 | R2 | |
| 0260361 | R2 | |
| 0260362 | R2 | |
| 0260363 | T7 | |
| 0260364 | T7 | |
| 0260365 | T7 | |
| 0260367 | T7 | |
| 0260368 | T7 | |
| 0260369 | T5 | |
| 0260370 | H[e] | Archival |
| 0260371 | H | Archival |
| 0260372 | H | Archival |
| 0260373 | H | Archival |
| 0260374 | H | Archival |
| 0260375 | R1 | |
| 0260400 | T1 | |
| 0260401 | T2 | |
| 0260402 | T1 | |
| 0260403 | T1 | |
| 0260405 | T1 | |
| 0260407 | R1 | |
| 0260408 | R1 | |
| 0260409 | R1 | |
| 0260410 | R2 | |
| 0260411 | R2 | |
| 0260412 | R2 | |
| 0260414 | T4 | |
| 0260415 | T4 | |
| 0260416 | T5 | |
| 0260417 | T5 | |
| 0260418 | T5 | |
| 0260419 | T6 | |
| 0260420 | T5 | |

Notes:

[a] The last two digits of the Sample ID's are not included for the purposes of this decoder.
The Sample ID numbering system is as follows:

1. The first three digits of the Sample ID correspond to the CTO number.
2. The fourth through seventh digits of the Sample ID corresponds to a sequentially assigned blind number for that sample.
3. The last two digits of the Sample ID (not shown in this table) correspond to the container number.

[b] Sample followed by a number refers to subsurface sediment cores (1 = shallowest, 5 = deepest).

[c] T - West Basin transect

[d] R - Reference transect

[e] H - Unspecified West Basin (harbor) transect

0 0 6 8 7



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## Surface Sediment and Clam Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | REP1 | 0.02 | 26002701 | 4,4'-DDD | 72-54-8 | 14 | UG/KG | | | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | 4,4'-DDE | 72-55-9 | 26 | UG/KG | | | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ACENAPHTHYLENE | 208-96-8 | 48 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ANTHRACENE | 120-12-7 | 64 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | BENZO(A)ANTHRACENE | 56-55-3 | 64 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | BENZO(A)PYRENE | 50-32-8 | 180 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | BENZO(B)FLUORANTHENE | 205-99-2 | 190 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | BENZO(GHI)PERYLENE | 191-24-2 | 110 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | BENZO(K)FLUORANTHENE | 207-08-9 | 220 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | CHRYSENE | 218-01-9 | 180 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | DI-N-OCTYLPHTHALATE | 117-84-0 | 64 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | FLUORANTHENE | 206-44-0 | 16 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 110 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | PCB-1260 | 11096-82-5 | 140 | UG/KG | | | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | PHENANTHRENE | 85-01-8 | 48 | UG/KG | | | SED-D | 37.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002701 | TOXAPHENE | 8001-35-2 | 80 | UG/KG | U | UJ | SED-D | 37.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP1 | 0.02 | 26002702 | ARSENIC, TOTAL | 7440-38-2 | 9 | MG/KG | | | SED-D | 37.7 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | BERYLLIUM, TOTAL | 7440-41-7 | 0.48 | MG/KG | | | SED-D | 37.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | CADMIUM, TOTAL | 7440-43-9 | 0.98 | MG/KG | | J | SED-D | 37.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | CHROMIUM, TOTAL | 7440-47-3 | 34 | MG/KG | | | SED-D | 37.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | COPPER, TOTAL | 7440-50-8 | 110 | MG/KG | | | SED-D | 37.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 37.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP1 | 0.02 | 26002702 | LEAD, TOTAL | 7439-92-1 | 37 | MG/KG | | | SED-D | 37.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | MERCURY, TOTAL | 7439-97-6 | 0.56 | MG/KG | | | SED-D | 37.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 37.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP1 | 0.02 | 26002702 | NICKEL, TOTAL | 7440-02-0 | 21 | MG/KG | | | SED-D | 37.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | UJ | SED-D | 37.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | SILVER, TOTAL | 7440-22-4 | 1.9 | MG/KG | | | SED-D | 37.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP1 | 0.02 | 26002702 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | UJ | SED-D | 37.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | REP1 | 0.02 | 26002702 | TRIBUTYLTIN | 688-73-3 | 9.3 | UG/KG | | UJ | SED-D | 37.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP1 | 0.02 | 26002702 | ZINC, TOTAL | 7440-66-6 | 150 | MG/KG | | | SED-D | 37.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 1 | REP1 | 0.02 | 26002703 | CLAY | | 12.685 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 25002703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 90.522 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.008 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 125 MICRONS | | 10.311 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 77.693 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 3.008 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 250 MICRONS | | 0.845 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 87.315 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 68.915 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.479 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 500 MICRONS | | 0.158 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 86.929 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 83.77 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.062 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | CUMULATIVE PERCENT > 88.39 MICRONS | | 36.354 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | GRAVEL | | 0 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | MEAN GRAIN SIZE | | 29.42 | UM | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | MEDIAN GRAIN SIZE | | 70.238 | UM | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | SAND | | 86.929 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002703 | SILT | | 30.385 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002704 | TOTAL ORGANIC CARBON | | 0.513 | PERCENT | | | SED-D | 37.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP1 | 0.02 | 26002705 | ACID VOLATILE SULFIDE | | 8 | MG/KG | | | SED-D | 37.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 1 | REP1 | 0.02 | 26002705 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | UJ | SED-D | 37.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP1 | 0.02 | 26002705 | COPPER, EXTRACTABLE | 7440-50-8 | 59 | MG/KG | | | SED-D | 37.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 1 | REP1 | 0.02 | 26002705 | LEAD, EXTRACTABLE | 7439-92-1 | 22 | MG/KG | | | SED-D | 37.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP1 | 0.02 | 26002705 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.08 | MG/KG | | | SED-D | 37.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 1 | REP1 | 0.02 | 26002705 | SULFIDE, TOTAL | | 4.3 | MG/KG | | | SED-D | 37.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 1 | REP1 | 0.02 | 26002705 | ZINC, EXTRACTABLE | 7440-66-6 | 72 | MG/KG | | | SED-D | 37.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP2 | 0.02 | 26002801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 3- AND 4-METHYLPHENOL | 108-44-5 | 30 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 4,4'-DDD | 72-54-8 | 18 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 18 | UG/KG |



R0063065

5 8 0 C3

2 0 1 7 8

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | REP2 | 0.02 | 26002801 | 4,4'-DDE | 72-55-9 | 41 | UG/KG | | | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ACENAPHTHYLENE | 208-96-8 | 17 | UG/KG | J | J | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ANTHRACENE | 120-12-7 | 51 | UG/KG | | | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BENZO(A)ANTHRACENE | 56-55-3 | 34 | UG/KG | | L | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BENZO(A)PYRENE | 50-32-8 | 120 | UG/KG | | | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BENZO(B)FLUORANTHENE | 205-99-2 | 140 | UG/KG | | | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BENZO(GHI)PERYLENE | 191-24-2 | 51 | UG/KG | | | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BENZO(K)FLUORANTHENE | 207-08-9 | 140 | UG/KG | | | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 160 | UG/KG | J | J | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | CHLORDANE | 57-74-9 | 3 | UG/KG | J | J | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | CHRYSENE | 218-01-9 | 68 | UG/KG | | | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | DI-N-OCTYLPHTHALATE | 117-84-0 | 34 | UG/KG | J | J | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | FLUORANTHENE | 206-44-0 | 34 | UG/KG | J | J | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 68 | UG/KG | | | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | J | J | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



R0063066

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | REP2 | 0.02 | 26002801 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PENTACHLOROPHENOL | 87-86-5 | 100 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PHENANTHRENE | 85-01-8 | 50 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PHENOL | 108-95-2 | 34 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | PYRENE | 129-00-0 | 30 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | TOXAPHENE | 8001-35-2 | 91 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP2 | 0.02 | 26002801 | ARSENIC, TOTAL | 7440-38-2 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP2 | 0.02 | 26002802 | BERYLLIUM, TOTAL | 7440-41-7 | 10 | MG/KG | | | SED-D | 41.1 | EPA 7080 | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | CADMIUM, TOTAL | 7440-43-9 | 0.34 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | CHROMIUM, TOTAL | 7440-47-3 | 6.86 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.68 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | COPPER, TOTAL | 7440-50-8 | 38 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | DIBUTYLTIN | | 110 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | LEAD, TOTAL | 7439-92-1 | 2 | UG/KG | U | U | SED-D | 41.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP2 | 0.02 | 26002802 | MERCURY, TOTAL | 7439-97-6 | 80 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | MONOBUTYLTIN | | 0.66 | MG/KG | | | SED-D | 41.1 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | NICKEL, TOTAL | | 2 | UG/KG | U | U | SED-D | 41.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP2 | 0.02 | 26002802 | SELENIUM, TOTAL | 7440-09-7 | 22 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | SILVER, TOTAL | 7782-49-2 | 0.8 | MG/KG | | | SED-D | 41.1 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | THALLIUM, TOTAL | 7440-22-4 | 2 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | TRIBUTYLTIN | 7440-28-0 | 0.5 | MG/KG | | | SED-D | 41.1 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 1 | REP2 | 0.02 | 26002802 | ZINC, TOTAL | 688-73-3 | 11 | UG/KG | U | U | SED-D | 41.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP2 | 0.02 | 26002802 | CLAY | 7440-66-6 | 190 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 0.98 MICRONS | | 16.58 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 1.95 MICRONS | | 100 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 1000 MICRONS | | 87.559 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 125 MICRONS | | 0.08 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 8.936 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 15.63 MICRONS | | 0.03 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 70.497 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 2000 MICRONS | | 2.317 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 250 MICRONS | | 8.081 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 0.029 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 83.48 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 353.55 MICRONS | | 59.108 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 500 MICRONS | | 0.4 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 0.204 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 42.723 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 78.074 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 0.123 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | GRAVEL | | 25.121 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | MEAN GRAIN SIZE | | 0.021 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0.02 | 26002803 | MEDIAN GRAIN SIZE | | 19.516 | UM | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| | | | | | | 46.936 | UM | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



R0063067

C0909

V01 T8

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | REP2 | 0 02 | 26002803 | SAND | | 42.701 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0 02 | 26002803 | SILT | | 40.897 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP2 | 0 02 | 26002804 | TOTAL ORGANIC CARBON | | 0.958 | PERCENT | | | SED-D | 41.1 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 1 | REP2 | 0 02 | 26002805 | ACID VOLATILE SULFIDE | | 78 | MG/KG | | J | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 1 | REP2 | 0 02 | 26002805 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | J | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 5 | MG/KG |
| 1 | REP2 | 0 02 | 26002805 | COPPER, EXTRACTABLE | 7440-50-8 | 88 | MG/KG | | | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 1 | REP2 | 0 02 | 26002805 | LEAD, EXTRACTABLE | 7439-92-1 | 38 | MG/KG | | | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 1 | REP2 | 0 02 | 26002805 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.068 | MG/KG | | | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 02 | MG/KG |
| 1 | REP2 | 0 02 | 26002805 | SULFIDE, TOTAL | | 24 | MG/KG | | | SED-D | 41.1 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | C 8 | MG/KG |
| 1 | REP2 | 0 02 | 26002805 | ZINC, EXTRACTABLE | 7440-66-6 | 130 | MG/KG | | | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 1 | REP3 | 0 02 | 26002901 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2 METHYL-4,6 DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2 METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 2 NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 3- AND 4-METHYLPHENOL | 108-44-5 | 50 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 4,4'-DDD | 72-54-8 | 0.1 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 4,4'-DDE | 72-55-9 | 34 | UG/KG | | | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ANTHRACENE | 120-12-7 | 17 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BENZO(A)ANTHRACENE | 56-55-3 | 17 | UG/KG | | J | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BENZO(A)PYRENE | 50-32-8 | 67 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BENZO(B)FLUORANTHENE | 205-99-2 | 84 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BENZO(GHI)PERYLENE | 191-24-2 | 34 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BENZO(K)FLUORANTHENE | 207-08-9 | 87 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | CHLORDANE | 57-74-9 | 8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | CHLORDANE | 57-74-9 | 8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |

8/1 1/98

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C0 9 6 C 3

V01 T8 1

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | REP3 | 0 02 | 26002901 | CHRYSENE | 218-01-9 | 51 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | FLUORANTHENE | 206-44-0 | 34 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 34 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | LINDANE (GAMMA-BHC) | 58-89-9 | 1.1 | UG/KG | | | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | METHOXYCHLOR | 72-43-5 | 8 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 8 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PCB-1260 | 11096-82-5 | 170 | UG/KG | | | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | PYRENE | 129-00-0 | 34 | UG/KG | | | SED-D | 40 6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 1 | REP3 | 0 02 | 26002901 | TOXAPHENE | 8001-35-2 | 80 | UG/KG | U | U | SED-D | 40 6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 1 | REP3 | 0 02 | 26002902 | ARSENIC, TOTAL | 7440-38-2 | 10 | MG/KG | | | SED-D | 40 6 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 1 | REP3 | 0 02 | 26002902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.51 | MG/KG | | | SED-D | 40 6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 1 | REP3 | 0 02 | 26002902 | CADMIUM, TOTAL | 7440-43-9 | 0.24 | MG/KG | | J | SED-D | 40 6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 08 | MG/KG |
| 1 | REP3 | 0 02 | 26002902 | CHROMIUM, TOTAL | 7440-47-3 | 84 | MG/KG | | | SED-D | 40 6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 1 | REP3 | 0 02 | 26002902 | COPPER, TOTAL | 7440-50-8 | 180 | MG/KG | | | SED-D | 40 6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 1 | REP3 | 0 02 | 26002902 | DIBUTYLTIN | | 5.7 | UG/KG | | U | SED-D | 40 6 | EPA PSD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP3 | 0 02 | 26002902 | LEAD, TOTAL | 7439-92-1 | 42 | MG/KG | | | SED-D | 40 6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 1 | REP3 | 0 02 | 26002902 | MERCURY, TOTAL | 7439-97-6 | 0.09 | MG/KG | | | SED-D | 40 6 | EPA 7471 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Stock | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | REP3 | 0.02 | 26002902 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 40.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP3 | 0.02 | 26002902 | NICKEL, TOTAL | 7440-02-0 | 20 | MG/KG | | | SED-D | 40.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 1 | REP3 | 0.02 | 26002902 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | UJ | SED-D | 40.6 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP3 | 0.02 | 26002902 | SILVER, TOTAL | 7440-22-4 | 2 | MG/KG | | | SED-D | 40.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP3 | 0.02 | 26002902 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 40.6 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP3 | 0.02 | 26002902 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | | UJ | SED-D | 40.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 1 | REP3 | 0.02 | 26002902 | ZINC, TOTAL | 7440-66-6 | 160 | MG/KG | | | SED-D | 40.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 1 | REP3 | 0.02 | 26002903 | CLAY | | 17.409 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 97.251 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 125 MICRONS | | 8.847 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 99.33 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.023 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 250 MICRONS | | 0.574 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 88.591 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 58.353 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.309 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 500 MICRONS | | 0.124 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 40.121 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 77.674 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.049 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 54.515 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | GRAVEL | | 0 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | MEAN GRAIN SIZE | | 18.19 | UM | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | MEDIAN GRAIN SIZE | | 39.869 | UM | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | SAND | | 40.121 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002903 | SILT | | 42.471 | PERCENT | | | SED-D | 40.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 1 | REP3 | 0.02 | 26002904 | TOTAL ORGANIC CARBON | | 0.903 | PERCENT | | | SED-D | 40.6 | MENZELVAOCARD | BOXCORE | SED | SEDIMENT | VV | | |
| 1 | REP3 | 0.02 | 26002905 | ACID VOLATILE SULFIDE | | 110 | MG/KG | | J | SED-D | 40.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP3 | 0.02 | 26002905 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.67 | MG/KG | | | SED-D | 40.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP3 | 0.02 | 26002905 | COPPER, EXTRACTABLE | 7440-50-8 | 62 | MG/KG | | | SED-D | 40.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP3 | 0.02 | 26002905 | LEAD, EXTRACTABLE | 7439-92-1 | 34 | MG/KG | | | SED-D | 40.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 1 | REP3 | 0.02 | 26002905 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.081 | MG/KG | | | SED-D | 40.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 1 | REP3 | 0.02 | 26002905 | SULFIDE, TOTAL | | 22 | MG/KG | | | SED-D | 40.6 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 1 | REP3 | 0.02 | 26002905 | ZINC, EXTRACTABLE | 7440-66-6 | 130 | MG/KG | | | SED-D | 40.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 2 | REG | 0.02 | 26002601 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | UJ | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |



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Surface Sediment and Clam Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 REG | 0.02 | 26002601 | 2 METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 2 NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 3- AND 4-METHYLPHENOL | 106-44-5 | 50 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | | | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 4,4'-DDE | 72-55-9 | 40 | UG/KG | | | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | | | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 4 BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | 4 NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ALPHA BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | J | J | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BENZO(A)PYRENE | 50-32-8 | 64 | UG/KG | J | J | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BENZO(B)FLUORANTHENE | 205-99-2 | 90 | UG/KG | J | J | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BENZO(GHI)PERYLENE | 191-24-2 | 40 | UG/KG | J | J | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BENZO(K)FLUORANTHENE | 207-08-9 | 60 | UG/KG | J | J | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BETA BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | J | J | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| | 2 REG | 0.02 | 26002601 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 2 REG | 0.02 | 26002601 | CHLORDANE | 57-74-9 | 3 | UG/KG | J | J | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| | 2 REG | 0.02 | 26002601 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | DELTA BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | DI-N BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 2 REG | 0.02 | 26002601 | DI-N-OCTYLPHTHALATE | 117-84-0 | 32 | UG/KG | J | J | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 2 REG | 0.02 | 26002601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | J | J | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | 2 REG | 0.02 | 26002601 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 2 REG | 0.02 | 26002601 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | REG | 0.02 | 26002601 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 2 | REG | 0.02 | 26002601 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 2 | REG | 0.02 | 26002601 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PCB-1260 | 11096-82-5 | 290 | UG/KG | J | J | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 2 | REG | 0.02 | 26002601 | PYRENE | 129-00-0 | 32 | UG/KG | | | SED-D | 37.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002601 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 37.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 2 | REG | 0.02 | 26002602 | ARSENIC, TOTAL | 7440-38-2 | 7.2 | MG/KG | | | SED-D | 37.5 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 2 | REG | 0.02 | 26002602 | BERYLLIUM, TOTAL | 7440-41-7 | 0.32 | MG/KG | | | SED-D | 37.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 2 | REG | 0.02 | 26002602 | CADMIUM, TOTAL | 7440-43-9 | 0.46 | MG/KG | | | SED-D | 37.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 2 | REG | 0.02 | 26002602 | CHROMIUM, TOTAL | 7440-47-3 | 39 | MG/KG | | J | SED-D | 37.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 2 | REG | 0.02 | 26002602 | COPPER, TOTAL | 7440-50-8 | 130 | MG/KG | | | SED-D | 37.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 2 | REG | 0.02 | 26002602 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 37.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 2 | REG | 0.02 | 26002602 | LEAD, TOTAL | 7439-92-1 | 45 | MG/KG | | | SED-D | 37.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 2 | REG | 0.02 | 26002602 | MERCURY, TOTAL | 7439-97-6 | 0.69 | MG/KG | | | SED-D | 37.5 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 2 | REG | 0.02 | 26002602 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 37.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 2 | REG | 0.02 | 26002602 | NICKEL, TOTAL | 7440-02-0 | 16 | MG/KG | | | SED-D | 37.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 2 | REG | 0.02 | 26002602 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | U | SED-D | 37.5 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 2 | REG | 0.02 | 26002602 | SILVER, TOTAL | 7440-22-4 | 2.8 | MG/KG | | | SED-D | 37.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 2 | REG | 0.02 | 26002602 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | U | SED-D | 37.5 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 2 | REG | 0.02 | 26002602 | TRIBUTYLTIN | 688-73-3 | 2.9 | UG/KG | | | SED-D | 37.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 2 | REG | 0.02 | 26002602 | ZINC, TOTAL | 7440-66-6 | 160 | MG/KG | | | SED-D | 37.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 2 | REG | 0.02 | 26002603 | CLAY | | 18.55 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 1.95 MICRONS | | 88.209 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.013 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 125 MICRONS | | 14.914 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.006 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 89.213 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 8.861 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.000 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 250 MICRONS | | 1.088 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 91.46 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 89.016 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.601 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 500 MICRONS | | 0.269 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 46.139 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 77.461 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.059 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 34.741 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | GRAVEL | | 0.008 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | MEAN GRAIN SIZE | | 18.178 | UM | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | MEDIAN GRAIN SIZE | | 56.509 | UM | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | SAND | | 48.13 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002603 | SILT | | 33.312 | PERCENT | | | SED-D | 37.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 2 | REG | 0.02 | 26002604 | TOTAL ORGANIC CARBON | | 1.085 | PERCENT | | | SED-D | 37.5 | MENZELAVACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 2 | REG | 0.02 | 26002605 | ACID VOLATILE SULFIDE | | 51 | MG/KG | | J | SED-D | 37.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 2 | REG | 0.02 | 26002605 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.46 | MG/KG | | | SED-D | 37.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 2 | REG | 0.02 | 26002605 | COPPER, EXTRACTABLE | 7440-50-8 | 86 | MG/KG | | | SED-D | 37.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 2 | REG | 0.02 | 26002605 | LEAD, EXTRACTABLE | 7439-92-1 | 37 | MG/KG | | | SED-D | 37.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 2 | REG | 0.02 | 26002605 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.048 | MG/KG | | | SED-D | 37.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 2 | REG | 0.02 | 26002605 | SULFIDE, TOTAL | | 18 | MG/KG | | | SED-D | 37.5 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 2 | REG | 0.02 | 26002605 | ZINC, EXTRACTABLE | 7440-66-6 | 130 | MG/KG | | | SED-D | 37.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 3 | REG | 0.02 | 26002501 | 4,4'-DDD | 72-54-8 | 7.1 | UG/KG | | | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | 4,4'-DDE | 72-55-9 | 67 | UG/KG | | | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ANTHRACENE | 120-12-7 | 20 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | BENZO(A)PYRENE | 50-32-8 | 200 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | BENZO(B)FLUORANTHENE | 205-99-2 | 340 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | BENZO(GHI)PERYLENE | 191-24-2 | 120 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | BENZO(K)FLUORANTHENE | 207-08-9 | 310 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 3 | REG | 0.02 | 26002501 | CHRYSENE | 218-01-9 | 70 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 80 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 3 | REG | 0.02 | 26002501 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | ENDRIN ALDEHYDE | 7421-36-3 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 180 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 3 | REG | 0.02 | 26002501 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 3 | REG | 0.02 | 26002501 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | PCB-1260 | 11096-82-5 | 340 | UG/KG | | U | SED-D | 40.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002501 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | | U | SED-D | 40.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |

R0063073

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | REG | 0.02 | 26002501 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 49.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 3 | REG | 0.02 | 26002502 | ARSENIC, TOTAL | 7440-38-2 | 12 | MG/KG | | | SED-D | 49.2 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 3 | REG | 0.02 | 26002502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.58 | MG/KG | | | SED-D | 49.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 3 | REG | 0.02 | 26002502 | CADMIUM, TOTAL | 7440-43-9 | 0.45 | MG/KG | | J | SED-D | 49.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 3 | REG | 0.02 | 26002502 | CHROMIUM, TOTAL | 7440-47-3 | 38 | MG/KG | | | SED-D | 49.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 3 | REG | 0.02 | 26002502 | COPPER, TOTAL | 7440-50-8 | 130 | MG/KG | | | SED-D | 49.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 3 | REG | 0.02 | 26002502 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 49.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 3 | REG | 0.02 | 26002502 | LEAD, TOTAL | 7439-92-1 | 51 | MG/KG | | | SED-D | 49.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 3 | REG | 0.02 | 26002502 | MERCURY, TOTAL | 7439-97-6 | 0.85 | MG/KG | | | SED-D | 49.2 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 3 | REG | 0.02 | 26002502 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 49.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 3 | REG | 0.02 | 26002502 | NICKEL, TOTAL | 7440-02-0 | 24 | MG/KG | | | SED-D | 49.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 3 | REG | 0.02 | 26002502 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 49.2 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 3 | REG | 0.02 | 26002502 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 49.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 3 | REG | 0.02 | 26002502 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | | | SED-D | 49.2 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 3 | REG | 0.02 | 26002502 | ZINC, TOTAL | 7440-66-6 | 170 | MG/KG | | | SED-D | 49.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 3 | REG | 0.02 | 26002503 | CLAY | | 24.878 | PERCENT | | | SED-D | 49.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 1.95 MICRONS | | 91.992 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 1000 MICRONS | | 0 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 125 MICRONS | | 2.691 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 1414.81 MICRONS | | 0 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 54.248 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.032 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 250 MICRONS | | 0.142 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 75.122 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 41.126 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.078 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 500 MICRONS | | 0.02 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 58.882 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 83.194 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.015 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | CUMULATIVE PERCENT > 88.39 MICRONS | | 16.932 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | GRAVEL | | 0 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | MEAN GRAIN SIZE | | 16.08 | UM | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | MEDIAN GRAIN SIZE | | 19.536 | UM | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | SAND | | 58.988 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002503 | SILT | | 40.318 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002504 | TOTAL ORGANIC CARBON | | 1.179 | PERCENT | | | SED-D | 49.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 3 | REG | 0.02 | 26002505 | ACID VOLATILE SULFIDE | | 88 | MG/KG | | J | SED-D | 49.2 | MENZELAVACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 3 | REG | 0.02 | 26002506 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.06 | MG/KG | | | SED-D | 49.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | | |
| 3 | REG | 0.02 | 26002506 | COPPER, EXTRACTABLE | 7440-50-8 | 110 | MG/KG | | | SED-D | 49.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 3 | REG | 0.02 | 26002506 | LEAD, EXTRACTABLE | 7439-92-1 | 47 | MG/KG | | | SED-D | 49.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 3 | REG | 0.02 | 26002506 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.699 | MG/KG | | | SED-D | 49.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 3 | REG | 0.02 | 26002506 | SULFIDE, TOTAL | | 31 | MG/KG | | | SED-D | 49.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 3 | REG | 0.02 | 26002506 | ZINC, EXTRACTABLE | 7440-66-6 | 150 | MG/KG | | | SED-D | 49.2 | EPA 9060 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 4 | REG | 0.02 | 26002401 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 50 | UG/KG | U | U | SED-D | 49.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 4 | REG | 0.02 | 26002401 | 1,2-DICHLOROBENZENE | 95-50-1 | 50 | UG/KG | U | U | SED-D | 44.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 4 | REG | 0.02 | 26002401 | 1,3-DICHLOROBENZENE | 541-73-1 | 50 | UG/KG | U | U | SED-D | 44.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 1,4-DICHLOROBENZENE | 106-46-7 | 50 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | | | | | | | | | | | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |

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Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | REG | 0.02 | 26002401 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2,4 DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2 METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 4,4'-DDD | 72-54-8 | 10 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 4,4'-DDE | 72-55-9 | 72 | UG/KG | J | J | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | J | J | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ALDRIN | 309-00-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BENZO(A)PYRENE | 50-32-8 | 270 | UG/KG | J | J | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BENZO(B)FLUORANTHENE | 205-99-2 | 390 | UG/KG | J | J | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BENZO(K)FLUORANTHENE | 207-08-9 | 260 | UG/KG | J | J | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 4 | REG | 0.02 | 26002401 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 4 | REG | 0.02 | 26002401 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



R0063075

C0909

NOV 18

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | REG | 0.02 | 26002401 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 4 | REG | 0.02 | 26002401 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 4 | REG | 0.02 | 26002401 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PENTACHLOROPHENOL | 87-86-5 | 100 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PHENANTHRENE | 85-01-8 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002401 | PYRENE | 129-00-0 | 40 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002401 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 4 | REG | 0.02 | 26002402 | ARSENIC, TOTAL | 7440-38-2 | 20 | UG/KG | U | U | SED-D | 44.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002402 | BERYLLIUM, TOTAL | 7440-41-7 | 1.8 | MG/KG | | | SED-D | 44.3 | EPA 7080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 4 | REG | 0.02 | 26002402 | CADMIUM, TOTAL | 7440-43-9 | 0.84 | MG/KG | | | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 4 | REG | 0.02 | 26002402 | CHROMIUM, TOTAL | 7440-47-3 | 0.41 | MG/KG | | | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 4 | REG | 0.02 | 26002402 | COPPER, TOTAL | 7440-50-8 | 39 | MG/KG | | | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 4 | REG | 0.02 | 26002402 | DIBUTYLTIN | 7440-58-6 | 180 | MG/KG | | | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 4 | REG | 0.02 | 26002402 | LEAD, TOTAL | | 2 | UG/KG | U | U | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 4 | REG | 0.02 | 26002402 | MERCURY, TOTAL | 7439-92-1 | 82 | MG/KG | | | SED-D | 44.3 | GC-PPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 4 | REG | 0.02 | 26002402 | MONOBUTYLTIN | 7439-97-6 | 0.72 | MG/KG | | | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 4 | REG | 0.02 | 26002402 | NICKEL, TOTAL | | 2 | UG/KG | U | U | SED-D | 44.3 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 4 | REG | 0.02 | 26002402 | SELENIUM, TOTAL | 7440-02-0 | 27 | MG/KG | | | SED-D | 44.3 | GC-PPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 4 | REG | 0.02 | 26002402 | SILVER, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 4 | REG | 0.02 | 26002402 | THALLIUM, TOTAL | 7440-22-4 | 0.7 | MG/KG | U | U | SED-D | 44.3 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 4 | REG | 0.02 | 26002402 | TRIBUTYLTIN | 7440-28-0 | 0.9 | MG/KG | U | U | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 4 | REG | 0.02 | 26002402 | ZINC, TOTAL | 688-73-3 | 10 | UG/KG | U | U | SED-D | 44.3 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 4 | REG | 0.02 | 26002403 | CLAY | 7440-09-7 | 170 | MG/KG | | | SED-D | 44.3 | GC-PPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 0.98 MICRONS | | 97.998 | PERCENT | | | SED-D | 44.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 100 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 1000 MICRONS | | 76.756 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 125 MICRONS | | 0.000 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 3.219 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 91.756 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.923 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 250 MICRONS | | 0.39 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 72.104 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 39.248 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.251 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 500 MICRONS | | 0.231 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 28.643 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 61.915 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.133 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | CUMULATIVE PERCENT > 88.39 MICRONS | | 16.1 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | GRAVEL | | 0 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | MEAN GRAIN SIZE | | 10.791 | UM | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | MEDIAN GRAIN SIZE | | 17.197 | UM | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | SAND | | 28.643 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002403 | SILT | | 43.462 | PERCENT | | | SED-D | 44.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 4 | REG | 0.02 | 26002404 | TOTAL ORGANIC CARBON | | 1.314 | PERCENT | | | SED-D | 44.3 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 4 | REG | 0.02 | 26002405 | ACID VOLATILE SULFIDE | | 4.3 | MG/KG | | J | SED-D | 44.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 4 | REG | 0.02 | 26002405 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | | SED-D | 44.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 4 | REG | 0.02 | 26002405 | COPPER, EXTRACTABLE | 7440-50-8 | 95 | MG/KG | | | SED-D | 44.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 4 | REG | 0.02 | 26002405 | LEAD, EXTRACTABLE | 7439-92-1 | 45 | MG/KG | | | SED-D | 44.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 4 | REG | 0.02 | 26002405 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.11 | MG/KG | | | SED-D | 44.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 4 | REG | 0.02 | 26002405 | SULFIDE, TOTAL | | 1.1 | MG/KG | | | SED-D | 44.3 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 4 | REG | 0.02 | 26002405 | ZINC, EXTRACTABLE | 7440-66-6 | 130 | MG/KG | | | SED-D | 44.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 5 | REG | 0.02 | 26003001 | 4,4'-DDD | 72-54-8 | 1.9 | UG/KG | | | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | 4,4'-DDE | 72-55-9 | 13 | UG/KG | | | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ANTHRACENE | 120-12-7 | 60 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | BENZO(A)ANTHRACENE | 56-55-3 | 80 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | BENZO(A)PYRENE | 50-32-8 | 100 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | BENZO(B)FLUORANTHENE | 205-99-2 | 150 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | BENZO(GHI)PERYLENE | 191-24-2 | 75 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | BENZO(K)FLUORANTHENE | 207-08-9 | 160 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | CHRYSENE | 218-01-9 | 100 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 5 | REG | 0.02 | 26003001 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | DI-N-OCTYLPHTHALATE | 117-84-0 | 45 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 75 | UG/KG | | J | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 5 | REG | 0.02 | 26003001 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | | | | | | | | | | | | | | | | | 0.7 | UG/KG |



R0063077

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Lifestage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | REG | 0.02 | 26003001 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 5 | REG | 0.02 | 26003001 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | PCB-1260 | 11096-82-5 | 87 | UG/KG | J | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | PHENANTHRENE | 85-01-8 | 45 | UG/KG | J | J | SED-D | 33.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003001 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 33.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003002 | ARSENIC, TOTAL | 7440-38-2 | 5.4 | MG/KG | | J | SED-D | 33.2 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | 0.02 | 26003002 | BERYLLIUM, TOTAL | 7440-41-7 | 0.3 | MG/KG | | | SED-D | 33.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 5 | REG | 0.02 | 26003002 | CADMIUM, TOTAL | 7440-43-9 | 0.15 | MG/KG | | | SED-D | 33.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 5 | REG | 0.02 | 26003002 | CHROMIUM, TOTAL | 7440-47-3 | 22 | MG/KG | | | SED-D | 33.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 5 | REG | 0.02 | 26003002 | COPPER, TOTAL | 7440-50-8 | 24 | MG/KG | | | SED-D | 33.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 5 | REG | 0.02 | 26003002 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 33.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 5 | REG | 0.02 | 26003002 | LEAD, TOTAL | 7439-92-1 | 21 | MG/KG | | | SED-D | 33.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 5 | REG | 0.02 | 26003002 | MERCURY, TOTAL | 7439-97-6 | 0.22 | MG/KG | | | SED-D | 33.2 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 5 | REG | 0.02 | 26003002 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 33.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 5 | REG | 0.02 | 26003002 | NICKEL, TOTAL | 7440-02-0 | 13 | MG/KG | | | SED-D | 33.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 5 | REG | 0.02 | 26003002 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 33.2 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 5 | REG | 0.02 | 26003002 | SILVER, TOTAL | 7440-22-4 | 1.5 | MG/KG | | | SED-D | 33.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 5 | REG | 0.02 | 26003002 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 33.2 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 5 | REG | 0.02 | 26003002 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | | UJ | SED-D | 33.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 5 | REG | 0.02 | 26003002 | ZINC, TOTAL | 7440-66-6 | 84 | MG/KG | | | SED-D | 33.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 5 | REG | 0.02 | 26003003 | CLAY | | 7.87 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 1.95 MICRONS | | 99.2 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.00 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 125 MICRONS | | 9.398 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.03 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 78.105 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.312 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 250 MICRONS | | 0.923 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 92.43 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 78.333 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.372 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 500 MICRONS | | 0.175 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 84.647 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 88.812 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.084 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 88.042 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | GRAVEL | | 0 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | MEAN GRAIN SIZE | | 34.901 | UM | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | MEDIAN GRAIN SIZE | | 88.842 | UM | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | SAND | | 84.647 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003003 | SILT | | 37.583 | PERCENT | | | SED-D | 33.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 5 | REG | 0.02 | 26003004 | TOTAL ORGANIC CARBON | | 0.418 | PERCENT | | | SED-D | 33.2 | MENZELAVACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 5 | REG | 0.02 | 26003005 | ACID VOLATILE SULFIDE | | 27 | MG/KG | | J | SED-D | 33.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 5 | REG | 0.02 | 26003005 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.4 | MG/KG | U | U | SED-D | 33.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.4 | MG/KG |

6/11/96



R0063078

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | REG | 0.02 | 26003005 | COPPER, EXTRACTABLE | 7440-50-8 | 43 | MG/KG | | | SED-D | 33.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 5 | REG | 0.02 | 26003005 | LEAD, EXTRACTABLE | 7439-92-1 | 18 | MG/KG | | | SED-D | 33.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 5 | REG | 0.02 | 26003005 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.03 | MG/KG | | | SED-D | 33.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 5 | REG | 0.02 | 26003005 | SULFIDE, TOTAL | | 14 | MG/KG | | | SED-D | 33.2 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 5 | REG | 0.02 | 26003005 | ZINC, EXTRACTABLE | 7440-66-6 | 88 | MG/KG | | | SED-D | 33.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 0.02 | 26005901 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 3- AND 4-METHYLPHENOL | 108-44-5 | 50 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 4,4'-DDE | 72-55-9 | 21 | UG/KG | | | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ACENAPHTHYLENE | 208-96-8 | 15 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ANTHRACENE | 120-12-7 | 46 | UG/KG | | | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BENZO(A)ANTHRACENE | 56-55-3 | 46 | UG/KG | | | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BENZO(A)PYRENE | 50-32-8 | 120 | UG/KG | | | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BENZO(B)FLUORANTHENE | 205-99-2 | 150 | UG/KG | | | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BENZO(GHI)PERYLENE | 191-24-2 | 46 | UG/KG | | | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BENZO(K)FLUORANTHENE | 207-08-9 | 180 | UG/KG | | | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 160 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 6 | REG | 0.02 | 26005901 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 0.02 | 26005901 | CHRYSENE | 218-01-9 | 91 | UG/KG | | | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 6 | REG | 0.02 | 26005901 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | | | | | | | | | | | | | | | | | 20 | UG/KG |



R0063079

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 0.02 | 26005901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | FLUORANTHENE | 206-44-0 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 40 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 34.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 0.02 | 26005901 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 6 | REG | 0.02 | 26005901 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PCB-1260 | 11096-82-5 | 110 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | PYRENE | 129-00-0 | 30 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005901 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 34.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005902 | ANTIMONY, TOTAL | 7440-36-0 | 0.6 | MG/KG | U | U | SED-D | 34.4 | EPA 6020 | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 0.02 | 26005902 | ARSENIC, TOTAL | 7440-38-2 | 4.6 | MG/KG | | | SED-D | 34.4 | EPA 7041 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 6 | REG | 0.02 | 26005902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.3 | MG/KG | | | SED-D | 34.4 | EPA 7090 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 6 | REG | 0.02 | 26005902 | CADMIUM, TOTAL | 7440-43-9 | 0.24 | MG/KG | | | SED-D | 34.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 6 | REG | 0.02 | 26005902 | CHROMIUM, TOTAL | 7440-47-3 | 27 | MG/KG | | | SED-D | 34.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 6 | REG | 0.02 | 26005902 | COPPER, TOTAL | 7440-50-8 | 67 | MG/KG | | | SED-D | 34.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 6 | REG | 0.02 | 26005902 | DIBUTYLTIN | | 8 | UG/KG | U | U | SED-D | 34.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 6 | REG | 0.02 | 26005902 | LEAD, TOTAL | 7439-92-1 | 80 | MG/KG | | | SED-D | 34.4 | GC-PFD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 6 | REG | 0.02 | 26005902 | MERCURY, TOTAL | 7439-97-6 | 0.69 | MG/KG | | | SED-D | 34.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 6 | REG | 0.02 | 26005902 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 34.4 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 6 | REG | 0.02 | 26005902 | NICKEL, TOTAL | 7440-02-0 | 18 | MG/KG | | | SED-D | 34.4 | GC-PFD | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 6 | REG | 0.02 | 26005902 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 34.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| | | | | | | | | | | | | EPA 7740 | | | | | 0.6 | MG/KG |

8/11/05



R0063080

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CT-CS7

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 0.02 | 26005902 | SILVER, TOTAL | 7440-22-4 | 1.5 | MG/KG | | | SED-D | 34.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | | |
| 6 | REG | 0.02 | 26005902 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 34.4 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 6 | REG | 0.02 | 26005902 | TRIBUTYLTIN | 688-73-3 | 2.9 | UG/KG | | UJ | SED-D | 34.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 6 | REG | 0.02 | 26005902 | ZINC, TOTAL | 7440-66-6 | 110 | MG/KG | | | SED-D | 34.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 6 | REG | 0.02 | 26005903 | CLAY | | 17.675 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 85.374 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.107 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 125 MICRONS | | 9.259 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.079 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 72.216 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.848 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.026 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 250 MICRONS | | 0.712 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 82.325 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 82.587 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 353.56 MICRONS | | 0.312 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 500 MICRONS | | 0.241 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 46.948 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 76.548 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.166 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 80.475 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | GRAVEL | | 0.026 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | MEAN GRAIN SIZE | | 17.189 | UM | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | MEDIAN GRAIN SIZE | | 89.946 | UM | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | SAND | | 46.92 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005903 | SILT | | 30.378 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005904 | TOTAL ORGANIC CARBON | | 0.61 | PERCENT | | | SED-D | 34.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 0.02 | 26005905 | ACID VOLATILE SULFIDE | | 180 | MG/KG | | | SED-D | 34.4 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 6 | REG | 0.02 | 26005905 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.61 | MG/KG | | J | SED-D | 34.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 6 | REG | 0.02 | 26005905 | COPPER, EXTRACTABLE | 7440-50-8 | 50 | MG/KG | | | SED-D | 34.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 6 | REG | 0.02 | 26005905 | LEAD, EXTRACTABLE | 7439-92-1 | 23 | MG/KG | | | SED-D | 34.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 6 | REG | 0.02 | 26005905 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.046 | MG/KG | | | SED-D | 34.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 6 | REG | 0.02 | 26005905 | SULFIDE, TOTAL | | 47 | MG/KG | | | SED-D | 34.4 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 6 | REG | 0.02 | 26005905 | ZINC, EXTRACTABLE | 7440-66-6 | 90 | MG/KG | | | SED-D | 34.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 6 | REG | 0.02 | 26005999 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 6 | REG | 0.02 | 26005999 | 4,4'-DDE | 72-55-9 | 35 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ARSENIC, TOTAL | 7440-38-2 | 3.2 | MG/KG | | J | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | UJ | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 6 | REG | 0.02 | 26005999 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | UJ | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| | | | | | | | | | | | | | | | | | 0.05 | MG/KG |



R0063081

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 0.02 | 26005999 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 6 | REG | 0.02 | 26005999 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 6 | REG | 0.02 | 26005999 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 6 | REG | 0.02 | 26005999 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | COPPER, TOTAL | 7440-50-8 | 1.5 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 6 | REG | 0.02 | 26005999 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 0.02 | 26005999 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | LEAD, TOTAL | 7439-92-1 | 0.8 | MG/KG | | | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 6 | REG | 0.02 | 26005999 | LIPIDS | | 1700 | MG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 6 | REG | 0.02 | 26005999 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | | | CLAM | | EPA 8071 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 6 | REG | 0.02 | 26005999 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 6 | REG | 0.02 | 26005999 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 6 | REG | 0.02 | 26005999 | MONOBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 0.02 | 26005999 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | | | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 0.02 | 26005999 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | CLAM | | EPA 8010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 0.02 | 26005999 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | | | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 6 | REG | 0.02 | 26005999 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | | | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 6 | REG | 0.02 | 26005999 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | | | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 6 | REG | 0.02 | 26005999 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 0.02 | 26005999 | TRIBUTYLTIN | 688-73-3 | 3.4 | UG/KG | | J | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 0.02 | 26005999 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 7 | REG | 0.02 | 26002201 | 4,4'-DDD | 72-54-8 | 9.2 | UG/KG | | J | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | 4,4'-DDE | 72-55-9 | 31 | UG/KG | | J | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | J | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ACENAPHTHYLENE | 208-96-8 | 32 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | J | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | J | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ANTHRACENE | 120-12-7 | 66 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | | | | | | | | | | | | | | | | | 20 | UG/KG |



R0063082

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | REG | 0.02 | 26002201 | BENZO(A)ANTHRACENE | 56-55-3 | 65 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | BENZO(A)PYRENE | 50-32-8 | 180 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | BENZO(B)FLUORANTHENE | 205-99-2 | 180 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | BENZO(GHI)PERYLENE | 191-24-2 | 130 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | BENZO(K)FLUORANTHENE | 207-08-9 | 260 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 7 | REG | 0.02 | 26002201 | CHRYSENE | 218-01-9 | 150 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | FLUORANTHENE | 206-44-0 | 81 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 130 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 7 | REG | 0.02 | 26002201 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PCB-1260 | 11096-82-5 | 180 | UG/KG | | J | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PHENANTHRENE | 85-01-8 | 32 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | PYRENE | 129-00-0 | 66 | UG/KG | | J | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002201 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 7 | REG | 0.02 | 26002202 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | | J | SED-D | 38.3 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 7 | REG | 0.02 | 26002202 | BERYLLIUM, TOTAL | 7440-41-7 | 0.49 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 7 | REG | 0.02 | 26002202 | CADMIUM, TOTAL | 7440-43-9 | 0.18 | MG/KG | | J | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 7 | REG | 0.02 | 26002202 | CHROMIUM, TOTAL | 7440-47-3 | 29 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 7 | REG | 0.02 | 26002202 | COPPER, TOTAL | 7440-50-8 | 73 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 7 | REG | 0.02 | 26002202 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 38.3 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 7 | REG | 0.02 | 26002202 | LEAD, TOTAL | 7439-92-1 | 37 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 7 | REG | 0.02 | 26002202 | MERCURY, TOTAL | 7439-97-6 | 0.41 | MG/KG | | | SED-D | 38.3 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 7 | REG | 0.02 | 26002202 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 38.3 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 7 | REG | 0.02 | 26002202 | NICKEL, TOTAL | 7440-02-0 | 16 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 7 | REG | 0.02 | 26002202 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | UJ | SED-D | 38.3 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 7 | REG | 0.02 | 26002202 | SILVER, TOTAL | 7440-22-4 | 2.3 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 7 | REG | 0.02 | 26002202 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | UJ | SED-D | 38.3 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 7 | REG | 0.02 | 26002202 | TRIBUTYLTIN | 688-73-3 | 15 | UG/KG | | J | SED-D | 38.3 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 7 | REG | 0.02 | 26002202 | ZINC, TOTAL | 7440-66-6 | 110 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 7 | REG | 0.02 | 26002203 | CLAY | | 17.083 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0.02 | 26002203 | CUMULATIVE PERCENT > 0.99 MICRONS | | 100 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0.02 | 26002203 | CUMULATIVE PERCENT > 1.99 MICRONS | | 99.632 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0.02 | 26002203 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.009 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0.02 | 26002203 | CUMULATIVE PERCENT > 125 MICRONS | | 12.753 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |

8/11/98

R0063083

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 73.596 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 3.087 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 250 MICRONS | | 0.773 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 92.907 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 85.682 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.157 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 500 MICRONS | | 0.046 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 57.923 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 77.168 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.015 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 39.1 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | GRAVEL | | 0 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | MEAN GRAIN SIZE | | 19 539 | UM | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | MEDIAN GRAIN SIZE | | 72.316 | UM | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | SAND | | 87.923 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002203 | SILT | | 24.964 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002204 | TOTAL ORGANIC CARBON | | 0.671 | PERCENT | | | SED-D | 38 3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 7 | REG | 0 02 | 26002205 | ACID VOLATILE SULFIDE | | 44 | MG/KG | | J | SED-D | 38 3 | MENZELBVACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 7 | REG | 0 02 | 26002205 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.6 | MG/KG | U | J | SED-D | 38 3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 7 | REG | 0 02 | 26002205 | COPPER, EXTRACTABLE | 7440-50-8 | 69 | MG/KG | | | SED-D | 38 3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 6 | MG/KG |
| 7 | REG | 0 02 | 26002205 | LEAD, EXTRACTABLE | 7439-92-1 | 37 | MG/KG | | | SED-D | 38 3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 7 | REG | 0 02 | 26002205 | MERCURY, EXTRACTABLE | 7439-97-6 | 0 666 | MG/KG | | | SED-D | 38 3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 7 | REG | 0 02 | 26002205 | SULFIDE, TOTAL | | 18 | MG/KG | | J | SED-D | 38 3 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 6 66 | MG/KG |
| 7 | REG | 0 02 | 26002205 | ZINC, EXTRACTABLE | 7440-66-6 | 160 | MG/KG | | | SED-D | 38 3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 6 | MG/KG |
| 8 | REG | 0 02 | 26005801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 8 | REG | 0 02 | 26005801 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 1,3 DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2,4-DINITROPHENOL | 51-28-5 | 80 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 80 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 2-NITROPHENOL | 88-75-5 | 80 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 80 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 4,4'-DDD | 72-54-8 | 4 1 | UG/KG | | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 4,4'-DDE | 72-55-9 | 28 | UG/KG | | J | SED-D | 38 9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 4,4'-DDT | 50-29-3 | 0 8 | UG/KG | U | J | SED-D | 38 9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0 02 | 26005801 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 0 02 | 26005801 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | J | SED-D | 38 9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |

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R0063084

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | REG | 0.02 | 26005801 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ANTHRACENE | 120-12-7 | 33 | UG/KG | | | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BENZO(A)PYRENE | 50-32-8 | 82 | UG/KG | | | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BENZO(B)FLUORANTHENE | 205-99-2 | 98 | UG/KG | | | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BENZO(GHI)PERYLENE | 191-24-2 | 49 | UG/KG | | | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BENZO(K)FLUORANTHENE | 207-08-9 | 130 | UG/KG | | | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 8 | REG | 0.02 | 26005801 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 0.02 | 26005801 | CHRYSENE | 218-01-9 | 49 | UG/KG | | | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 8 | REG | 0.02 | 26005801 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | DI-N-OCTYLPHTHALATE | 117-84-0 | 49 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 0.02 | 26005801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | FLUORANTHENE | 206-44-0 | 33 | UG/KG | | | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | FLUORENE | 86-73-7 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 49 | UG/KG | | | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005801 | METHYLNAPHTHALENES | | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 8 | REG | 0.02 | 26005801 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | REG | 0.02 | 26005801 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PCB-1260 | 11096-82-5 | 97 | UG/KG | | J | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PHENANTHRENE | 85-01-8 | 16 | UG/KG | | J | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PHENOL | 108-95-2 | 30 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 0.02 | 26005801 | PYRENE | 129-00-0 | 33 | UG/KG | | J | SED-D | 38.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005801 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 38.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005802 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | UJ | SED-D | 38.9 | EPA 7041 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005802 | ARSENIC, TOTAL | 7440-38-2 | 6.2 | MG/KG | | | SED-D | 38.9 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 8 | REG | 0.02 | 26005802 | BERYLLIUM, TOTAL | 7440-41-7 | 0.33 | MG/KG | | | SED-D | 38.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 8 | REG | 0.02 | 26005802 | CADMIUM, TOTAL | 7440-43-9 | 0.21 | MG/KG | | | SED-D | 38.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 8 | REG | 0.02 | 26005802 | CHROMIUM, TOTAL | 7440-47-3 | 28 | MG/KG | | | SED-D | 38.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005802 | COPPER, TOTAL | 7440-50-8 | 84 | MG/KG | | | SED-D | 38.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 8 | REG | 0.02 | 26005802 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 38.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 8 | REG | 0.02 | 26005802 | LEAD, TOTAL | 7439-92-1 | 43 | MG/KG | | | SED-D | 38.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 8 | REG | 0.02 | 26005802 | MERCURY, TOTAL | 7439-97-6 | 0.34 | MG/KG | | | SED-D | 38.9 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 8 | REG | 0.02 | 26005802 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 38.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 8 | REG | 0.02 | 26005802 | NICKEL, TOTAL | 7440-02-0 | 16 | MG/KG | | | SED-D | 38.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 8 | REG | 0.02 | 26005802 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | UJ | SED-D | 38.9 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005802 | SILVER, TOTAL | 7440-22-4 | 1.3 | MG/KG | | | SED-D | 38.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005802 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | UJ | SED-D | 38.9 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005802 | TRIBUTYLTIN | 688-73-3 | 3.3 | UG/KG | | UJ | SED-D | 38.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 8 | REG | 0.02 | 26005802 | ZINC, TOTAL | 7440-66-6 | 110 | MG/KG | | | SED-D | 38.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 8 | REG | 0.02 | 26005803 | CLAY | | 13.63 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 1.96 MICRONS | | 86.726 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 1000 MICRONS | | 0 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 125 MICRONS | | 0.907 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 15.63 MICRONS | | 77.195 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.926 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 250 MICRONS | | 0.437 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 86.47 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 69.394 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.221 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 500 MICRONS | | 0.058 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 86.716 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 82.89 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.02 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 39.203 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | GRAVEL | | 0 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | MEAN GRAIN SIZE | | 59.987 | UM | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | MEDIAN GRAIN SIZE | | 69.179 | UM | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | SAND | | 86.716 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005803 | SILT | | 59.756 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005804 | TOTAL ORGANIC CARBON | | 0.669 | PERCENT | | | SED-D | 38.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 0.02 | 26005806 | ACID VOLATILE SULFIDE | | 160 | MG/KG | | J | SED-D | 66.0 | MINGELEVAGGIANO | BOXCORE | SED | SEDIMENT | VV | | |
| 8 | REG | 0.02 | 26005806 | CADMIUM, EXTRACTABLE | 7440-54-9 | 0.49 | MG/KG | | | SED-D | 66.0 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| | | | | | | | | | | | 66.0 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |



R0063086

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | REG | 0.02 | 26005805 | COPPER, EXTRACTABLE | 7440-50-8 | 47 | MG/KG | | | SED-D | 38.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005805 | LEAD, EXTRACTABLE | 7439-92-1 | 69 | MG/KG | | | SED-D | 38.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 8 | REG | 0.02 | 26005805 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.085 | MG/KG | | | SED-D | 38.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 8 | REG | 0.02 | 26005805 | SULFIDE, TOTAL | | 98 | MG/KG | | | SED-D | 38.9 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005805 | ZINC, EXTRACTABLE | 7440-66-6 | 100 | MG/KG | | | SED-D | 38.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 8 | REG | 0.02 | 26005899 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | 4,4'-DDE | 72-55-9 | 17 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ARSENIC, TOTAL | 7440-38-2 | 2.8 | MG/KG | | | CLAM | | EPA 7041 | BOXCORE | FAU | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005899 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | E | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 8 | REG | 0.02 | 26005899 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | E | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 8 | REG | 0.02 | 26005899 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | E | CLAM | | EPA 8010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 8 | REG | 0.02 | 26005899 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 8 | REG | 0.02 | 26005899 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | E | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 8 | REG | 0.02 | 26005899 | COPPER, TOTAL | 7440-50-8 | 1.4 | MG/KG | | | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | E | CLAM | | EPA 8010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 8 | REG | 0.02 | 26005899 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | DIBUTYLTIN | | 1 | UG/KG | | | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | E | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | FLUORENE | 86-73-7 | 20 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | LEAD, TOTAL | 7439-92-1 | 5.8 | MG/KG | | | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | E | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 0.02 | 26005899 | LIPIDS | | 1000 | MG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 8 | REG | 0.02 | 26005899 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | | | CLAM | | EPA 7471 | BOXCORE | FAU | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 0.02 | 26005899 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | E | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 8 | REG | 0.02 | 26005899 | METHYLNAPHTHALENES | | 20 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.09 | MG/KG |
| 8 | REG | 0.02 | 26005899 | MONOBUTYLTIN | | 1 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 8 | REG | 0.02 | 26005899 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | E | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | | | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | E | CLAM | | EPA 8010 | BOXCORE | FAU | SEDIMENT | VV | 40 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 8 | REG | 0.02 | 26005899 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | E | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |

8/11/95

R0063087

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Image | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | REG | 0.02 | 26005899 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 8 | REG | 0.02 | 26005899 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 8 | REG | 0.02 | 26005899 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | U | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 8 | REG | 0.02 | 26005899 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 8 | REG | 0.02 | 26005899 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 0.02 | 26005899 | TRIBUTYLTIN | 688-73-3 | 2.8 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 8 | REG | 0.02 | 26005899 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 9 | REG | 0.02 | 26002301 | 4,4'-DDD | 72-54-8 | 8.4 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | 4,4'-DDE | 72-55-9 | 46 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | 4,4'-DDT | 50-29-3 | 8.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | ANTHRACENE | 120-12-7 | 18 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | BENZO(A)ANTHRACENE | 56-55-3 | 18 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | BENZO(A)PYRENE | 50-32-8 | 53 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | BENZO(B)FLUORANTHENE | 205-99-2 | 53 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | BENZO(GHI)PERYLENE | 191-24-2 | 38 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | BENZO(K)FLUORANTHENE | 207-08-9 | 71 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 9 | REG | 0.02 | 26002301 | CHRYSENE | 218-01-9 | 53 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 38 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 9 | REG | 0.02 | 26002301 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | FLUORANTHENE | 206-44-0 | 18 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 38 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 9 | REG | 0.02 | 26002301 | PCB-1016 | 12674-11-2 | 80 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 9 | REG | 0.02 | 26002301 | PCB-1221 | 11104-28-2 | 80 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 9 | REG | 0.02 | 26002301 | PCB-1232 | 11141-16-5 | 80 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | PCB-1242 | 53469-21-9 | 80 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | PCB-1248 | 12672-29-6 | 80 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | PCB-1254 | 11097-69-1 | 80 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | PCB-1260 | 11096-82-5 | 160 | UG/KG | U | U | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | PYRENE | 129-00-0 | 18 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 9 | REG | 0.02 | 26002301 | TOXAPHENE | 8001-35-2 | 80 | UG/KG | U | U | SED-D | 43.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |

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Surface Sediment and Clam Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Solitons | Method | Collection | Matrix | Station Type | Assign | Detection Limit | Detection Limit Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | REG | 0.02 | 26002302 | ARSENIC, TOTAL | 7440-38-2 | 9.4 | MG/KG | | | SED-D | 43.9 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 9 | REG | 0.02 | 26002302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.53 | MG/KG | | J | SED-D | 43.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 9 | REG | 0.02 | 26002302 | CADMIUM, TOTAL | 7440-43-9 | 0.36 | MG/KG | | J | SED-D | 43.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 9 | REG | 0.02 | 26002302 | CHROMIUM, TOTAL | 7440-47-3 | 38 | MG/KG | | | SED-D | 43.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 9 | REG | 0.02 | 26002302 | COPPER, TOTAL | 7440-50-8 | 56 | MG/KG | | | SED-D | 43.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 9 | REG | 0.02 | 26002302 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 43.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 9 | REG | 0.02 | 26002302 | LEAD, TOTAL | 7439-92-1 | 48 | MG/KG | | | SED-D | 43.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 9 | REG | 0.02 | 26002302 | MERCURY, TOTAL | 7439-97-6 | 0.99 | MG/KG | | | SED-D | 43.9 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 9 | REG | 0.02 | 26002302 | MONOBUTYLTIN | | 5 | UG/KG | U | U | SED-D | 43.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 9 | REG | 0.02 | 26002302 | NICKEL, TOTAL | 7440-02-0 | 25 | MG/KG | | | SED-D | 43.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 9 | REG | 0.02 | 26002302 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | SED-D | 43.9 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 9 | REG | 0.02 | 26002302 | SILVER, TOTAL | 7440-22-4 | 2.3 | MG/KG | | | SED-D | 43.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 9 | REG | 0.02 | 26002302 | TRIBUTYLTIN | 688-73-3 | 6.9 | NG/KG | U | J | SED-D | 43.9 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.5 | NG/KG |
| 9 | REG | 0.02 | 26002302 | ZINC, TOTAL | 7440-66-6 | 150 | MG/KG | | | SED-D | 43.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 9 | REG | 0.02 | 26002303 | CLAY | | 27.847 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 0.06 MICRONS | | 100 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 1.00 MICRONS | | 72.009 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.994 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 125 MICRONS | | 1.718 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 15.369 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 4.254 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 250 MICRONS | | 6.696 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 78.948 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 44.13 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 9.087 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 500 MICRONS | | 6.868 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 84.879 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 82.751 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 16.979 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 0 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | GRAVEL | | 11.365 | UM | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | MEAN GRAIN SIZE | | 62.851 | UM | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | MEDIAN GRAIN SIZE | | 84.879 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | SAND | | 88.979 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002303 | SILT | | 0.016 | PERCENT | | | SED-D | 43.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002304 | TOTAL ORGANIC CARBON | | 67 | MG/KG | | J | SED-D | 43.9 | WENDELAAR/GAMO | BOXCORE | SED | SEDIMENT | VV | | |
| 9 | REG | 0.02 | 26002305 | ACID VOLATILE SULFIDE | | 0.71 | MG/KG | | | SED-D | 43.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 9 | REG | 0.02 | 26002305 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.71 | MG/KG | | | SED-D | 43.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 9 | REG | 0.02 | 26002305 | COPPER, EXTRACTABLE | 7440-50-8 | 23 | MG/KG | | | SED-D | 43.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 9 | REG | 0.02 | 26002305 | LEAD, EXTRACTABLE | 7439-92-1 | 48 | MG/KG | | | SED-D | 43.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 9 | REG | 0.02 | 26002305 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.971 | MG/KG | | | SED-D | 43.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 9 | REG | 0.02 | 26002305 | SULFIDE, TOTAL | | 83 | MG/KG | | J | SED-D | 43.9 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 9 | REG | 0.02 | 26002305 | ZINC, EXTRACTABLE | 7440-66-6 | 140 | MG/KG | | | SED-D | 43.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 9 | REG | 0.02 | 26002101 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | | J | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 9 | REG | 0.02 | 26002101 | 4,4'-DDE | 72-55-9 | 0.5 | UG/KG | | J | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 9 | REG | 0.02 | 26002101 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | | J | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 9 | REG | 0.02 | 26002101 | AGN/HYHYLBHC | 58-89-9 | 0.5 | UG/KG | | J | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 9 | REG | 0.02 | 26002101 | ALDRIN | 309-00-2 | 0.5 | UG/KG | | J | SED-D | 43.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | REG | 0.02 | 26002101 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | ANTHRACENE | 120-12-7 | 160 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | BENZO(A)ANTHRACENE | 56-55-3 | 200 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | BENZO(A)PYRENE | 50-32-8 | 540 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | BENZO(B)FLUORANTHENE | 205-99-2 | 500 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | BENZO(GHI)PERYLENE | 191-24-2 | 340 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | BENZO(K)FLUORANTHENE | 207-08-9 | 660 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | CHRYSENE | 218-01-9 | 360 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 10 | REG | 0.02 | 26002101 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | DI-N-OCTYLPHTHALATE | 117-84-0 | 91 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 10 | REG | 0.02 | 26002101 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | ENDRIN | 72-20-8 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 25002101 | FLUORANTHENE | 206-44-0 | 160 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 360 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PCB-1260 | 11096-82-5 | 540 | UG/KG | | | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PHENANTHRENE | 85-01-8 | 110 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | PYRENE | 129-00-0 | 340 | UG/KG | | | SED-D | 55.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002101 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 55.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002102 | ARSENIC, TOTAL | 7440-38-2 | 12 | MG/KG | | | SED-D | 55.9 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 10 | REG | 0.02 | 26002102 | BERYLLIUM, TOTAL | 7440-41-7 | 0.68 | MG/KG | | | SED-D | 55.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 10 | REG | 0.02 | 26002102 | CADMIUM, TOTAL | 7440-43-9 | 0.32 | MG/KG | | J | SED-D | 55.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 10 | REG | 0.02 | 26002102 | CHROMIUM, TOTAL | 7440-47-3 | 54 | MG/KG | | | SED-D | 55.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 10 | REG | 0.02 | 26002102 | COPPER, TOTAL | 7440-50-8 | 210 | MG/KG | | | SED-D | 55.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 10 | REG | 0.02 | 26002102 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 55.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 10 | REG | 0.02 | 26002102 | LEAD, TOTAL | 7439-92-1 | 77 | MG/KG | | | SED-D | 55.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 10 | REG | 0.02 | 26002102 | MERCURY, TOTAL | 7439-97-6 | 0.57 | MG/KG | | | SED-D | 55.9 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 10 | REG | 0.02 | 26002102 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 55.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 10 | REG | 0.02 | 26002102 | NICKEL, TOTAL | 7440-02-0 | 32 | MG/KG | | | SED-D | 55.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 10 | REG | 0.02 | 26002102 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | UJ | SED-D | 55.9 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 10 | REG | 0.02 | 26002102 | SILVER, TOTAL | 7440-22-4 | 3.4 | MG/KG | | | SED-D | 55.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 10 | REG | 0.02 | 26002102 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 55.9 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 10 | REG | 0.02 | 26002102 | TRIBUTYLTIN | 688-73-3 | 19 | UG/KG | | UJ | SED-D | 55.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 10 | REG | 0.02 | 26002102 | ZINC, TOTAL | 7440-66-6 | 280 | MG/KG | | | SED-D | 55.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 10 | REG | 0.02 | 26002103 | CLAY | | 48.076 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT < 0.04 MICRONS | | 100 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |



R0063090

C9-Y-C3

VOA 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 66.034 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.037 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 125 MICRONS | | 3.972 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 32.313 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.931 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 250 MICRONS | | 0.374 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 57.924 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 23.349 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.121 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 500 MICRONS | | 0.11 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 17.586 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 42.344 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.088 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 10.2 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | GRAVEL | | 0 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | MEAN GRAIN SIZE | | 6.383 | UM | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | MEDIAN GRAIN SIZE | | 5.557 | UM | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | SAND | | 17.586 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002103 | SILT | | 40.330 | PERCENT | | | SED-D | 55.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 10 | REG | 0.02 | 26002104 | TOTAL ORGANIC CARBON | | 1.756 | PERCENT | | | SED-D | 65.9 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 10 | REG | 0.02 | 26002105 | ACID VOLATILE SULFIDE | | 590 | MG/KG | | J | SED-D | 55.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 10 | REG | 0.02 | 26002105 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.7 | MG/KG | U | | SED-D | 55.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 10 | REG | 0.02 | 26002105 | COPPER, EXTRACTABLE | 7440-50-8 | 140 | MG/KG | | | SED-D | 55.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 10 | REG | 0.02 | 26002105 | LEAD, EXTRACTABLE | 7439-92-1 | 70 | MG/KG | | | SED-D | 55.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 10 | REG | 0.02 | 26002105 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.045 | MG/KG | | | SED-D | 55.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 10 | REG | 0.02 | 26002105 | SULFIDE, TOTAL | | 270 | MG/KG | | J | SED-D | 55.9 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 10 | REG | 0.02 | 26002105 | ZINC, EXTRACTABLE | 7440-66-6 | 200 | MG/KG | | | SED-D | 55.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 11 | REG | 0.02 | 26002001 | 4,4'-DDD | 72-54-8 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | 4,4'-DDE | 72-55-9 | 57 | UG/KG | | | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | ACENAPHTHYLENE | 208-96-8 | 37 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | ANTHRACENE | 120-12-7 | 73 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | BENZO(A)ANTHRACENE | 56-55-3 | 98 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | BENZO(A)PYRENE | 50-32-8 | 310 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | BENZO(B)FLUORANTHENE | 205-99-2 | 370 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | BENZO(GHI)PERYLENE | 191-24-2 | 200 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | BENZO(K)FLUORANTHENE | 207-08-9 | 370 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 11 | REG | 0.02 | 26002001 | CHRYSENE | 218-01-9 | 180 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | DI-N-OCTYLPHTHALATE | 117-84-0 | 73 | UG/KG | | J | SED-D | 49.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 11 | REG | 0.02 | 26002001 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | J | SED-D | 49.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | REG | 0.02 | 26002001 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | FLUORANTHENE | 206-44-0 | 92 | UG/KG | | J | SED-D | 45.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 200 | UG/KG | | J | SED-D | 45.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 11 | REG | 0.02 | 26002001 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PCB-1260 | 11096-82-5 | 310 | UG/KG | | J | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PHENANTHRENE | 85-01-8 | 73 | UG/KG | | J | SED-D | 45.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | PYRENE | 129-00-0 | 110 | UG/KG | | J | SED-D | 45.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002001 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 45.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 11 | REG | 0.02 | 26002002 | ARSENIC, TOTAL | 7440-38-2 | 12 | MG/KG | | | SED-D | 45.4 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 11 | REG | 0.02 | 26002002 | BERYLLIUM, TOTAL | 7440-41-7 | 0.55 | MG/KG | | | SED-D | 45.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 11 | REG | 0.02 | 26002002 | CADMIUM, TOTAL | 7440-43-9 | 0.35 | MG/KG | | J | SED-D | 45.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 11 | REG | 0.02 | 26002002 | CHROMIUM, TOTAL | 7440-47-3 | 42 | MG/KG | | | SED-D | 45.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 11 | REG | 0.02 | 26002002 | COPPER, TOTAL | 7440-50-8 | 120 | MG/KG | | | SED-D | 45.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 11 | REG | 0.02 | 26002002 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 45.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 11 | REG | 0.02 | 26002002 | LEAD, TOTAL | 7439-92-1 | 68 | MG/KG | | | SED-D | 45.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 11 | REG | 0.02 | 26002002 | MERCURY, TOTAL | 7439-97-6 | 0.7 | MG/KG | | | SED-D | 45.4 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 11 | REG | 0.02 | 26002002 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 45.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 11 | REG | 0.02 | 26002002 | NICKEL, TOTAL | 7440-02-0 | 22 | MG/KG | | | SED-D | 45.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 11 | REG | 0.02 | 26002002 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | UJ | SED-D | 45.4 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 11 | REG | 0.02 | 26002002 | SILVER, TOTAL | 7440-22-4 | 2.2 | MG/KG | | | SED-D | 45.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 11 | REG | 0.02 | 26002002 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | UJ | SED-D | 45.4 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 11 | REG | 0.02 | 26002002 | TRIBUTYLTIN | 688-73-3 | 9.2 | UG/KG | | UJ | SED-D | 45.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 11 | REG | 0.02 | 26002002 | ZINC, TOTAL | 7440-66-6 | 200 | MG/KG | | | SED-D | 45.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 11 | REG | 0.02 | 26002003 | CLAY | | 28.383 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 1.95 MICRONS | | 76.161 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 1000 MICRONS | | 0 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 125 MICRONS | | 6.376 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 50.713 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.908 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 250 MICRONS | | 0.486 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 71.617 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 41.625 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.22 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 500 MICRONS | | 0.049 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 30.356 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 60.347 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.019 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 50.109 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | GRAVEL | | 0 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | REG | 0.02 | 26002003 | MEAN GRAIN SIZE | | 10.052 | UM | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | MEDIAN GRAIN SIZE | | 18.499 | UM | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | SAND | | 30.355 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002003 | SILT | | 41.282 | PERCENT | | | SED-D | 45.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 11 | REG | 0.02 | 26002004 | TOTAL ORGANIC CARBON | | 1.309 | PERCENT | | | SED-D | 45.4 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 11 | REG | 0.02 | 26002005 | ACID VOLATILE SULFIDE | | 81 | MG/KG | | J | SED-D | 45.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 9 | MG/KG |
| 11 | REG | 0.02 | 26002005 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | U | SED-D | 45.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 11 | REG | 0.02 | 26002005 | COPPER, EXTRACTABLE | 7440-50-8 | 99 | MG/KG | | | SED-D | 45.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 11 | REG | 0.02 | 26002005 | LEAD, EXTRACTABLE | 7439-92-1 | 53 | MG/KG | | | SED-D | 45.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 11 | REG | 0.02 | 26002005 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.073 | MG/KG | | | SED-D | 45.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 11 | REG | 0.02 | 26002005 | SULFIDE, TOTAL | | 35 | MG/KG | | J | SED-D | 45.4 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 11 | REG | 0.02 | 26002005 | ZINC, EXTRACTABLE | 7440-66-6 | 140 | MG/KG | | | SED-D | 45.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 12 | REG | 0.02 | 26001901 | 4,4'-DDD | 72-54-8 | 7.1 | UG/KG | | J | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | 4,4'-DDE | 72-55-9 | 38 | UG/KG | | J | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ACENAPHTHYLENE | 208-96-8 | 18 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ANTHRACENE | 120-12-7 | 38 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | BENZO(A)ANTHRACENE | 56-55-3 | 38 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | BENZO(A)PYRENE | 50-32-8 | 110 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | BENZO(B)FLUORANTHENE | 205-99-2 | 150 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | BENZO(GHI)PERYLENE | 191-24-2 | 91 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | BENZO(K)FLUORANTHENE | 207-08-9 | 160 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 12 | REG | 0.02 | 26001901 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 73 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 12 | REG | 0.02 | 26001901 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | FLUORANTHENE | 206-44-0 | 55 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 91 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 12 | REG | 0.02 | 26001901 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PCB-1260 | 11096-82-5 | 110 | UG/KG | | J | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PHENANTHRENE | 85-01-8 | 38 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | PYRENE | 129-00-0 | 85 | UG/KG | | J | SED-D | 45 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001901 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 45 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 12 | REG | 0.02 | 26001902 | ARSENIC, TOTAL | 7440-38-2 | 9 | MG/KG | | | SED-D | 45 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | REG | 0.02 | 26001902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.55 | MG/KG | | | SED-D | 45 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 12 | REG | 0.02 | 26001902 | CADMIUM, TOTAL | 7440-43-9 | 0.27 | MG/KG | | J | SED-D | 45 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 12 | REG | 0.02 | 26001902 | CHROMIUM, TOTAL | 7440-47-3 | 33 | MG/KG | | | SED-D | 45 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 12 | REG | 0.02 | 26001902 | COPPER, TOTAL | 7440-50-8 | 69 | MG/KG | | | SED-D | 45 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 12 | REG | 0.02 | 26001902 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 45 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 12 | REG | 0.02 | 26001902 | LEAD, TOTAL | 7439-92-1 | 39 | MG/KG | | | SED-D | 45 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 12 | REG | 0.02 | 26001902 | MERCURY, TOTAL | 7439-97-6 | 0.39 | MG/KG | | | SED-D | 45 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 12 | REG | 0.02 | 26001902 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 45 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 12 | REG | 0.02 | 26001902 | NICKEL, TOTAL | 7440-02-0 | 22 | MG/KG | | | SED-D | 45 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 12 | REG | 0.02 | 26001902 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | SED-D | 45 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 12 | REG | 0.02 | 26001902 | SILVER, TOTAL | 7440-22-4 | 2 | MG/KG | U | U | SED-D | 45 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 12 | REG | 0.02 | 26001902 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | U | SED-D | 45 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 12 | REG | 0.02 | 26001902 | TRIBUTYLTIN | 688-73-3 | 9.8 | UG/KG | | UJ | SED-D | 45 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 12 | REG | 0.02 | 26001902 | ZINC, TOTAL | 7440-66-6 | 130 | MG/KG | | | SED-D | 45 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 12 | REG | 0.02 | 26001903 | CLAY | | 23.214 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 81.28 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.004 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 125 MICRONS | | 4.098 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 62.945 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.018 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 250 MICRONS | | 0.266 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 76.786 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 51.8 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.126 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 500 MICRONS | | 0.031 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 38.139 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 70.315 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.013 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 21.081 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | GRAVEL | | 0 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | MEAN GRAIN SIZE | | 12.218 | UM | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | MEDIAN GRAIN SIZE | | 34.239 | UM | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | SAND | | 38.139 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001903 | SILT | | 38.647 | PERCENT | | | SED-D | 45 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 12 | REG | 0.02 | 26001904 | TOTAL ORGANIC CARBON | | 0.631 | PERCENT | | | SED-D | 45 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 12 | REG | 0.02 | 26001905 | ACID VOLATILE SULFIDE | | 380 | MG/KG | | J | SED-D | 45 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 9 | MG/KG |
| 12 | REG | 0.02 | 26001905 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | UJ | SED-D | 45 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 12 | REG | 0.02 | 26001905 | COPPER, EXTRACTABLE | 7440-50-8 | 67 | MG/KG | | | SED-D | 45 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 12 | REG | 0.02 | 26001905 | LEAD, EXTRACTABLE | 7439-92-1 | 35 | MG/KG | | | SED-D | 45 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 12 | REG | 0.02 | 26001905 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.036 | MG/KG | | | SED-D | 45 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 12 | REG | 0.02 | 26001905 | SULFIDE, TOTAL | | 400 | MG/KG | | J | SED-D | 45 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 12 | REG | 0.02 | 26001905 | ZINC, EXTRACTABLE | 7440-66-6 | 110 | MG/KG | | | SED-D | 45 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 13 | REG | 0.02 | 26001801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 36.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001801 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 36.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001801 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 36.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001801 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 36.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 36.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001801 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 36.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |



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Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | REG | 0.02 | 26001601 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 3- AND 4-METHYLPHENOL | 108-44-5 | 50 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 4,4'-DDD | 72-54-8 | 18 | UG/KG |  | J | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 4,4'-DDE | 72-55-9 | 50 | UG/KG |  | J | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BENZO(A)PYRENE | 50-32-8 | 160 | UG/KG |  | J | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BENZO(B)FLUORANTHENE | 205-99-2 | 200 | UG/KG |  | J | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BENZO(GHI)PERYLENE | 191-24-2 | 93 | UG/KG |  | J | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BENZO(K)FLUORANTHENE | 207-08-9 | 160 | UG/KG |  | J | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 13 | REG | 0.02 | 26001601 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 13 | REG | 0.02 | 26001601 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | REG | 0.02 | 26001601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 13 | REG | 0.02 | 26001601 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 13 | REG | 0.02 | 26001601 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PCB-1260 | 11096-82-5 | 370 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001601 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001601 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 35.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 13 | REG | 0.02 | 26001602 | ARSENIC, TOTAL | 7440-38-2 | 7.8 | MG/KG | | | SED-D | 35.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001602 | BERYLLIUM, TOTAL | 7440-41-7 | 0.47 | MG/KG | | | SED-D | 35.7 | EPA 7080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 13 | REG | 0.02 | 26001602 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | | | SED-D | 35.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 13 | REG | 0.02 | 26001602 | CHROMIUM, TOTAL | 7440-47-3 | 39 | MG/KG | | | SED-D | 35.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 13 | REG | 0.02 | 26001602 | COPPER, TOTAL | 7440-50-8 | 150 | MG/KG | | | SED-D | 35.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 13 | REG | 0.02 | 26001602 | DIBUTYLTIN | | 2 | UG/KG | J | J | SED-D | 35.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 13 | REG | 0.02 | 26001602 | LEAD, TOTAL | 7439-92-1 | 58 | MG/KG | | | SED-D | 35.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 13 | REG | 0.02 | 26001602 | MERCURY, TOTAL | 7439-97-6 | 0.68 | MG/KG | | | SED-D | 35.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 13 | REG | 0.02 | 26001602 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 35.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 13 | REG | 0.02 | 26001602 | NICKEL, TOTAL | 7440-02-0 | 22 | MG/KG | | | SED-D | 35.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 13 | REG | 0.02 | 26001602 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | U | SED-D | 35.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 13 | REG | 0.02 | 26001602 | SILVER, TOTAL | 7440-22-4 | 2.3 | MG/KG | | | SED-D | 35.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 13 | REG | 0.02 | 26001602 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 35.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 13 | REG | 0.02 | 26001602 | TRIBUTYLTIN | 688-73-3 | 1.9 | UG/KG | U | U | SED-D | 35.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 13 | REG | 0.02 | 26001602 | ZINC, TOTAL | 7440-66-6 | 160 | MG/KG | | | SED-D | 35.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 13 | REG | 0.02 | 26001603 | CLAY | | 12.449 | PERCENT | | | SED-D | 35.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 1.95 MICRONS | | 80.167 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.032 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 125 MICRONS | | 9.675 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.029 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 77.098 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 3.425 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.024 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 250 MICRONS | | 1.277 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 87.551 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 62.864 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.685 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 500 MICRONS | | 0.234 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 44.227 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 84.118 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.121 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 25.958 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | GRAVEL | | 0.024 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | MEAN GRAIN SIZE | | 29.366 | UM | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | MEDIAN GRAIN SIZE | | 50.423 | UM | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | SAND | | 44.203 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001603 | SILT | | 43.324 | PERCENT | | | SED-D | 35.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 13 | REG | 0.02 | 26001604 | TOTAL ORGANIC CARBON | | 0.598 | PERCENT | | | SED-D | 35.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 13 | REG | 0.02 | 26001605 | ACID VOLATILE SULFIDE | | 19 | MG/KG | | J | SED-D | 35.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 13 | REG | 0.02 | 26001605 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | U | SED-D | 35.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 13 | REG | 0.02 | 26001605 | COPPER, EXTRACTABLE | 7440-50-8 | 120 | MG/KG | | | SED-D | 35.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 13 | REG | 0.02 | 26001605 | LEAD, EXTRACTABLE | 7439-92-1 | 44 | MG/KG | | | SED-D | 35.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 13 | REG | 0.02 | 26001605 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.078 | MG/KG | | | SED-D | 35.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 13 | REG | 0.02 | 26001605 | SULFIDE, TOTAL | | 5.8 | MG/KG | | J | SED-D | 35.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 13 | REG | 0.02 | 26001605 | ZINC, EXTRACTABLE | 7440-66-6 | 120 | MG/KG | | | SED-D | 35.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 14 | REG | 0.02 | 26006201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 3- AND 4-METHYLPHENOL | 106-44-5 | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | U | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 4,4'-DDE | 72-55-9 | 17 | UG/KG | | | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0.02 | 26006201 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0.02 | 26006201 | ANTHRACENE | 120-12-7 | 20 | UG/KG | | | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 0 02 | 26006201 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BENZO(A)ANTHRACENE | 56-55-3 | 32 | UG/KG | | | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BENZO(A)PYRENE | 50-32-8 | 95 | UG/KG | | | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BENZO(B)FLUORANTHENE | 205-99-2 | 130 | UG/KG | | | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BENZO(GHI)PERYLENE | 191-24-2 | 63 | UG/KG | | | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BENZO(K)FLUORANTHENE | 207-08-9 | 140 | UG/KG | | | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 14 | REG | 0 02 | 26006201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0 02 | 26006201 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 14 | REG | 0 02 | 26006201 | CHRYSENE | 218-01-9 | 63 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0 02 | 26006201 | DI-N-OCTYLPHTHALATE | 117-84-0 | 32 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0 02 | 26006201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 16 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | FLUORENE | 86-73-7 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 63 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 14 | REG | 0 02 | 26006201 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 14 | REG | 0 02 | 26006201 | METHYLNAPHTHALENES | | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0 02 | 26006201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0 02 | 26006201 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0 02 | 26006201 | PCB-1260 | 11096-82-5 | 63 | UG/KG | U | UJ | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 0.02 | 26006201 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | PHENANTHRENE | 85-01-8 | 32 | UG/KG | | | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 0.02 | 26006201 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006201 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 38.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 14 | REG | 0.02 | 26006202 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | U | SED-D | 38.7 | EPA 7041 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 14 | REG | 0.02 | 26006202 | ARSENIC, TOTAL | 7440-38-2 | 8 | MG/KG | | J | SED-D | 38.7 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 14 | REG | 0.02 | 26006202 | BERYLLIUM, TOTAL | 7440-41-7 | 0.32 | MG/KG | | | SED-D | 38.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 14 | REG | 0.02 | 26006202 | CADMIUM, TOTAL | 7440-43-9 | 0.14 | MG/KG | | | SED-D | 38.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 14 | REG | 0.02 | 26006202 | CHROMIUM, TOTAL | 7440-47-3 | 25 | MG/KG | | | SED-D | 38.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 14 | REG | 0.02 | 26006202 | COPPER, TOTAL | 7440-50-8 | 47 | MG/KG | | | SED-D | 38.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 14 | REG | 0.02 | 26006202 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 38.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 14 | REG | 0.02 | 26006202 | LEAD, TOTAL | 7439-92-1 | 21 | MG/KG | | | SED-D | 38.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 14 | REG | 0.02 | 26006202 | MERCURY, TOTAL | 7439-97-6 | 0.21 | MG/KG | | | SED-D | 38.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 14 | REG | 0.02 | 26006202 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 38.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 14 | REG | 0.02 | 26006202 | NICKEL, TOTAL | 7440-02-0 | 17 | MG/KG | | | SED-D | 38.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 14 | REG | 0.02 | 26006202 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | UJ | SED-D | 38.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 14 | REG | 0.02 | 26006202 | SILVER, TOTAL | 7440-22-4 | 1.6 | MG/KG | | | SED-D | 38.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 14 | REG | 0.02 | 26006202 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 38.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 14 | REG | 0.02 | 26006202 | TRIBUTYLTIN | 688-73-3 | 9 | UG/KG | | UJ | SED-D | 38.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 14 | REG | 0.02 | 26006202 | ZINC, TOTAL | 7440-66-6 | 65 | MG/KG | | | SED-D | 38.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 14 | REG | 0.02 | 26006203 | CLAY | | 10.738 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 91.317 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.036 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 125 MICRONS | | 5.471 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.004 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 81.041 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.263 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 250 MICRONS | | 0.232 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 89.262 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 75.022 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.166 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 500 MICRONS | | 0.08 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 58.433 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 86.032 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.054 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 34.293 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | GRAVEL | | 0 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | MEAN GRAIN SIZE | | 33.778 | UM | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | MEDIAN GRAIN SIZE | | 70.544 | UM | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | SAND | | 58.433 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006203 | SILT | | 30.829 | PERCENT | | | SED-D | 38.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 0.02 | 26006204 | TOTAL ORGANIC CARBON | | 0.456 | PERCENT | | | SED-D | 38.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 14 | REG | 0.02 | 26006205 | ACID VOLATILE SULFIDE | | 33 | MG/KG | | J | SED-D | 38.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 14 | REG | 0.02 | 26006205 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | U | SED-D | 38.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 14 | REG | 0.02 | 26006205 | COPPER, EXTRACTABLE | 7440-50-8 | 41 | MG/KG | | | SED-D | 38.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 14 | REG | 0.02 | 26006205 | LEAD, EXTRACTABLE | 7439-92-1 | 21 | MG/KG | | | SED-D | 38.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 14 | REG | 0.02 | 26006205 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.083 | MG/KG | | | SED-D | 38.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 14 | REG | 0.02 | 26006205 | SULFIDE, TOTAL | | 24 | MG/KG | | | SED-D | 38.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |



R0063099

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 0 02 | 26006205 | ZINC, EXTRACTABLE | 7440-66-6 | 65 | MG/KG | | | SED-D | 38.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 14 | REG | 0 02 | 26006299 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | 4,4'-DDE | 72-55-9 | 23 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ACENAPHTHENE | 83-32-9 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ACENAPHTHYLENE | 208-96-8 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ANTHRACENE | 120-12-7 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | J | CLAM | | EPA 7041 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 14 | REG | 0 02 | 26006299 | ARSENIC, TOTAL | 7440-38-2 | 2.8 | MG/KG | | J | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 14 | REG | 0 02 | 26006299 | BENZO(A)ANTHRACENE | 56-55-3 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | BENZO(A)PYRENE | 50-32-8 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | BENZO(B)FLUORANTHENE | 205-99-2 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | BENZO(GHI)PERYLENE | 191-24-2 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | BENZO(K)FLUORANTHENE | 207-08-9 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | W | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 14 | REG | 0 02 | 26006299 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | W | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 14 | REG | 0 02 | 26006299 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 14 | REG | 0 02 | 26006299 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 14 | REG | 0 02 | 26006299 | CHRYSENE | 218-01-9 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | COPPER, TOTAL | 7440-50-8 | 1.7 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 14 | REG | 0 02 | 26006299 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | DIBUTYLTIN | | 1 | UG/KG | U | W | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 0 02 | 26006299 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | FLUORANTHENE | 206-44-0 | 50 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | FLUORENE | 86-73-7 | 50 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 50 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | J | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | W | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 14 | REG | 0 02 | 26006299 | LIPIDS | | 430 | MG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 14 | REG | 0 02 | 26006299 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | | | CLAM | | EPA 9071 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 14 | REG | 0 02 | 26006299 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | W | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 14 | REG | 0 02 | 26006299 | METHYLNAPHTHALENES | | 50 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 14 | REG | 0 02 | 26006299 | MONOBUTYLTIN | | 1 | UG/KG | U | W | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0 02 | 26006299 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | W | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 0 02 | 26006299 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | J | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 100 | UG/KG |
| 14 | REG | 0 02 | 26006299 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | W | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 14 | REG | 0 02 | 26006299 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 0 02 | 26006299 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 0 02 | 26006299 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 0 02 | 26006299 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |



R0063100

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 0.02 | 26006299 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 0.02 | 26006299 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 0.02 | 26006299 | PHENANTHRENE | 85-01-8 | 50 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0.02 | 26006299 | PYRENE | 129-00-0 | 50 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 50 | UG/KG |
| 14 | REG | 0.02 | 26006299 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 14 | REG | 0.02 | 26006299 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | U | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 14 | REG | 0.02 | 26006299 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 14 | REG | 0.02 | 26006299 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 0.02 | 26006299 | TRIBUTYLTIN | 688-73-3 | 2.6 | UG/KG | | J | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 0.02 | 26006299 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 15 | REG | 0.02 | 26001701 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 4,4'-DDD | 72-54-8 | 20 | UG/KG | | J | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 4,4'-DDE | 72-55-9 | 43 | UG/KG | | J | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BENZO(A)PYRENE | 50-32-8 | 54 | UG/KG | | J | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BENZO(B)FLUORANTHENE | 205-99-2 | 72 | UG/KG | | J | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BENZO(K)FLUORANTHENE | 207-08-9 | 72 | UG/KG | | J | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 15 | REG | 0.02 | 26001701 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | UJ | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |



R0063101

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | REG | 0.02 | 26001701 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 15 | REG | 0.02 | 26001701 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 15 | REG | 0.02 | 26001701 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PCB-1260 | 11096-82-5 | 120 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001701 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001701 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 15 | REG | 0.02 | 26001702 | ARSENIC, TOTAL | 7440-38-2 | 7.8 | MG/KG | | | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001702 | BERYLLIUM, TOTAL | 7440-41-7 | 0.54 | MG/KG | | | SED-D | 44.6 | EPA 7080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 15 | REG | 0.02 | 26001702 | CADMIUM, TOTAL | 7440-43-9 | 0.4 | MG/KG | | J | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 15 | REG | 0.02 | 26001702 | CHROMIUM, TOTAL | 7440-47-3 | 42 | MG/KG | | | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 15 | REG | 0.02 | 26001702 | COPPER, TOTAL | 7440-50-8 | 88 | MG/KG | | | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 15 | REG | 0.02 | 26001702 | DIBUTYLTIN | | 7 | UG/KG | U | UJ | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 15 | REG | 0.02 | 26001702 | LEAD, TOTAL | 7439-92-1 | 45 | MG/KG | | | SED-D | 44.6 | QC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 15 | REG | 0.02 | 26001702 | MERCURY, TOTAL | 7439-97-6 | 0.81 | MG/KG | | | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| | | | | | | | | | | SED-D | 44.6 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| | | | | | | | | | | | | | | | | | 0.04 | MG/KG |

8/11/98



R0063102

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | REG | 0.02 | 26001702 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 44.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 15 | REG | 0.02 | 26001702 | NICKEL, TOTAL | 7440-02-0 | 25 | MG/KG | | | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 15 | REG | 0.02 | 26001702 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | SED-D | 44.6 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 15 | REG | 0.02 | 26001702 | SILVER, TOTAL | 7440-22-4 | 2.5 | MG/KG | | | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 15 | REG | 0.02 | 26001702 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | U | SED-D | 44.6 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 15 | REG | 0.02 | 26001702 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | | UJ | SED-D | 44.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 15 | REG | 0.02 | 26001702 | ZINC, TOTAL | 7440-66-6 | 160 | MG/KG | | | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 15 | REG | 0.02 | 26001703 | CLAY | | 31.134 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 75.345 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.021 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 125 MICRONS | | 1.908 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.005 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 42.731 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.761 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 250 MICRONS | | 0.415 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 68.968 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 29.123 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 353.56 MICRONS | | 0.272 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 500 MICRONS | | 0.129 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 16.163 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 58.068 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.069 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | CUMULATIVE PERCENT > 88.39 MICRONS | | 7.31 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | GRAVEL | | 0 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | MEAN GRAIN SIZE | | 6.22 | UM | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | MEDIAN GRAIN SIZE | | 11.249 | UM | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | SAND | | 16.163 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001703 | SILT | | 52.702 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001704 | TOTAL ORGANIC CARBON | | 0.921 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 15 | REG | 0.02 | 26001705 | ACID VOLATILE SULFIDE | | 200 | MG/KG | | J | SED-D | 44.6 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 15 | REG | 0.02 | 26001705 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.72 | MG/KG | | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 15 | REG | 0.02 | 26001705 | COPPER, EXTRACTABLE | 7440-50-8 | 81 | MG/KG | | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 15 | REG | 0.02 | 26001705 | LEAD, EXTRACTABLE | 7439-92-1 | 45 | MG/KG | | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 15 | REG | 0.02 | 26001705 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.038 | MG/KG | | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 15 | REG | 0.02 | 26001705 | SULFIDE, TOTAL | | 7.2 | MG/KG | | J | SED-D | 44.6 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 15 | REG | 0.02 | 26001705 | ZINC, EXTRACTABLE | 7440-66-6 | 130 | MG/KG | | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 16 | REG | 0.02 | 26001801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 16 | REG | 0.02 | 26001801 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | REG | 0.02 | 26001801 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 3- AND 4-METHYLPHENOL | 106-44-5 | 60 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 4,4'-DDD | 72-54-8 | 42 | UG/KG | | J | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 4,4'-DDE | 72-55-9 | 60 | UG/KG | | J | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 4,4'-DDT | 50-29-3 | 34 | UG/KG | | J | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 16 | REG | 0.02 | 26001801 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 16 | REG | 0.02 | 26001801 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | J | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | REG | 0.02 | 26001801 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 16 | REG | 0.02 | 26001801 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 16 | REG | 0.02 | 26001801 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PCB 1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PCB-1260 | 11096-82-5 | 150 | UG/KG | J | J | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001801 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 16 | REG | 0.02 | 26001801 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001802 | ARSENIC, TOTAL | 7440-38-2 | 9.8 | MG/KG | | | SED-D | 49.9 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 16 | REG | 0.02 | 26001802 | BERYLLIUM, TOTAL | 7440-41-7 | 0.6 | MG/KG | | | SED-D | 49.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 16 | REG | 0.02 | 26001802 | CADMIUM, TOTAL | 7440-43-9 | 0.34 | MG/KG | J | J | SED-D | 49.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 16 | REG | 0.02 | 26001802 | CHROMIUM, TOTAL | 7440-47-3 | 42 | MG/KG | | | SED-D | 49.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 16 | REG | 0.02 | 26001802 | COPPER, TOTAL | 7440-50-8 | 82 | MG/KG | | | SED-D | 49.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 16 | REG | 0.02 | 26001802 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 49.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 16 | REG | 0.02 | 26001802 | LEAD, TOTAL | 7439-92-1 | 46 | MG/KG | | | SED-D | 49.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 16 | REG | 0.02 | 26001802 | MERCURY, TOTAL | 7439-97-6 | 0.54 | MG/KG | | | SED-D | 49.9 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 16 | REG | 0.02 | 26001802 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 49.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 16 | REG | 0.02 | 26001802 | NICKEL, TOTAL | 7440-02-0 | 26 | MG/KG | | | SED-D | 49.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 16 | REG | 0.02 | 26001802 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 49.9 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 16 | REG | 0.02 | 26001802 | SILVER, TOTAL | 7440-22-4 | 2.6 | MG/KG | | | SED-D | 49.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 16 | REG | 0.02 | 26001802 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 49.9 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 16 | REG | 0.02 | 26001802 | TRIBUTYLTIN | 688-73-3 | 14 | UG/KG | U | U | SED-D | 49.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 16 | REG | 0.02 | 26001802 | ZINC, TOTAL | 7440-66-6 | 160 | MG/KG | | | SED-D | 49.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 16 | REG | 0.02 | 26001803 | CLAY | | 30.049 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 1.95 MICRONS | | 77.181 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.038 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 125 MICRONS | | 3.888 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.016 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 15.63 MICRONS | | 47.802 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.188 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 250 MICRONS | | 0.475 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 69.951 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 35.113 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.2 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 500 MICRONS | | 0.13 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 22.186 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 60.091 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



R0063105

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | REG | 0 02 | 26001803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.07 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0 02 | 26001803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 10.926 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0.02 | 26001803 | GRAVEL | | 0 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0 02 | 26001803 | MEAN GRAIN SIZE | | 8.52 | UM | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0 02 | 26001803 | MEDIAN GRAIN SIZE | | 13.678 | UM | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0 02 | 26001803 | SAND | | 22.186 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0 02 | 26001803 | SILT | | 47.765 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0 02 | 26001804 | TOTAL ORGANIC CARBON | | 0.885 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 16 | REG | 0 02 | 26001805 | ACID VOLATILE SULFIDE | | 180 | MG/KG | | J | SED-D | 49.9 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 16 | REG | 0 02 | 26001805 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.6 | MG/KG | | | SED-D | 49.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 16 | REG | 0 02 | 26001805 | COPPER, EXTRACTABLE | 7440-50-8 | 80 | MG/KG | | | SED-D | 49.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 6 | MG/KG |
| 16 | REG | 0 02 | 26001805 | LEAD, EXTRACTABLE | 7439-92-1 | 44 | MG/KG | | | SED-D | 49.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 16 | REG | 0 02 | 26001805 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.08 | MG/KG | | | SED-D | 49.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 16 | REG | 0 02 | 26001805 | SULFIDE, TOTAL | | 190 | MG/KG | | J | SED-D | 49.9 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0 02 | MG/KG |
| 16 | REG | 0 02 | 26001805 | ZINC, EXTRACTABLE | 7440-66-6 | 130 | MG/KG | | | SED-D | 49.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 17 | REG | 0 02 | 26001101 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 17 | REG | 0 02 | 26001101 | 1,2-DICHLOROBENZENE | 95-50-1 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 1,3-DICHLOROBENZENE | 541-73-1 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 1,4-DICHLOROBENZENE | 106-46-7 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 300 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2,4-DICHLOROPHENOL | 120-83-2 | 300 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2,4-DIMETHYLPHENOL | 105-67-9 | 300 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2,4-DINITROPHENOL | 51-28-5 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2,4-DINITROTOLUENE | 121-14-2 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2,6-DINITROTOLUENE | 606-20-2 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2-CHLORONAPHTHALENE | 91-58-7 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2-CHLOROPHENOL | 95-57-8 | 300 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2 METHYL-4,6-DINITROPHENOL | 534-52-1 | 300 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2-METHYLPHENOL | 95-48-7 | 300 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 2-NITROPHENOL | 88-75-5 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 3- AND 4-METHYLPHENOL | 106-44-5 | 400 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 4,4'-DDD | 72-54-8 | 33 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 4,4'-DDE | 72-55-9 | 180 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 60 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 300 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | 4-NITROPHENOL | 100-02-7 | 300 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0 02 | 26001101 | ACENAPHTHENE | 83-32-9 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | ACENAPHTHYLENE | 208-96-8 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0 02 | 26001101 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 60 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | ANTHRACENE | 120-12-7 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0 02 | 26001101 | BENZO(A)ANTHRACENE | 56-55-3 | 150 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0 02 | 26001101 | BENZO(A)PYRENE | 50-32-8 | 500 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | BENZO(B)FLUORANTHENE | 205-99-2 | 980 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | BENZO(GHI)PERYLENE | 191-24-2 | 380 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | BENZO(K)FLUORANTHENE | 207-08-9 | 480 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 60 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0 02 | 26001101 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 100 | UG/KG | U | U | SED-D | 60 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| | | | | | | | | | | | | EPA 8270 | | | | | 100 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | REG | 0.02 | 26001101 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 900 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 900 | UG/KG |
| 17 | REG | 0.02 | 26001101 | BUTYLBENZYLPHTHALATE | 85-68-7 | 300 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0.02 | 26001101 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 17 | REG | 0.02 | 26001101 | CHRYSENE | 218-01-9 | 380 | UG/KG | J | J | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | DI-N-BUTYLPHTHALATE | 84-74-2 | 300 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0.02 | 26001101 | DI-N-OCTYLPHTHALATE | 117-84-0 | 300 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0.02 | 26001101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | DIETHYLPHTHALATE | 84-66-2 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | DIMETHYLPHTHALATE | 131-11-3 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | FLUORANTHENE | 206-44-0 | 150 | UG/KG | J | J | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | FLUORENE | 86-73-7 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | HEXACHLOROBENZENE | 118-74-1 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | HEXACHLOROBUTADIENE | 87-68-3 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | HEXACHLOROETHANE | 67-72-1 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 400 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | ISOPHORONE | 78-59-1 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 17 | REG | 0.02 | 26001101 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 17 | REG | 0.02 | 26001101 | METHYLNAPHTHALENES | | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | N-NITROSODIMETHYLAMINE | 62-75-9 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | N-NITROSODIPHENYLAMINE | 86-30-6 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | NITROBENZENE | 98-95-3 | 300 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PCB-1260 | 11096-82-5 | 880 | UG/KG | J | J | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PENTACHLOROPHENOL | 87-86-5 | 300 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PHENANTHRENE | 85-01-8 | 100 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PHENOL | 108-95-2 | 300 | UG/KG | U | U | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 17 | REG | 0.02 | 26001101 | PYRENE | 129-00-0 | 180 | UG/KG | J | J | SED-D | 60.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 17 | REG | 0.02 | 26001101 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | 60.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 17 | REG | 0.02 | 26001102 | ARSENIC, TOTAL | 7440-38-2 | 19 | MG/KG | J | J | SED-D | 60.2 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 17 | REG | 0.02 | 26001102 | BERYLLIUM, TOTAL | 7440-41-7 | 0.75 | MG/KG | J | J | SED-D | 60.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 17 | REG | 0.02 | 26001102 | CADMIUM, TOTAL | 7440-43-9 | 1 | MG/KG | J | J | SED-D | 60.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |



R0063107

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | REG | 0.02 | 26001102 | CHROMIUM, TOTAL | 7440-47-3 | 88 | MG/KG | | | SED-D | 60.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 17 | REG | 0.02 | 26001102 | COPPER, TOTAL | 7440-50-8 | 530 | MG/KG | | | SED-D | 60.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 17 | REG | 0.02 | 26001102 | DIBUTYLTIN | | 3 | UG/KG | U | W | SED-D | 60.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 17 | REG | 0.02 | 26001102 | LEAD, TOTAL | 7439-92-1 | 180 | MG/KG | | | SED-D | 60.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 17 | REG | 0.02 | 26001102 | MERCURY, TOTAL | 7439-97-6 | 1.8 | MG/KG | | | SED-D | 60.2 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 17 | REG | 0.02 | 26001102 | MONOBUTYLTIN | | 3 | UG/KG | U | W | SED-D | 60.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 17 | REG | 0.02 | 26001102 | NICKEL, TOTAL | 7440-02-0 | 35 | MG/KG | | | SED-D | 60.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 17 | REG | 0.02 | 26001102 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 60.2 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 17 | REG | 0.02 | 26001102 | SILVER, TOTAL | 7440-22-4 | 3.8 | MG/KG | | | SED-D | 60.2 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 17 | REG | 0.02 | 26001102 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 60.2 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 17 | REG | 0.02 | 26001102 | TRIBUTYLTIN | 688-73-3 | 3.3 | UG/KG | | W | SED-D | 60.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 17 | REG | 0.02 | 26001102 | ZINC, TOTAL | 7440-66-6 | 480 | MG/KG | | | SED-D | 60.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 17 | REG | 0.02 | 26001103 | CLAY | | 47.983 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 82.728 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.068 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 125 MICRONS | | 5.45 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.038 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 24.728 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.973 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 250 MICRONS | | 2.005 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 82.017 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 17.687 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 353.56 MICRONS | | 1.226 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 500 MICRONS | | 0.773 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 13.251 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 37.99 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.421 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 0.812 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | GRAVEL | | 0 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | MEAN GRAIN SIZE | | 4.573 | UM | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | MEDIAN GRAIN SIZE | | 4.316 | UM | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | SAND | | 13.251 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001103 | SILT | | 38.765 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001104 | TOTAL ORGANIC CARBON | | 1.824 | PERCENT | | | SED-D | 60.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 17 | REG | 0.02 | 26001105 | ACID VOLATILE SULFIDE | | 110 | MG/KG | | J | SED-D | 60.2 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 17 | REG | 0.02 | 26001105 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.3 | MG/KG | | | SED-D | 60.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 17 | REG | 0.02 | 26001105 | COPPER, EXTRACTABLE | 7440-50-8 | 330 | MG/KG | | | SED-D | 60.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 17 | REG | 0.02 | 26001105 | LEAD, EXTRACTABLE | 7439-92-1 | 180 | MG/KG | | | SED-D | 60.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 17 | REG | 0.02 | 26001105 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.025 | MG/KG | | | SED-D | 60.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 17 | REG | 0.02 | 26001105 | SULFIDE, TOTAL | | 140 | MG/KG | | J | SED-D | 60.2 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 17 | REG | 0.02 | 26001105 | ZINC, EXTRACTABLE | 7440-66-6 | 580 | MG/KG | | | SED-D | 60.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 18 | REG | 0.02 | 26001501 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 18 | REG | 0.02 | 26001501 | 1,2-DICHLOROBENZENE | 95-50-1 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0.02 | 26001501 | 1,3-DICHLOROBENZENE | 541-73-1 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0.02 | 26001501 | 1,4-DICHLOROBENZENE | 106-46-7 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0.02 | 26001501 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0.02 | 26001501 | 2,4-DICHLOROPHENOL | 120-83-2 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0.02 | 26001501 | 2,4-DIMETHYLPHENOL | 105-67-9 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0.02 | 26001501 | 2,4-DINITROPHENOL | 51-28-5 | 100 | UG/KG | U | W | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | REG | 0 02 | 26001501 | 2,4-DINITROTOLUENE | 121-14-2 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 2,6-DINITROTOLUENE | 606-20-2 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 2-CHLORONAPHTHALENE | 91-58-7 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 2-CHLOROPHENOL | 95-57-8 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 2-METHYLPHENOL | 95-48-7 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 2-NITROPHENOL | 88-75-5 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 3- AND 4-METHYLPHENOL | 108-44-5 | 300 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 4,4'-DDD | 72-54-8 | 7.9 | UG/KG | J | J | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 4,4'-DDE | 72-55-9 | 57 | UG/KG | E | E | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | J | J | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | 4-NITROPHENOL | 100-02-7 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ACENAPHTHENE | 83-32-9 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ACENAPHTHYLENE | 208-96-8 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ANTHRACENE | 120-12-7 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BENZO(A)ANTHRACENE | 56-55-3 | 120 | UG/KG | J | J | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BENZO(A)PYRENE | 50-32-8 | 240 | UG/KG | J | J | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BENZO(B)FLUORANTHENE | 205-99-2 | 260 | UG/KG | J | J | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BENZO(GHI)PERYLENE | 191-24-2 | 220 | UG/KG | J | J | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BENZO(K)FLUORANTHENE | 207-08-9 | 320 | UG/KG | J | J | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 700 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | BUTYLBENZYLPHTHALATE | 85-68-7 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 700 | UG/KG |
| 18 | REG | 0 02 | 26001501 | CHLORDANE | 57-74-9 | 4 | UG/KG | J | J | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | CHRYSENE | 218-01-9 | 220 | UG/KG | J | J | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 18 | REG | 0 02 | 26001501 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | DI-N-BUTYLPHTHALATE | 84-74-2 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 120 | UG/KG | J | J | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | DIETHYLPHTHALATE | 84-66-2 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | DIMETHYLPHTHALATE | 131-11-3 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | FLUORANTHENE | 206-44-0 | 120 | UG/KG | J | J | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | FLUORENE | 86-73-7 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | HEXACHLOROBENZENE | 118-74-1 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | REG | 0 02 | 26001501 | HEXACHLOROBUTADIENE | 87-68-3 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | HEXACHLOROETHANE | 67-72-1 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 220 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | ISOPHORONE | 78-59-1 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 18 | REG | 0 02 | 26001501 | METHYLNAPHTHALENES | | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 18 | REG | 0 02 | 26001501 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | N-NITROSODIMETHYLAMINE | 62-75-9 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | N-NITROSODIPHENYLAMINE | 86-30-6 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | NITROBENZENE | 98-95-3 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PCB-1260 | 11096-82-5 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PENTACHLOROPHENOL | 87-86-5 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PHENANTHRENE | 85-01-8 | 100 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PHENOL | 108-95-2 | 200 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001501 | PYRENE | 129-00-0 | 120 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 18 | REG | 0 02 | 26001501 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 50.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 18 | REG | 0 02 | 26001502 | ARSENIC, TOTAL | 7440-38-2 | 11 | MG/KG | | | SED-D | 50.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 18 | REG | 0 02 | 26001502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.61 | MG/KG | | | SED-D | 50.7 | EPA 7080 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 18 | REG | 0 02 | 26001502 | CADMIUM, TOTAL | 7440-43-9 | 0.51 | MG/KG | | | SED-D | 50.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 18 | REG | 0 02 | 26001502 | CHROMIUM, TOTAL | 7440-47-3 | 43 | MG/KG | | | SED-D | 50.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 1 | MG/KG |
| 18 | REG | 0 02 | 26001502 | COPPER, TOTAL | 7440-50-8 | 110 | MG/KG | | | SED-D | 50.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 18 | REG | 0 02 | 26001502 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 50.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 18 | REG | 0 02 | 26001502 | LEAD, TOTAL | 7439-92-1 | 49 | MG/KG | | | SED-D | 50.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 18 | REG | 0 02 | 26001502 | MERCURY, TOTAL | 7439-97-6 | 0.57 | MG/KG | | | SED-D | 50.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 18 | REG | 0 02 | 26001502 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 50.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0 06 | MG/KG |
| 18 | REG | 0 02 | 26001502 | NICKEL, TOTAL | 7440-02-0 | 26 | MG/KG | | | SED-D | 50.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 18 | REG | 0 02 | 26001502 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 50.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 18 | REG | 0 02 | 26001502 | SILVER, TOTAL | 7440-22-4 | 2.4 | MG/KG | | | SED-D | 50.7 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 18 | REG | 0 02 | 26001502 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | CED-D | 50.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 18 | REG | 0 02 | 26001502 | TRIBUTYLTIN | 688-73-3 | 16 | UG/KG | | | SED-D | 50.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 18 | REG | 0 02 | 26001502 | ZINC, TOTAL | 7440-66-6 | 170 | MG/KG | | | SED-D | 50.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 18 | REG | 0 02 | 26001503 | CLAY | | 33.204 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 1.95 MICRONS | | 78.849 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.025 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 125 MICRONS | | 2.979 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.015 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 42.286 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.986 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 250 MICRONS | | 0.501 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0 02 | 26001503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 66.798 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



R0063110

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | REG | 0.02 | 26001503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 28.594 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.228 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | CUMULATIVE PERCENT > 500 MICRONS | | 0.154 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 16.731 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 58.742 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.059 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | CUMULATIVE PERCENT > 88.39 MICRONS | | 8.618 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | GRAVEL | | 0 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | MEAN GRAIN SIZE | | 8.938 | UM | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | MEDIAN GRAIN SIZE | | 10.789 | UM | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | SAND | | 16.731 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001503 | SILT | | 80.064 | PERCENT | | | SED-D | 50.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 18 | REG | 0.02 | 26001504 | TOTAL ORGANIC CARBON | | 0.41 | PERCENT | | | SED-D | 50.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 18 | REG | 0.02 | 26001505 | ACID VOLATILE SULFIDE | | 110 | MG/KG | | J | SED-D | 50.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 18 | REG | 0.02 | 26001505 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.6 | MG/KG | U | U | SED-D | 50.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 18 | REG | 0.02 | 26001505 | COPPER, EXTRACTABLE | 7440-50-8 | 77 | MG/KG | | | SED-D | 50.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 18 | REG | 0.02 | 26001505 | LEAD, EXTRACTABLE | 7439-92-1 | 47 | MG/KG | | | SED-D | 50.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 18 | REG | 0.02 | 26001505 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | | | SED-D | 50.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 18 | REG | 0.02 | 26001505 | SULFIDE, TOTAL | | 110 | MG/KG | | J | SED-D | 50.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 18 | REG | 0.02 | 26001505 | ZINC, EXTRACTABLE | 7440-66-6 | 120 | MG/KG | | | SED-D | 50.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 19 | REG | 0.02 | 26001401 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 1,2-DICHLOROBENZENE | 95-50-1 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 1,3-DICHLOROBENZENE | 541-73-1 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 1,4-DICHLOROBENZENE | 106-46-7 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2,4-DICHLOROPHENOL | 120-83-2 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2,4-DIMETHYLPHENOL | 105-67-9 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2,4 DINITROPHENOL | 51-28-5 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2,4-DINITROTOLUENE | 121-14-2 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2,6-DINITROTOLUENE | 606-20-2 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2-CHLORONAPHTHALENE | 91-58-7 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2-CHLOROPHENOL | 95-57-8 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2-METHYLPHENOL | 95-48-7 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 2-NITROPHENOL | 88-75-5 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 3- AND 4-METHYLPHENOL | 106-44-5 | 300 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 4,4'-DDD | 72-54-8 | 4.8 | UG/KG | | J | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 4,4'-DDE | 72-55-9 | 38 | UG/KG | | J | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | U | J | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | 4-NITROPHENOL | 100-02-7 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ACENAPHTHENE | 83-32-9 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ACENAPHTHYLENE | 208-96-8 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ANTHRACENE | 120-12-7 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BENZO(A)ANTHRACENE | 56-55-3 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BENZO(A)PYRENE | 50-32-8 | 87 | UG/KG | | | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |



R0063111

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | REG | 0.02 | 26001401 | BENZO(B)FLUORANTHENE | 205-99-2 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BENZO(GHI)PERYLENE | 191-24-2 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BENZO(K)FLUORANTHENE | 207-08-9 | 120 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 800 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | BUTYLBENZYLPHTHALATE | 85-68-7 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 19 | REG | 0.02 | 26001401 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | CHRYSENE | 218-01-9 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 19 | REG | 0.02 | 26001401 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | DI-N-BUTYLPHTHALATE | 84-74-2 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | DI-N-OCTYLPHTHALATE | 117-84-0 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | DIETHYLPHTHALATE | 84-66-2 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | DIMETHYLPHTHALATE | 131-11-3 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | FLUORANTHENE | 206-44-0 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | FLUORENE | 86-73-7 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | HEXACHLOROBENZENE | 118-74-1 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | HEXACHLOROBUTADIENE | 87-68-3 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | HEXACHLOROETHANE | 67-72-1 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | ISOPHORONE | 78-59-1 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 19 | REG | 0.02 | 26001401 | METHYLNAPHTHALENES | | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 19 | REG | 0.02 | 26001401 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | N-NITROSODIMETHYLAMINE | 62-75-9 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | N-NITROSODIPHENYLAMINE | 86-30-6 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | NAPHTHALENE | 91-20-3 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | NITROBENZENE | 98-95-3 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PCB-1260 | 11096-82-5 | 56 | UG/KG | U | U | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PENTACHLOROPHENOL | 87-86-5 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PHENANTHRENE | 85-01-8 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 19 | REG | 0.02 | 26001401 | PHENOL | 108-95-2 | 200 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| | | | | | | | | | | | | | | | | | 200 | UG/KG |



R0063112

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | REG | 0.02 | 26001401 | PYRENE | 129-00-0 | 90 | UG/KG | U | U | SED-D | 42.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 19 | REG | 0.02 | 26001401 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 42.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 19 | REG | 0.02 | 26001402 | ARSENIC, TOTAL | 7440-38-2 | 10 | MG/KG | | J | SED-D | 42.7 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 19 | REG | 0.02 | 26001402 | BERYLLIUM, TOTAL | 7440-41-7 | 0.52 | MG/KG | | | SED-D | 42.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 19 | REG | 0.02 | 26001402 | CADMIUM, TOTAL | 7440-43-9 | 0.37 | MG/KG | | J | SED-D | 42.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 19 | REG | 0.02 | 26001402 | CHROMIUM, TOTAL | 7440-47-3 | 37 | MG/KG | | | SED-D | 42.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 19 | REG | 0.02 | 26001402 | COPPER, TOTAL | 7440-50-8 | 68 | MG/KG | | | SED-D | 42.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 19 | REG | 0.02 | 26001402 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 42.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 19 | REG | 0.02 | 26001402 | LEAD, TOTAL | 7439-92-1 | 37 | MG/KG | | | SED-D | 42.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 19 | REG | 0.02 | 26001402 | MERCURY, TOTAL | 7439-97-6 | 0.31 | MG/KG | | | SED-D | 42.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 19 | REG | 0.02 | 26001402 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 42.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 19 | REG | 0.02 | 26001402 | NICKEL, TOTAL | 7440-02-0 | 23 | MG/KG | | | SED-D | 42.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 19 | REG | 0.02 | 26001402 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | SED-D | 42.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 19 | REG | 0.02 | 26001402 | SILVER, TOTAL | 7440-22-4 | 2.1 | MG/KG | | | SED-D | 42.7 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 19 | REG | 0.02 | 26001402 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | U | SED-D | 42.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 19 | REG | 0.02 | 26001402 | TRIBUTYLTIN | 688-73-3 | 8.2 | UG/KG | | UJ | SED-D | 42.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 19 | REG | 0.02 | 26001402 | ZINC, TOTAL | 7440-66-6 | 130 | MG/KG | | | SED-D | 42.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 19 | REG | 0.02 | 26001403 | CLAY | | 23.458 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 81.903 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.005 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 125 MICRONS | | 8.051 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 58.289 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.804 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 250 MICRONS | | 0.881 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 76.542 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 43.979 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.455 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 500 MICRONS | | 0.152 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 32.463 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 68.614 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.054 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | CUMULATIVE PERCENT > 88.38 MICRONS | | 20.296 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | GRAVEL | | 0 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | MEAN GRAIN SIZE | | 12.869 | UM | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | MEDIAN GRAIN SIZE | | 22.264 | UM | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | SAND | | 32.463 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001403 | SILT | | 44.079 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001404 | TOTAL ORGANIC CARBON | | 0.8 | PERCENT | | | SED-D | 42.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 19 | REG | 0.02 | 26001405 | ACID VOLATILE SULFIDE | | 91 | MG/KG | | J | SED-D | 42.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 19 | REG | 0.02 | 26001405 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | UJ | SED-D | 42.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 9 | MG/KG |
| 19 | REG | 0.02 | 26001405 | COPPER, EXTRACTABLE | 7440-50-8 | 58 | MG/KG | | | SED-D | 42.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 19 | REG | 0.02 | 26001405 | LEAD, EXTRACTABLE | 7439-92-1 | 31 | MG/KG | | | SED-D | 42.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 19 | REG | 0.02 | 26001405 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | UJ | SED-D | 42.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 19 | REG | 0.02 | 26001405 | SULFIDE, TOTAL | | 33 | MG/KG | | J | SED-D | 42.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 19 | REG | 0.02 | 26001405 | ZINC, EXTRACTABLE | 7440-66-6 | 68 | MG/KG | | | SED-D | 42.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 20 | REG | 0.02 | 26001001 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 80 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 20 | REG | 0.02 | 26001001 | 1,2-DICHLOROBENZENE | 95-50-1 | 80 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0.02 | 26001001 | 1,3-DICHLOROBENZENE | 541-73-1 | 80 | UG/KG | U | UJ | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |



R0063113

NOV 18

| Station ID | Sample Type | Surface Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | REG | 0 02 | 26001001 | 1,4-DICHLOROBENZENE | 106-46-7 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2,4-DICHLOROPHENOL | 120-83-2 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2,4-DIMETHYLPHENOL | 105-67-9 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2,4-DINITROPHENOL | 51-28-5 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2,4-DINITROTOLUENE | 121-14-2 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2,6-DINITROTOLUENE | 606-20-2 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2-CHLORONAPHTHALENE | 91-58-7 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2-CHLOROPHENOL | 95-57-8 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2-METHYLPHENOL | 95-48-7 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 2-NITROPHENOL | 88-75-5 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 3- AND 4-METHYLPHENOL | 108-44-5 | 300 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 4,4'-DDD | 72-54-8 | 4.9 | UG/KG | | | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 4,4'-DDE | 72-55-9 | 37 | UG/KG | | | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | J | J | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | 4-NITROPHENOL | 100-02-7 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ACENAPHTHENE | 83-32-9 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ACENAPHTHYLENE | 208-96-8 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ANTHRACENE | 120-12-7 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BENZO(A)ANTHRACENE | 56-55-3 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BENZO(A)PYRENE | 50-32-8 | 100 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BENZO(B)FLUORANTHENE | 205-99-2 | 100 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BENZO(GHI)PERYLENE | 191-24-2 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BENZO(K)FLUORANTHENE | 207-08-9 | 85 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 600 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | BUTYLBENZYLPHTHALATE | 85-68-7 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 600 | UG/KG |
| 20 | REG | 0 02 | 26001001 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | CHRYSENE | 218-01-9 | 85 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 20 | REG | 0 02 | 26001001 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | DI-N-BUTYLPHTHALATE | 84-74-2 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | DI-N-OCTYLPHTHALATE | 117-84-0 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | DIETHYLPHTHALATE | 84-66-2 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | DIMETHYLPHTHALATE | 131-11-3 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |



R0063114

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CF-EB

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | REG | 0 02 | 26001001 | FLUORANTHENE | 206-44-0 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | FLUORENE | 86-73-7 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | HEXACHLOROBENZENE | 118-74-1 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | HEXACHLOROBUTADIENE | 87-68-3 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0.02 | 26001001 | HEXACHLOROETHANE | 67-72-1 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | ISOPHORONE | 78-59-1 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 8 | UG/KG |
| 20 | REG | 0 02 | 26001001 | METHYLNAPHTHALENES | | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 20 | REG | 0 02 | 26001001 | N NITROSODI-N-PROPYLAMINE | 621-64-7 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | N NITROSODIMETHYLAMINE | 62-75-9 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | N-NITROSODIPHENYLAMINE | 86-30-6 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | NAPHTHALENE | 91-20-3 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | NITROBENZENE | 98-95-3 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PCB-1260 | 11096-82-5 | 75 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PENTACHLOROPHENOL | 87-86-5 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PHENANTHRENE | 85-01-8 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PHENOL | 108-95-2 | 200 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 20 | REG | 0 02 | 26001001 | PYRENE | 129-00-0 | 80 | UG/KG | U | U | SED-D | 41.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 20 | REG | 0 02 | 26001001 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 41.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 20 | REG | 0 02 | 26001002 | ARSENIC, TOTAL | 7440-38-2 | 8 8 | MG/KG | | | SED-D | 41.1 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 20 | REG | 0 02 | 26001002 | BERYLLIUM, TOTAL | 7440-41-7 | 0.68 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 20 | REG | 0 02 | 26001002 | CADMIUM, TOTAL | 7440-43-9 | 0.42 | MG/KG | | J | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 08 | MG/KG |
| 20 | REG | 0 02 | 26001002 | CHROMIUM, TOTAL | 7440-47-3 | 42 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 20 | REG | 0 02 | 26001002 | COPPER, TOTAL | 7440-50-8 | 76 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 20 | REG | 0 02 | 26001002 | DIBUTYLTIN | | 2 | UG/KG | U | J | SED-D | 41.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 20 | REG | 0 02 | 26001002 | LEAD, TOTAL | 7439-92-1 | 41 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 20 | REG | 0 02 | 26001002 | MERCURY, TOTAL | 7439-97-6 | 0.51 | MG/KG | | | SED-D | 41.1 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0 05 | MG/KG |
| 20 | REG | 0 02 | 26001002 | MONOBUTYLTIN | | 8 | UG/KG | U | J | SED-D | 41.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 20 | REG | 0 02 | 26001002 | NICKEL, TOTAL | 7440-02-0 | 36 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 20 | REG | 0 02 | 26001002 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 41.1 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0 6 | MG/KG |
| 20 | REG | 0 02 | 26001002 | SILVER, TOTAL | 7440-22-4 | 2.5 | MG/KG | | | SED-D | 41.1 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 20 | REG | 0 02 | 26001002 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 41.1 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 20 | REG | 0 02 | 26001002 | TRIBUTYLTIN | 688-73-3 | 2.2 | UG/KG | | J | SED-D | 41.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 20 | REG | 0 02 | 26001002 | ZINC, TOTAL | 7440-66-6 | 150 | MG/KG | | | SED-D | 41.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 20 | REG | 0 02 | 26001003 | CLAY | | 24.38 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0 02 | 26001003 | CUMULATIVE PERCENT > 0.99 MICRONS | | 100 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0 02 | 26001003 | CUMULATIVE PERCENT > 1 95 MICRONS | | 81.196 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.005 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 125 MICRONS | | 4.123 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



R0063115

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 52.841 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.412 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 250 MICRONS | | 0.671 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 75.64 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 39.047 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.524 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 500 MICRONS | | 0.298 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 24.486 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 65.969 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.123 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | CUMULATIVE PERCENT > 99.39 MICRONS | | 13.374 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | GRAVEL | | 0 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | MEAN GRAIN SIZE | | 11.413 | UM | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | MEDIAN GRAIN SIZE | | 18.023 | UM | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | SAND | | 24.486 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001003 | SILT | | 61.184 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001004 | TOTAL ORGANIC CARBON | | 0.695 | PERCENT | | | SED-D | 41.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 20 | REG | 0.02 | 26001005 | ACID VOLATILE SULFIDE | | 110 | MG/KG | | J2 | SED-D | 41.1 | MENZELSVADCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 20 | REG | 0.02 | 26001005 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | J2 | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 | MG/KG |
| 20 | REG | 0.02 | 26001005 | COPPER, EXTRACTABLE | 7440-50-8 | 48 | MG/KG | | J2 | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 20 | REG | 0.02 | 26001005 | LEAD, EXTRACTABLE | 7439-92-1 | 29 | MG/KG | | J2 | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 20 | REG | 0.02 | 26001005 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | J2 | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 20 | REG | 0.02 | 26001005 | SULFIDE, TOTAL | | 180 | MG/KG | | J2 | SED-D | 41.1 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 20 | REG | 0.02 | 26001005 | ZINC, EXTRACTABLE | 7440-66-6 | 78 | MG/KG | | J2 | SED-D | 41.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 21 | REG | 0.02 | 26000901 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 21 | REG | 0.02 | 26000901 | 1,2-DICHLOROBENZENE | 95-50-1 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 1,3-DICHLOROBENZENE | 541-73-1 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 1,4-DICHLOROBENZENE | 106-46-7 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 200 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2,4-DICHLOROPHENOL | 120-83-2 | 200 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2,4-DIMETHYLPHENOL | 105-67-9 | 200 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2,4-DINITROPHENOL | 51-28-5 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2,4-DINITROTOLUENE | 121-14-2 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2,6-DINITROTOLUENE | 606-20-2 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2-CHLORONAPHTHALENE | 91-58-7 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2-CHLOROPHENOL | 95-57-8 | 200 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 200 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2-METHYLPHENOL | 95-48-7 | 200 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 2-NITROPHENOL | 88-75-5 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 3- AND 4-METHYLPHENOL | 106-44-5 | 300 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 4,4'-DDD | 72-54-8 | 11 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 4,4'-DDE | 72-55-9 | 92 | UG/KG | | J2 | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 200 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | 4-NITROPHENOL | 100-02-7 | 200 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ACENAPHTHENE | 83-32-9 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ACENAPHTHYLENE | 208-96-8 | 100 | UG/KG | U | J2 | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | REG | 0.02 | 26000901 | ALDRIN | 309-00-2 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ANTHRACENE | 120-12-7 | 180 | UG/KG | | | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BENZO(A)ANTHRACENE | 56-55-3 | 280 | UG/KG | | | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BENZO(A)PYRENE | 50-32-8 | 440 | UG/KG | | | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BENZO(B)FLUORANTHENE | 205-99-2 | 610 | UG/KG | | | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BENZO(GHI)PERYLENE | 191-24-2 | 300 | UG/KG | | | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BENZO(K)FLUORANTHENE | 207-08-9 | 550 | UG/KG | | | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 800 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 21 | REG | 0.02 | 26000901 | BUTYLBENZYLPHTHALATE | 85-68-7 | 200 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 21 | REG | 0.02 | 26000901 | CHRYSENE | 218-01-9 | 550 | UG/KG | | | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | DELTA BHC (HCH) | 319-86-8 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | DI-N-BUTYLPHTHALATE | 84-74-2 | 200 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 200 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | DIETHYLPHTHALATE | 84-66-2 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | DIMETHYLPHTHALATE | 131-11-3 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ENDRIN | 72-20-8 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | FLUORANTHENE | 206-44-0 | 320 | UG/KG | | | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | FLUORENE | 86-73-7 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | HEXACHLOROBENZENE | 118-74-1 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | HEXACHLOROBUTADIENE | 87-68-3 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | HEXACHLOROETHANE | 67-72-1 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 300 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | ISOPHORONE | 78-59-1 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 21 | REG | 0.02 | 26000901 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 21 | REG | 0.02 | 26000901 | METHYLNAPHTHALENES | | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | NITROBENZENE | 98-95-3 | 200 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 56.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | REG | 0.02 | 26000901 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 58.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PCB-1260 | 11096-82-5 | 230 | UG/KG | | J | SED-D | 58.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PENTACHLOROPHENOL | 87-86-5 | 200 | UG/KG | U | U | SED-D | 58.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PHENANTHRENE | 85-01-8 | 160 | UG/KG | | | SED-D | 58.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PHENOL | 108-95-2 | 200 | UG/KG | U | U | SED-D | 58.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 21 | REG | 0.02 | 26000901 | PYRENE | 129-00-0 | 350 | UG/KG | | | SED-D | 58.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 21 | REG | 0.02 | 26000901 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 58.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 21 | REG | 0.02 | 26000902 | ARSENIC, TOTAL | 7440-38-2 | 16 | MG/KG | | J | SED-D | 58.6 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 21 | REG | 0.02 | 26000902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.69 | MG/KG | | | SED-D | 58.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 21 | REG | 0.02 | 26000902 | CADMIUM, TOTAL | 7440-43-9 | 1 | MG/KG | | J | SED-D | 58.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 21 | REG | 0.02 | 26000902 | CHROMIUM, TOTAL | 7440-47-3 | 67 | MG/KG | | | SED-D | 58.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 21 | REG | 0.02 | 26000902 | COPPER, TOTAL | 7440-50-8 | 220 | MG/KG | | | SED-D | 58.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 21 | REG | 0.02 | 26000902 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 58.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 21 | REG | 0.02 | 26000902 | LEAD, TOTAL | 7439-92-1 | 78 | MG/KG | | | SED-D | 58.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 21 | REG | 0.02 | 26000902 | MERCURY, TOTAL | 7439-97-6 | 0.74 | MG/KG | | | SED-D | 58.6 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 21 | REG | 0.02 | 26000902 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 58.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 21 | REG | 0.02 | 26000902 | NICKEL, TOTAL | 7440-02-0 | 37 | MG/KG | | | SED-D | 58.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 21 | REG | 0.02 | 26000902 | SELENIUM, TOTAL | 7782-49-2 | 1.6 | MG/KG | | | SED-D | 58.6 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 21 | REG | 0.02 | 26000902 | SILVER, TOTAL | 7440-22-4 | 3 | MG/KG | | | SED-D | 58.6 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 21 | REG | 0.02 | 26000902 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 58.6 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 21 | REG | 0.02 | 26000902 | TRIBUTYLTIN | 688-73-3 | 3.7 | UG/KG | | UJ | SED-D | 58.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 21 | REG | 0.02 | 26000902 | ZINC, TOTAL | 7440-66-6 | 300 | MG/KG | | | SED-D | 58.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 21 | REG | 0.02 | 26000903 | CLAY | | 49.357 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 85.098 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.157 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 125 MICRONS | | 2.942 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.05 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 21.576 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.334 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 250 MICRONS | | 1.832 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 63.643 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 12.414 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 353.56 MICRONS | | 1.537 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 500 MICRONS | | 0.891 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 7.578 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 36.581 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.477 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 5.008 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | GRAVEL | | 0 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | MEAN GRAIN SIZE | | 4.028 | UM | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | MEDIAN GRAIN SIZE | | 4.53 | UM | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | SAND | | 7.578 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000903 | SILT | | 46.085 | PERCENT | | | SED-D | 58.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 21 | REG | 0.02 | 26000904 | TOTAL ORGANIC CARBON | | 1.478 | PERCENT | | | SED-D | 58.6 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 21 | REG | 0.02 | 26000905 | ACID VOLATILE SULFIDE | | 190 | MG/KG | | J | SED-D | 58.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 21 | REG | 0.02 | 26000905 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.92 | MG/KG | | | SED-D | 58.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 21 | REG | 0.02 | 26000905 | COPPER, EXTRACTABLE | 7440-50-8 | 140 | MG/KG | | | SED-D | 58.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 21 | REG | 0.02 | 26000905 | LEAD, EXTRACTABLE | 7439-92-1 | 66 | MG/KG | | | SED-D | 58.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 9 | MG/KG |
| 21 | REG | 0.02 | 26000905 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.08 | MG/KG | U | U | SED-D | 58.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | REG | 0 02 | 26000905 | SULFIDE, TOTAL | | 60 | MG/KG | | J | SED-D | 56.6 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 21 | REG | 0 02 | 26000905 | ZINC, EXTRACTABLE | 7440-66-6 | 200 | MG/KG | | | SED-D | 56.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 22 | REG | 0 02 | 26001201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2,4-DICHLOROPHENOL | 120-83-2 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2-CHLOROPHENOL | 95-57-8 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2-METHYLPHENOL | 95-48-7 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 4,4'-DDD | 72-54-8 | 18 | UG/KG | | J | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 4,4'-DDE | 72-55-9 | 130 | UG/KG | | J | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | J | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | 4-NITROPHENOL | 100-02-7 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0 02 | 26001201 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0 02 | 26001201 | ANTHRACENE | 120-12-7 | 61 | UG/KG | | | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BENZO(A)ANTHRACENE | 56-55-3 | 130 | UG/KG | | | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BENZO(A)PYRENE | 50-32-8 | 300 | UG/KG | | | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BENZO(B)FLUORANTHENE | 205-99-2 | 410 | UG/KG | | | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BENZO(GHI)PERYLENE | 191-24-2 | 150 | UG/KG | | | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BENZO(K)FLUORANTHENE | 207-08-9 | 300 | UG/KG | | | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | J | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 250 | UG/KG | | | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 22 | REG | 0 02 | 26001201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 22 | REG | 0 02 | 26001201 | CHRYSENE | 218-01-9 | 280 | UG/KG | | | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0 02 | 26001201 | DI-N-BUTYLPHTHALATE | 84-74-2 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | DI-N-OCTYLPHTHALATE | 117-84-0 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0 02 | 26001201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0 02 | 26001201 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0 02 | 26001201 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |



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| Station ID | Sample Type | Surface Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 22 | REG | 0.02 | 26001201 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | FLUORANTHENE | 206-44-0 | 76 | UG/KG | J | J | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 150 | UG/KG | J | J | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 22 | REG | 0.02 | 26001201 | METHYLNAPHTHALENES | | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 22 | REG | 0.02 | 26001201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | NAPHTHALENE | 91-20-3 | 35 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | NITROBENZENE | 98-95-3 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PCB-1260 | 11096-82-5 | 410 | UG/KG | J | J | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PENTACHLOROPHENOL | 87-86-5 | 80 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PHENANTHRENE | 85-01-8 | 78 | UG/KG | J | J | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PHENOL | 108-95-2 | 50 | UG/KG | U | U | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 22 | REG | 0.02 | 26001201 | PYRENE | 129-00-0 | 150 | UG/KG | J | J | SED-D | 60.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001201 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | 60.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 22 | REG | 0.02 | 26001202 | ARSENIC, TOTAL | 7440-38-2 | 17 | MG/KG | J | J | SED-D | 60.5 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 22 | REG | 0.02 | 26001202 | BERYLLIUM, TOTAL | 7440-41-7 | 1 | MG/KG | J | J | SED-D | 60.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 22 | REG | 0.02 | 26001202 | CADMIUM, TOTAL | 7440-43-9 | 0.91 | MG/KG | J | J | SED-D | 60.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 22 | REG | 0.02 | 26001202 | CHROMIUM, TOTAL | 7440-47-3 | 71 | MG/KG | J | J | SED-D | 60.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 22 | REG | 0.02 | 26001202 | COPPER, TOTAL | 7440-50-8 | 210 | MG/KG | J | J | SED-D | 60.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 22 | REG | 0.02 | 26001202 | DIBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 60.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 22 | REG | 0.02 | 26001202 | LEAD, TOTAL | 7439-92-1 | 99 | MG/KG | J | J | SED-D | 60.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 22 | REG | 0.02 | 26001202 | MERCURY, TOTAL | 7439-97-6 | 0.48 | MG/KG | J | J | SED-D | 60.5 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 22 | REG | 0.02 | 26001202 | MONOBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 60.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 22 | REG | 0.02 | 26001202 | NICKEL, TOTAL | 7440-02-0 | 41 | MG/KG | J | J | SED-D | 60.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 22 | REG | 0.02 | 26001202 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 60.5 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 22 | REG | 0.02 | 26001202 | SILVER, TOTAL | 7440-22-4 | 5.8 | MG/KG | J | J | SED-D | 60.5 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 22 | REG | 0.02 | 26001202 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 60.5 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 22 | REG | 0.02 | 26001202 | TRIBUTYLTIN | 688-73-3 | 5.8 | UG/KG | J | J | SED-D | 60.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 22 | REG | 0.02 | 26001202 | ZINC, TOTAL | 7440-66-6 | 300 | MG/KG | J | J | SED-D | 60.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 22 | REG | 0.02 | 26001209 | CLAY | | 46.463 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |



R0063120

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 98.156 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.959 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 125 MICRONS | | 3.3 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.562 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 22.157 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.83 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.08 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 250 MICRONS | | 2.52 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 53.547 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 11.425 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 2.301 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 500 MICRONS | | 1.852 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 6.864 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 38.376 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 1.455 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 4.578 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | GRAVEL | | 0.08 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | MEAN GRAIN SIZE | | 4.247 | UM | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | MEDIAN GRAIN SIZE | | 4.508 | UM | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | SAND | | 8.805 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001203 | SILT | | 48.662 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001204 | TOTAL ORGANIC CARBON | | 0.712 | PERCENT | | | SED-D | 60.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 22 | REG | 0.02 | 26001205 | ACID VOLATILE SULFIDE | | 190 | MG/KG | | J | SED-D | 60.5 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 22 | REG | 0.02 | 26001205 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.78 | MG/KG | | | SED-D | 60.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 22 | REG | 0.02 | 26001205 | COPPER, EXTRACTABLE | 7440-50-8 | 43 | MG/KG | | | SED-D | 60.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 22 | REG | 0.02 | 26001205 | LEAD, EXTRACTABLE | 7439-92-1 | 71 | MG/KG | | | SED-D | 60.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 22 | REG | 0.02 | 26001205 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.03 | MG/KG | U | | SED-D | 60.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 22 | REG | 0.02 | 26001205 | SULFIDE, TOTAL | | 140 | MG/KG | | J | SED-D | 60.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 22 | REG | 0.02 | 26001205 | ZINC, EXTRACTABLE | 7440-66-6 | 180 | MG/KG | | | SED-D | 60.5 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 23 | REG | 0.02 | 26001301 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 80 | UG/KG | U | U | SED-D | 60.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 23 | REG | 0.02 | 26001301 | 1,2-DICHLOROBENZENE | 95-50-1 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 1,3-DICHLOROBENZENE | 541-73-1 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 1,4-DICHLOROBENZENE | 106-46-7 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2,4-DICHLOROPHENOL | 120-83-2 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2,4-DINITROPHENOL | 51-28-5 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2,4-DINITROTOLUENE | 121-14-2 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2,6-DINITROTOLUENE | 606-20-2 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2-CHLORONAPHTHALENE | 91-58-7 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2-CHLOROPHENOL | 95-57-8 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2-METHYLPHENOL | 95-48-7 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 2-NITROPHENOL | 88-75-5 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 3- AND 4-METHYLPHENOL | 108-44-5 | 300 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 4,4'-DDD | 72-54-8 | 7 | UG/KG | | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 4,4'-DDE | 72-55-9 | 81 | UG/KG | | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | J | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 80 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |



R0063121

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Visual | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | REG | 0.02 | 26001301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | 4-NITROPHENOL | 100-02-7 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ACENAPHTHENE | 83-32-9 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ACENAPHTHYLENE | 208-96-8 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ANTHRACENE | 120-12-7 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BENZO(A)ANTHRACENE | 56-55-3 | 110 | UG/KG | | | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BENZO(A)PYRENE | 50-32-8 | 180 | UG/KG | | | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BENZO(B)FLUORANTHENE | 205-99-2 | 220 | UG/KG | | | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BENZO(GHI)PERYLENE | 191-24-2 | 140 | UG/KG | | | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BENZO(K)FLUORANTHENE | 207-08-9 | 290 | UG/KG | | | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 600 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 600 | UG/KG |
| 23 | REG | 0.02 | 26001301 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | CHRYSENE | 218-01-9 | 230 | UG/KG | | | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 23 | REG | 0.02 | 26001301 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | DIETHYLPHTHALATE | 84-66-2 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | DIMETHYLPHTHALATE | 131-11-3 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | FLUORANTHENE | 206-44-0 | 130 | UG/KG | | | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | FLUORENE | 86-73-7 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | HEXACHLOROBENZENE | 118-74-1 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | HEXACHLOROBUTADIENE | 87-68-3 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | HEXACHLOROETHANE | 67-72-1 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 140 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | ISOPHORONE | 78-59-1 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 23 | REG | 0.02 | 26001301 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 23 | REG | 0.02 | 26001301 | METHYLNAPHTHALENES | | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | NAPHTHALENE | 91-20-3 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | NITROBENZENE | 98-95-3 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |

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R0063122

CF-59

VOA 178

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | REG | 0.02 | 26001301 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PCB-1260 | 11096-82-5 | 160 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PENTACHLOROPHENOL | 87-86-5 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PHENANTHRENE | 85-01-8 | 90 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PHENOL | 108-95-2 | 200 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 23 | REG | 0.02 | 26001301 | PYRENE | 129-00-0 | 140 | UG/KG | U | U | SED-D | 44.6 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 23 | REG | 0.02 | 26001301 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 44.6 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 23 | REG | 0.02 | 26001302 | ARSENIC, TOTAL | 7440-38-2 | 8.5 | MG/KG | | J | SED-D | 44.6 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 23 | REG | 0.02 | 26001302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.54 | MG/KG | | J | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 23 | REG | 0.02 | 26001302 | CADMIUM, TOTAL | 7440-43-9 | 0.38 | MG/KG | | J | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 23 | REG | 0.02 | 26001302 | CHROMIUM, TOTAL | 7440-47-3 | 40 | MG/KG | | J | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 23 | REG | 0.02 | 26001302 | COPPER, TOTAL | 7440-50-8 | 81 | MG/KG | | J | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 23 | REG | 0.02 | 26001302 | DIBUTYLTIN | | 2 | UG/KG | U | J | SED-D | 44.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 23 | REG | 0.02 | 26001302 | LEAD, TOTAL | 7439-92-1 | 38 | MG/KG | | J | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 23 | REG | 0.02 | 26001302 | MERCURY, TOTAL | 7439-97-6 | 0.31 | MG/KG | | J | SED-D | 44.6 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 23 | REG | 0.02 | 26001302 | MONOBUTYLTIN | | 2 | UG/KG | U | J | SED-D | 44.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 23 | REG | 0.02 | 26001302 | NICKEL, TOTAL | 7440-02-0 | 22 | MG/KG | | J | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 23 | REG | 0.02 | 26001302 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | J | SED-D | 44.6 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 23 | REG | 0.02 | 26001302 | SILVER, TOTAL | 7440-22-4 | 2.2 | MG/KG | | J | SED-D | 44.6 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 23 | REG | 0.02 | 26001302 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | J | SED-D | 44.6 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 23 | REG | 0.02 | 26001302 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | J | SED-D | 44.6 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 23 | REG | 0.02 | 26001302 | ZINC, TOTAL | 7440-66-6 | 140 | MG/KG | | J | SED-D | 44.6 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 23 | REG | 0.02 | 26001303 | CLAY | | 29.439 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 1.95 MICRONS | | 80.402 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.094 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 125 MICRONS | | 7.871 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.033 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 54.581 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.805 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.028 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 250 MICRONS | | 1.382 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 73.581 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 42.59 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.656 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 500 MICRONS | | 0.407 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 29.67 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 65.201 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.225 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 17.535 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | GRAVEL | | 0.029 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | MEAN GRAIN SIZE | | 11.796 | UM | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | MEDIAN GRAIN SIZE | | 30.347 | UM | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | SAND | | 29.642 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001303 | SILT | | 43.862 | PERCENT | | | SED-D | 44.6 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 23 | REG | 0.02 | 26001304 | TOTAL ORGANIC CARBON | | 0.723 | PERCENT | | | SED-D | 44.6 | MENZELAVACCARO | BOXCORE | SED | SEDIMENT | VV | | |

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R0063123

## Surface Sediment and Clam Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | REG | 0.02 | 26001305 | ACID VOLATILE SULFIDE | | 150 | MG/KG | | UJ | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 9 | MG/KG |
| 23 | REG | 0.02 | 26001305 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 23 | REG | 0.02 | 26001305 | COPPER, EXTRACTABLE | 7440-50-8 | 68 | MG/KG | | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 23 | REG | 0.02 | 26001305 | LEAD, EXTRACTABLE | 7439-92-1 | 38 | MG/KG | | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 23 | REG | 0.02 | 26001305 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | UJ | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 23 | REG | 0.02 | 26001305 | SULFIDE, TOTAL | | 87 | MG/KG | | UJ | SED-D | 44.6 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 23 | REG | 0.02 | 26001305 | ZINC, EXTRACTABLE | 7440-66-6 | 110 | MG/KG | | | SED-D | 44.6 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 24 | REG | 0.02 | 26006101 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 3- AND 4-METHYLPHENOL | 108-44-5 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | U | U | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 4,4'-DDE | 72-55-9 | 6 | UG/KG | | | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | U | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 24 | REG | 0.02 | 26006101 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BENZIDINE | 92-87-5 | 70 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | U | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 60 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006101 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 24 | REG | 0.02 | 26006101 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 0.02 | 26006101 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 23.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 24 | REG | 0.02 | 26006101 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | U | SED-D | 23.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | | | | | | | | | | | | | | | | | 0.7 | UG/KG |



R0063124

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 4 | 26020901 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | FLUORANTHENE | 206-44-0 | 13000 | UG/KG | | | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | FLUORENE | 86-73-7 | 240 | UG/KG | | | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | HEXACHLOROBENZENE | 118-74-1 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | HEXACHLOROBUTADIENE | 87-68-3 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | HEXACHLOROETHANE | 67-72-1 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 740 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | ISOPHORONE | 78-59-1 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | METHYLNAPHTHALENES | | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 51 | REG | 4 | 26020901 | N NITROSODI-N-PROPYLAMINE | 621-64-7 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | NITROBENZENE | 98-95-3 | 70 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PENTACHLOROPHENOL | 87-86-5 | 70 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | PHENANTHRENE | 85-01-8 | 4900 | UG/KG | | | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | PHENOL | 108-95-2 | 70 | UG/KG | U | UJ | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | PYRENE | 129-00-0 | 9300 | UG/KG | | | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020902 | ARSENIC, TOTAL | 7440-38-2 | 5.6 | MG/KG | | | SED-D | 46 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 51 | REG | 4 | 26020902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.93 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 51 | REG | 4 | 26020902 | CADMIUM, TOTAL | 7440-43-9 | 2.2 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 51 | REG | 4 | 26020902 | CHROMIUM, TOTAL | 7440-47-3 | 59 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 51 | REG | 4 | 26020902 | COPPER, TOTAL | 7440-50-8 | 200 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 4 | 26020902 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 46 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 4 | 26020902 | LEAD, TOTAL | 7439-92-1 | 170 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 51 | REG | 4 | 26020902 | MERCURY, TOTAL | 7439-97-6 | 1.8 | MG/KG | | | SED-D | 46 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 51 | REG | 4 | 26020902 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 46 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 4 | 26020902 | NICKEL, TOTAL | 7440-02-0 | 31 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 51 | REG | 4 | 26020902 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | UJ | SED-D | 46 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 51 | REG | 4 | 26020902 | SILVER, TOTAL | 7440-22-4 | 0.2 | MG/KG | | | SED-D | 46 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 51 | REG | 4 | 26020902 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | UJ | SED-D | 46 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 51 | REG | 4 | 26020902 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | UJ | SED-D | 46 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 4 | 26020902 | ZINC, TOTAL | 7440-66-6 | 540 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 4 | 26020903 | CLAY | | 57.131 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 98.533 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.119 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 125 MICRONS | | 12.819 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



R0063125

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Verage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | REG | 0.02 | 26006102 | NICKEL, TOTAL | 7440-02-0 | 7.8 | MG/KG | | | SED-D | 23.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 24 | REG | 0.02 | 26006102 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 23.2 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 24 | REG | 0.02 | 26006102 | SILVER, TOTAL | 7440-22-4 | 0.7 | MG/KG | U | U | SED-D | 23.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 24 | REG | 0.02 | 26006102 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 23.2 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 24 | REG | 0.02 | 26006102 | TRIBUTYLTIN | 688-73-3 | 2.2 | UG/KG | | J | SED-D | 23.2 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 24 | REG | 0.02 | 26006102 | ZINC, TOTAL | 7440-66-6 | 33 | MG/KG | | | SED-D | 23.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 24 | REG | 0.02 | 26006103 | CLAY | | 1.762 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 98.383 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 1000 MICRONS | | 21.656 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 125 MICRONS | | 92.407 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 19.824 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 97.242 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 68.927 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 2000 MICRONS | | 16.647 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 250 MICRONS | | 72.398 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 98.238 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 96.619 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 99.061 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 500 MICRONS | | 32.41 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 99.121 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 97.985 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 24.932 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | CUMULATIVE PERCENT > 99.39 MICRONS | | 94.985 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | GRAVEL | | 16.647 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | MEAN GRAIN SIZE | | 637.841 | UM | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | MEDIAN GRAIN SIZE | | 397.709 | UM | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | SAND | | 79.474 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006103 | SILT | | 2.117 | PERCENT | | | SED-D | 23.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 0.02 | 26006104 | TOTAL ORGANIC CARBON | | 0.088 | PERCENT | | | SED-D | 23.2 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 24 | REG | 0.02 | 26006105 | ACID VOLATILE SULFIDE | | 0.9 | MG/KG | | J | SED-D | 23.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 24 | REG | 0.02 | 26006105 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.4 | MG/KG | U | U | SED-D | 23.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.4 | MG/KG |
| 24 | REG | 0.02 | 26006105 | COPPER, EXTRACTABLE | 7440-50-8 | 14 | MG/KG | | | SED-D | 23.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 24 | REG | 0.02 | 26006105 | LEAD, EXTRACTABLE | 7439-92-1 | 2.8 | MG/KG | | | SED-D | 23.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 24 | REG | 0.02 | 26006105 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.01 | MG/KG | U | U | SED-D | 23.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 24 | REG | 0.02 | 26006105 | SULFIDE, TOTAL | | 11 | MG/KG | | | SED-D | 23.2 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 24 | REG | 0.02 | 26006105 | ZINC, EXTRACTABLE | 7440-66-6 | 20 | MG/KG | | | SED-D | 23.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 24 | REG | 0.02 | 26006199 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | 4,4'-DDE | 72-55-9 | 38 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | CLAM | | EPA 7041 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 24 | REG | 0.02 | 26006199 | ARSENIC, TOTAL | 7440-38-2 | 3.3 | MG/KG | | J | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 24 | REG | 0.02 | 26006199 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |



R0063126

C35-JC3

VOL 18

## Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | REG | 0.02 | 26006199 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 24 | REG | 0.02 | 26006199 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 24 | REG | 0.02 | 26006199 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 24 | REG | 0.02 | 26006199 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 24 | REG | 0.02 | 26006199 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | COPPER, TOTAL | 7440-50-8 | 1.3 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 24 | REG | 0.02 | 26006199 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 24 | REG | 0.02 | 26006199 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | LEAD, TOTAL | 7439-92-1 | 0.6 | MG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | LIPIDS | | 940 | MG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.6 | MG/KG |
| 24 | REG | 0.02 | 26006199 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | CLAM | | EPA 8071 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 24 | REG | 0.02 | 26006199 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 24 | REG | 0.02 | 26006199 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 24 | REG | 0.02 | 26006199 | MONOBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 24 | REG | 0.02 | 26006199 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 24 | REG | 0.02 | 26006199 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 40 | UG/KG |
| 24 | REG | 0.02 | 26006199 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 24 | REG | 0.02 | 26006199 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006199 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006199 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006199 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006199 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006199 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006199 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 0.02 | 26006199 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | U | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 0.02 | 26006199 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 24 | REG | 0.02 | 26006199 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 24 | REG | 0.02 | 26006199 | TRIBUTYLTIN | 688-73-3 | 3 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 24 | REG | 0.02 | 26006199 | ZINC, TOTAL | 7440-66-6 | 16 | MG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 1,2-DICHLOROBENZENE | 95-50-1 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 25 | REG | 0.02 | 26000801 | 1,3-DICHLOROBENZENE | 541-73-1 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 1,4-DICHLOROBENZENE | 106-46-7 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| | | | | | | | | | | | | | | | | | 100 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | REG | 0.02 | 26000801 | 2,4-DICHLOROPHENOL | 120-83-2 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2,4-DIMETHYLPHENOL | 105-67-9 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2,4-DINITROPHENOL | 51-28-5 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2,4-DINITROTOLUENE | 121-14-2 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2,6-DINITROTOLUENE | 606-20-2 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2-CHLORONAPHTHALENE | 91-58-7 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2-CHLOROPHENOL | 95-57-8 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2-METHYLPHENOL | 95-48-7 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 2-NITROPHENOL | 88-75-5 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 3- AND 4-METHYLPHENOL | 106-44-5 | 200 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 4,4'-DDE | 72-55-9 | 18 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | 4-NITROPHENOL | 100-02-7 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ACENAPHTHENE | 83-32-9 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ACENAPHTHYLENE | 208-96-8 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ANTHRACENE | 120-12-7 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BENZO(A)ANTHRACENE | 56-55-3 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BENZO(A)PYRENE | 50-32-8 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BENZO(B)FLUORANTHENE | 205-99-2 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BENZO(GHI)?ERYLENE | 191-24-2 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BENZO(K)FLUORANTHENE | 207-08-9 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 500 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | BUTYLBENZYLPHTHALATE | 85-68-7 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 500 | UG/KG |
| 25 | REG | 0.02 | 26000801 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | CHRYSENE | 218-01-9 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 25 | REG | 0.02 | 26000801 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | DI-N-BUTYLPHTHALATE | 84-74-2 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | DI-N-OCTYLPHTHALATE | 117-84-0 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | DIETHYLPHTHALATE | 84-66-2 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | DIMETHYLPHTHALATE | 131-11-3 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | FLUORANTHENE | 206-44-0 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | FLUORENE | 86-73-7 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Stock | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | REG | 0.02 | 26000801 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | HEXACHLOROBENZENE | 118-74-1 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | HEXACHLOROBUTADIENE | 87-68-3 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | HEXACHLOROETHANE | 67-72-1 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | ISOPHORONE | 78-59-1 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 25 | REG | 0.02 | 26000801 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 25 | REG | 0.02 | 26000801 | METHYLNAPHTHALENES | | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | N-NITROSODIMETHYLAMINE | 62-75-9 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | N-NITROSODIPHENYLAMINE | 86-30-6 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | NAPHTHALENE | 91-20-3 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | NITROBENZENE | 98-95-3 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PENTACHLOROPHENOL | 87-86-5 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PHENANTHRENE | 85-01-8 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PHENOL | 108-95-2 | 100 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 25 | REG | 0.02 | 26000801 | PYRENE | 129-00-0 | 70 | UG/KG | U | U | SED-D | 29.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 25 | REG | 0.02 | 26000801 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 29.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 25 | REG | 0.02 | 26000802 | ARSENIC, TOTAL | 7440-38-2 | 1.6 | MG/KG | | | SED-D | 29.7 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 25 | REG | 0.02 | 26000802 | BERYLLIUM, TOTAL | 7440-41-7 | 0.29 | MG/KG | | | SED-D | 29.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 25 | REG | 0.02 | 26000802 | CADMIUM, TOTAL | 7440-43-9 | 0.29 | MG/KG | | | SED-D | 29.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 25 | REG | 0.02 | 26000802 | CHROMIUM, TOTAL | 7440-47-3 | 21 | MG/KG | | | SED-D | 29.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 25 | REG | 0.02 | 26000802 | COPPER, TOTAL | 7440-50-8 | 30 | MG/KG | | | SED-D | 29.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 25 | REG | 0.02 | 26000802 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 29.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 25 | REG | 0.02 | 26000802 | LEAD, TOTAL | 7439-92-1 | 16 | MG/KG | | | SED-D | 29.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 25 | REG | 0.02 | 26000802 | MERCURY, TOTAL | 7439-97-6 | 0.11 | MG/KG | | | SED-D | 29.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 25 | REG | 0.02 | 26000802 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 29.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 25 | REG | 0.02 | 26000802 | NICKEL, TOTAL | 7440-02-0 | 16 | MG/KG | | | SED-D | 29.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 25 | REG | 0.02 | 26000802 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 29.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 25 | REG | 0.02 | 26000802 | SILVER, TOTAL | 7440-22-4 | 1.3 | MG/KG | | | SED-D | 29.7 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 25 | REG | 0.02 | 26000802 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 29.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 25 | REG | 0.02 | 26000802 | TRIBUTYLTIN | 688-73-3 | 16 | UG/KG | | | SED-D | 29.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 25 | REG | 0.02 | 26000802 | ZINC, TOTAL | 7440-66-6 | 73 | MG/KG | | | SED-D | 29.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 25 | REG | 0.02 | 26000803 | CLAY | | 8.78 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 1.95 MICRONS | | 93.09 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.192 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 125 MICRONS | | 28.473 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.104 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 16.63 MICRONS | | 64.981 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 19.877 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.055 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 250 MICRONS | | 6.979 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 91.26 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 76.833 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.456 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 500 MICRONS | | 0.495 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 88.835 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 89.18 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.285 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 58.283 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | GRAVEL | | 0.055 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | MEAN GRAIN SIZE | | 58.17 | UM | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | MEDIAN GRAIN SIZE | | 102.172 | UM | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | SAND | | 69.779 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000803 | SILT | | 21.445 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000804 | TOTAL ORGANIC CARBON | | 0.561 | PERCENT | | | SED-D | 29.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 25 | REG | 0.02 | 26000805 | ACID VOLATILE SULFIDE | | 85 | MG/KG | | | SED-D | 29.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 25 | REG | 0.02 | 26000805 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.4 | MG/KG | J | J | SED-D | 29.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 25 | REG | 0.02 | 26000805 | COPPER, EXTRACTABLE | 7440-50-8 | 17 | MG/KG | | | SED-D | 29.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.4 | MG/KG |
| 25 | REG | 0.02 | 26000805 | LEAD, EXTRACTABLE | 7439-92-1 | 11 | MG/KG | | | SED-D | 29.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 25 | REG | 0.02 | 26000805 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.01 | MG/KG | J | J | SED-D | 29.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 25 | REG | 0.02 | 26000805 | SULFIDE, TOTAL | | 84 | MG/KG | | | SED-D | 29.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 25 | REG | 0.02 | 26000805 | ZINC, EXTRACTABLE | 7440-66-6 | 31 | MG/KG | | | SED-D | 29.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 26 | REG | 0.02 | 26000701 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 29.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 26 | REG | 0.02 | 26000701 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 4,4'-DDD | 72-54-8 | 9.5 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 4,4'-DDE | 72-55-9 | 86 | UG/KG | | | SED-D | 47.9 | EPA 8090 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8090 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8090 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ALDRIN | 309-00-2 | 1 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | UJ | SED-D | 47.9 | EPA 8090 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |



R0063130

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | REG | 0.02 | 26000701 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BENZO(A)ANTHRACENE | 56-55-3 | 39 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BENZO(A)PYRENE | 50-32-8 | 66 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BENZO(B)FLUORANTHENE | 205-99-2 | 130 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BENZO(GHI)PERYLENE | 191-24-2 | 58 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BENZO(K)FLUORANTHENE | 207-08-9 | 120 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 26 | REG | 0.02 | 26000701 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | CHRYSENE | 218-01-9 | 88 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 26 | REG | 0.02 | 26000701 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | DI-N-OCTYLPHTHALATE | 117-84-0 | 38 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 19 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | FLUORANTHENE | 206-44-0 | 39 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 58 | UG/KG | | | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | LINDANE (GAMMA-BHC) | 58-89-9 | 2.5 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 26 | REG | 0.02 | 26000701 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 26 | REG | 0.02 | 26000701 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PCB-1260 | 11096-82-5 | 130 | UG/KG | | | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



R0063131

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | REG | 0.02 | 26000701 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 26 | REG | 0.02 | 26000701 | PYRENE | 129-00-0 | 38 | UG/KG | | J | SED-D | 47.9 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000701 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | J | SED-D | 47.9 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 26 | REG | 0.02 | 26000702 | ARSENIC, TOTAL | 7440-38-2 | 13 | MG/KG | | | SED-D | 47.9 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 26 | REG | 0.02 | 26000702 | BERYLLIUM, TOTAL | 7440-41-7 | 0.77 | MG/KG | | | SED-D | 47.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 26 | REG | 0.02 | 26000702 | CADMIUM, TOTAL | 7440-43-9 | 0.46 | MG/KG | | J | SED-D | 47.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 26 | REG | 0.02 | 26000702 | CHROMIUM, TOTAL | 7440-47-3 | 48 | MG/KG | | | SED-D | 47.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 26 | REG | 0.02 | 26000702 | COPPER, TOTAL | 7440-50-8 | 120 | MG/KG | | | SED-D | 47.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 26 | REG | 0.02 | 26000702 | LEAD, TOTAL | | 2 | UG/KG | U | UJ | SED-D | 47.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 26 | REG | 0.02 | 26000702 | MERCURY, TOTAL | 7439-92-1 | 56 | MG/KG | | | SED-D | 47.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 26 | REG | 0.02 | 26000702 | MONOBUTYLTIN | 7439-97-6 | 0.48 | MG/KG | | | SED-D | 47.9 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 26 | REG | 0.02 | 26000702 | NICKEL, TOTAL | | 2 | UG/KG | U | UJ | SED-D | 47.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 26 | REG | 0.02 | 26000702 | SELENIUM, TOTAL | 7440-02-0 | 33 | MG/KG | | | SED-D | 47.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 26 | REG | 0.02 | 26000702 | SILVER, TOTAL | 7782-49-2 | 1 | MG/KG | U | UJ | SED-D | 47.9 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 26 | REG | 0.02 | 26000702 | THALLIUM, TOTAL | 7440-22-4 | 19 | MG/KG | | J | SED-D | 47.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 26 | REG | 0.02 | 26000702 | TRIBUTYLTIN | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 47.9 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 26 | REG | 0.02 | 26000702 | ZINC, TOTAL | 688-73-3 | 13 | UG/KG | | UJ | SED-D | 47.9 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 26 | REG | 0.02 | 26000703 | CLAY | 7440-66-6 | 190 | MG/KG | | | SED-D | 47.9 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 32.305 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 100 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 1000 MICRONS | | 74.673 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 125 MICRONS | | 0.054 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 4.789 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 0.018 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 37.821 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 2000 MICRONS | | 2.016 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 250 MICRONS | | 0.011 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 1.07 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 67.695 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 353.55 MICRONS | | 22.775 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 500 MICRONS | | 0.677 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 0.403 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 15.797 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 53.738 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | CUMULATIVE PERCENT > 99.39 MICRONS | | 0.215 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | GRAVEL | | 10.207 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | MEAN GRAIN SIZE | | 0.011 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | MEDIAN GRAIN SIZE | | 0.161 | UM | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | SAND | | 9.194 | UM | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000703 | SILT | | 15.786 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000704 | TOTAL ORGANIC CARBON | | 51.896 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000705 | ACID VOLATILE SULFIDE | | 1.316 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 26 | REG | 0.02 | 26000705 | CADMIUM, EXTRACTABLE | | 110 | MG/KG | | J | SED-D | 47.9 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 26 | REG | 0.02 | 26000705 | COPPER, EXTRACTABLE | 7440-43-9 | 0.6 | MG/KG | U | UJ | SED-D | 47.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 26 | REG | 0.02 | 26000705 | LEAD, EXTRACTABLE | 7440-50-8 | 69 | MG/KG | | | SED-D | 47.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 26 | REG | 0.02 | 26000705 | MERCURY, EXTRACTABLE | 7439-92-1 | 44 | MG/KG | | | SED-D | 47.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 26 | REG | 0.02 | 26000705 | SULFIDE, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 47.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 26 | REG | 0.02 | 26000705 | ZINC, EXTRACTABLE | | 98 | MG/KG | | J | SED-D | 47.9 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| | | | | | 7440-66-6 | 120 | MG/KG | | | SED-D | 47.9 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| | | | | | | | | | | | | | | | | | 8 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 | REG | 0 02 | 26000101 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 2,4-DICHLOROPHENOL | 120-83-2 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 2,4-DIMETHYLPHENOL | 105-67-9 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 2-CHLOROPHENOL | 95-57-8 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 2-METHYLPHENOL | 95-48-7 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 3- AND 4-METHYLPHENOL | 108-44-5 | 70 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 4,4'-DDD | 72-54-8 | 12 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 4,4'-DDE | 72-55-9 | 100 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | 4-NITROPHENOL | 100-02-7 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | BENZO(A)PYRENE | 50-32-8 | 40 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | BENZO(B)FLUORANTHENE | 205-99-2 | 40 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | BENZO(K)FLUORANTHENE | 207-08-9 | 72 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 27 | REG | 0 02 | 26000101 | CHRYSENE | 218-01-9 | 40 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | FLUORANTHENE | 206-44-0 | 24 | UG/KG | J | J | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 27 | REG | 0 02 | 26000101 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PCB-1260 | 11096-82-5 | 430 | UG/KG | J | J | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PENTACHLOROPHENOL | 87-86-5 | 50 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PHENANTHRENE | 85-01-8 | 24 | UG/KG | J | J | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PHENOL | 108-95-2 | 90 | UG/KG | U | U | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 27 | REG | 0 02 | 26000101 | PYRENE | 129-00-0 | 48 | UG/KG | J | J | SED-D | 58.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000101 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 58.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 27 | REG | 0 02 | 26000102 | ARSENIC, TOTAL | 7440-38-2 | 13 | MG/KG | J | J | SED-D | 58.4 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 27 | REG | 0 02 | 26000102 | BERYLLIUM, TOTAL | 7440-41-7 | 0.72 | MG/KG | J | J | SED-D | 58.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 27 | REG | 0 02 | 26000102 | CADMIUM, TOTAL | 7440-43-9 | 0.48 | MG/KG | J | J | SED-D | 58.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 27 | REG | 0 02 | 26000102 | CHROMIUM, TOTAL | 7440-47-3 | 65 | MG/KG | J | J | SED-D | 58.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 27 | REG | 0 02 | 26000102 | COPPER, TOTAL | 7440-50-8 | 230 | MG/KG | J | J | SED-D | 58.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |



R0063133

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 | REG | 0.02 | 26000102 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 58.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 27 | REG | 0.02 | 26000102 | LEAD, TOTAL | 7439-92-1 | 75 | MG/KG | | | SED-D | 58.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 27 | REG | 0.02 | 26000102 | MERCURY, TOTAL | 7439-97-6 | 0.67 | MG/KG | | | SED-D | 58.4 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 27 | REG | 0.02 | 26000102 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 58.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 27 | REG | 0.02 | 26000102 | NICKEL, TOTAL | 7440-02-0 | 34 | MG/KG | | | SED-D | 58.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 27 | REG | 0.02 | 26000102 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | UJ | SED-D | 58.4 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 27 | REG | 0.02 | 26000102 | SILVER, TOTAL | 7440-22-4 | 3.4 | MG/KG | | J | SED-D | 58.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 27 | REG | 0.02 | 26000102 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 58.4 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 27 | REG | 0.02 | 26000102 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | UJ | SED-D | 58.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 27 | REG | 0.02 | 26000102 | ZINC, TOTAL | 7440-66-6 | 240 | MG/KG | | | SED-D | 58.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 27 | REG | 0.02 | 26000103 | CLAY | | 46.569 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 88.787 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.031 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 125 MICRONS | | 1.857 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.01 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 24.213 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.758 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 250 MICRONS | | 0.34 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 89.431 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 14.196 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.19 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 500 MICRONS | | 0.129 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 9.187 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 87.779 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.072 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 4.665 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | GRAVEL | | 0 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | MEAN GRAIN SIZE | | 4.759 | UM | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | MEDIAN GRAIN SIZE | | 4.547 | UM | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | SAND | | 9.187 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000103 | SILT | | 44.243 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000104 | TOTAL ORGANIC CARBON | | 1.892 | PERCENT | | | SED-D | 58.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 27 | REG | 0.02 | 26000105 | ACID VOLATILE SULFIDE | | 180 | MG/KG | J | UJ | SED-D | 58.4 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 27 | REG | 0.02 | 26000105 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.7 | MG/KG | U | UJ | SED-D | 58.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 27 | REG | 0.02 | 26000105 | COPPER, EXTRACTABLE | 7440-50-8 | 160 | MG/KG | | | SED-D | 58.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 27 | REG | 0.02 | 26000105 | LEAD, EXTRACTABLE | 7439-92-1 | 85 | MG/KG | | | SED-D | 58.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 27 | REG | 0.02 | 26000105 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | UJ | SED-D | 58.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 27 | REG | 0.02 | 26000105 | SULFIDE, TOTAL | | 240 | MG/KG | | UJ | SED-D | 58.4 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 27 | REG | 0.02 | 26000105 | ZINC, EXTRACTABLE | 7440-66-6 | 190 | MG/KG | | | SED-D | 58.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 28 | REG | 0.02 | 26000201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 28 | REG | 0.02 | 26000201 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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8 5 - J C

0 7 1 8 V

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | REG | 0.02 | 26000201 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 3- AND 4-METHYLPHENOL | 108-44-5 | 50 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 4,4'-DDD | 72-54-8 | 7 | UG/KG | J | J | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 4,4'-DDE | 72-55-9 | 54 | UG/KG | J | J | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | U | J | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ALDRIN | 309-00-2 | 2.3 | UG/KG | J | J | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BENZO(A)PYRENE | 50-32-8 | 38 | UG/KG | J | J | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BENZO(B)FLUORANTHENE | 205-99-2 | 38 | UG/KG | J | J | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BENZO(K)FLUORANTHENE | 207-08-9 | 38 | UG/KG | J | J | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 28 | REG | 0.02 | 26000201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | CHLORDANE | 57-74-9 | 4 | UG/KG | J | J | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 28 | REG | 0.02 | 26000201 | CHRYSENE | 218-01-9 | 38 | UG/KG | J | J | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | FLUORANTHENE | 206-44-0 | 16 | UG/KG | J | J | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | REG | 0.02 | 26000201 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 28 | REG | 0.02 | 26000201 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 28 | REG | 0.02 | 26000201 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PCB-1260 | 11096-82-5 | 140 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000201 | PYRENE | 129-00-0 | 18 | UG/KG | J | J | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000201 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 44.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 28 | REG | 0.02 | 26000202 | ARSENIC, TOTAL | 7440-38-2 | 12 | MG/KG | | | SED-D | 44.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000202 | BERYLLIUM, TOTAL | 7440-41-7 | 0.54 | MG/KG | | | SED-D | 44.1 | EPA 7000 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 28 | REG | 0.02 | 26000202 | CADMIUM, TOTAL | 7440-43-9 | 0.41 | MG/KG | | | SED-D | 44.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 28 | REG | 0.02 | 26000202 | CHROMIUM, TOTAL | 7440-47-3 | 38 | MG/KG | | | SED-D | 44.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 28 | REG | 0.02 | 26000202 | COPPER, TOTAL | 7440-50-8 | 110 | MG/KG | | | SED-D | 44.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 28 | REG | 0.02 | 26000202 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 44.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 28 | REG | 0.02 | 26000202 | LEAD, TOTAL | 7439-92-1 | 43 | MG/KG | | | SED-D | 44.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 28 | REG | 0.02 | 26000202 | MERCURY, TOTAL | 7439-97-6 | 0.34 | MG/KG | | | SED-D | 44.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 28 | REG | 0.02 | 26000202 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 44.1 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 28 | REG | 0.02 | 26000202 | NICKEL, TOTAL | 7440-02-0 | 27 | MG/KG | | | SED-D | 44.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 28 | REG | 0.02 | 26000202 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | | | SED-D | 44.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 28 | REG | 0.02 | 26000202 | SILVER, TOTAL | 7440-22-4 | 5.2 | MG/KG | | | SED-D | 44.1 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 28 | REG | 0.02 | 26000202 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | | | SED-D | 44.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 28 | REG | 0.02 | 26000202 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | U | SED-D | 44.1 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 28 | REG | 0.02 | 26000202 | ZINC, TOTAL | 7440-66-6 | 160 | MG/KG | | | SED-D | 44.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 28 | REG | 0.02 | 26000203 | CLAY | | 22.971 | PERCENT | | | SED-D | 44.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 28 | REG | 0.02 | 26000201 | CUMULATIVE PERCENT > 1.95 MICRONS | | 88.707 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.088 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 125 MICRONS | | 7.566 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.004 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 89.391 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.866 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 250 MICRONS | | 0.459 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 77.089 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 46.883 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0.02 | 26000203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.094 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | REG | 0 02 | 26000203 | CUMULATIVE PERCENT > 500 MICRONS | | 0.048 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 32.163 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 88.494 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.03 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 20.172 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | GRAVEL | | 0 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | MEAN GRAIN SIZE | | 13.762 | UM | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | MEDIAN GRAIN SIZE | | 25.28 | UM | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | SAND | | 32.163 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000203 | SILT | | 44.985 | PERCENT | | | SED-D | 44.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 28 | REG | 0 02 | 26000204 | TOTAL ORGANIC CARBON | | 0.711 | PERCENT | | | SED-D | 44.1 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 28 | REG | 0 02 | 26000205 | ACID VOLATILE SULFIDE | | 70 | MG/KG | | J | SED-D | 44.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 9 | MG/KG |
| 28 | REG | 0 02 | 26000205 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.72 | MG/KG | | | SED-D | 44.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 5 | MG/KG |
| 28 | REG | 0 02 | 26000205 | COPPER, EXTRACTABLE | 7440-50-8 | 59 | MG/KG | | | SED-D | 44.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 9 | MG/KG |
| 28 | REG | 0 02 | 26000205 | LEAD, EXTRACTABLE | 7439-92-1 | 36 | MG/KG | | | SED-D | 44.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 28 | REG | 0 02 | 26000205 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | J | SED-D | 44.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 02 | MG/KG |
| 28 | REG | 0 02 | 26000205 | SULFIDE, TOTAL | | 50 | MG/KG | | | SED-D | 44.1 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 28 | REG | 0 02 | 26000205 | ZINC, EXTRACTABLE | 7440-66-6 | 100 | MG/KG | | | SED-D | 44.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 29 | REG | 0 02 | 26006001 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 4,4'-DDD | 72-54-8 | 0.9 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 4,4'-DDE | 72-55-9 | 43 | UG/KG | | | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 9 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 9 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0 9 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0 02 | 26006001 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0 02 | 26006001 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0 02 | 26006001 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | UJ | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 29 | REG | 0 02 | 26006001 | BENZO(A)PYRENE | 50-32-8 | 19 | UG/KG | | | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006001 | BENZO(B)FLUORANTHENE | 205-99-2 | 19 | UG/KG | | | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 0.02 | 26006001 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | BENZO(K)FLUORANTHENE | 207-08-9 | 37 | UG/KG | | | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | BETA BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 29 | REG | 0.02 | 26006001 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0.02 | 26006001 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 29 | REG | 0.02 | 26006001 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0.02 | 26006001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0.02 | 26006001 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 29 | REG | 0.02 | 26006001 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 29 | REG | 0.02 | 26006001 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006001 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 0 02 | 26006001 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 46.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0 02 | 26006002 | ANTIMONY, TOTAL | 7440-36-0 | 0.9 | MG/KG | U | U | SED-D | 46.1 | EPA 7041 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006002 | ARSENIC, TOTAL | 7440-38-2 | 4.8 | MG/KG | | | SED-D | 46.1 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006002 | BERYLLIUM, TOTAL | 7440-41-7 | 0.56 | MG/KG | | | SED-D | 46.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 29 | REG | 0 02 | 26006002 | CADMIUM, TOTAL | 7440-43-9 | 0.33 | MG/KG | | | SED-D | 46.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 29 | REG | 0 02 | 26006002 | CHROMIUM, TOTAL | 7440-47-3 | 33 | MG/KG | | | SED-D | 46.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006002 | COPPER, TOTAL | 7440-50-8 | 52 | MG/KG | | | SED-D | 46.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 29 | REG | 0 02 | 26006002 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 46.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 29 | REG | 0 02 | 26006002 | LEAD, TOTAL | 7439-92-1 | 30 | MG/KG | | | SED-D | 46.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 29 | REG | 0 02 | 26006002 | MERCURY, TOTAL | 7439-97-6 | 0.13 | MG/KG | | | SED-D | 46.1 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 29 | REG | 0 02 | 26006002 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 46.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 29 | REG | 0 02 | 26006002 | NICKEL, TOTAL | 7440-02-0 | 24 | MG/KG | | | SED-D | 46.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 29 | REG | 0 02 | 26006002 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | SED-D | 46.1 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006002 | SILVER, TOTAL | 7440-22-4 | 1.9 | MG/KG | | | SED-D | 46.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006002 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | U | SED-D | 46.1 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006002 | TRIBUTYLTIN | 688-73-3 | 3.2 | UG/KG | | UJ | SED-D | 46.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 29 | REG | 0 02 | 26006002 | ZINC, TOTAL | 7440-66-6 | 110 | MG/KG | | | SED-D | 46.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 29 | REG | 0 02 | 26006003 | CLAY | | 23.373 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 1.95 MICRONS | | 81.752 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.014 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 125 MICRONS | | 12.397 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 96.129 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 176.78 MICRONS | | 4.674 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 250 MICRONS | | 1.258 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 78.627 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 41.325 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.187 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 500 MICRONS | | 0.075 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 29.557 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 88.186 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.037 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 20.477 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | GRAVEL | | 0 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | MEAN GRAIN SIZE | | 13.301 | UM | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | MEDIAN GRAIN SIZE | | 20.819 | UM | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | SAND | | 29.557 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006003 | SILT | | 47.07 | PERCENT | | | SED-D | 46.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 0 02 | 26006004 | TOTAL ORGANIC CARBON | | 0.639 | PERCENT | | | SED-D | 46.1 | MENZELAVACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 29 | REG | 0 02 | 26006005 | ACID VOLATILE SULFIDE | | 170 | MG/KG | | J | SED-D | 46.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006005 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.93 | MG/KG | | | SED-D | 46.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 29 | REG | 0 02 | 26006005 | COPPER, EXTRACTABLE | 7440-50-8 | 43 | MG/KG | | | SED-D | 46.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006005 | LEAD, EXTRACTABLE | 7439-92-1 | 32 | MG/KG | | | SED-D | 46.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 29 | REG | 0 02 | 26006005 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.037 | MG/KG | | | SED-D | 46.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 29 | REG | 0 02 | 26006005 | SULFIDE, TOTAL | | 150 | MG/KG | | | SED-D | 46.1 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 29 | REG | 0 02 | 26006005 | ZINC, EXTRACTABLE | 7440-66-6 | 100 | MG/KG | | | SED-D | 46.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 29 | REG | 0 02 | 26006099 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0 02 | 26006099 | 4,4'-DDE | 72-55-9 | 20 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0 02 | 26006099 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 0.02 | 26006099 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | J | CLAM | | EPA 7041 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 29 | REG | 0.02 | 26006099 | ARSENIC, TOTAL | 7440-38-2 | 2.9 | MG/KG | | J | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 29 | REG | 0.02 | 26006099 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 29 | REG | 0.02 | 26006099 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 29 | REG | 0.02 | 26006099 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 29 | REG | 0.02 | 26006099 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | | J | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 29 | REG | 0.02 | 26006099 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | COPPER, TOTAL | 7440-50-8 | 1.1 | MG/KG | | J | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 29 | REG | 0.02 | 26006099 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 0.02 | 26006099 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | | J | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 29 | REG | 0.02 | 26006099 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 29 | REG | 0.02 | 26006099 | LIPIDS | | 1040 | MG/KG | | J | CLAM | | EPA 9071 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 29 | REG | 0.02 | 26006099 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | J | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 29 | REG | 0.02 | 26006099 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 29 | REG | 0.02 | 26006099 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | MONOBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 0.02 | 26006099 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 0.02 | 26006099 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | | J | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 29 | REG | 0.02 | 26006099 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 0.02 | 26006099 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 0.02 | 26006099 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 0.02 | 26006099 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 0.02 | 26006099 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 0.02 | 26006099 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 0.02 | 26006099 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 0.02 | 26006099 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 0.02 | 26006099 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 0.02 | 26006099 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 29 | REG | 0.02 | 26006099 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | U | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 29 | REG | 0.02 | 26006099 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 29 | REG | 0.02 | 26006099 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 0.02 | 26006099 | TRIBUTYLTIN | 688-73-3 | 1.5 | UG/KG | | J | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 0.02 | 26006099 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 30 | REG | 0.02 | 26000501 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 4,4'-DDD | 72-54-8 | 6.9 | UG/KG | | J | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 4,4'-DDE | 72-55-9 | 33 | UG/KG | | J | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | UJ | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | UJ | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | UJ | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BENZO(A)PYRENE | 50-32-8 | 33 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BENZO(B)FLUORANTHENE | 205-99-2 | 33 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BENZO(K)FLUORANTHENE | 207-08-9 | 33 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | UJ | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 30 | REG | 0.02 | 26000501 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 30 | REG | 0.02 | 26000501 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | UJ | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 20 | UG/KG | U | UJ | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | REG | 0.02 | 26000501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | FLUORANTHENE | 206-44-0 | 16 | UG/KG | J | J | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 30 | REG | 0.02 | 26000501 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | J | J | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 30 | REG | 0.02 | 26000501 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PCB-1260 | 11096-82-5 | 51 | UG/KG | J | J | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000501 | PYRENE | 129-00-0 | 33 | UG/KG | J | J | SED-D | 39 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 30 | REG | 0.02 | 26000501 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 39 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000502 | ARSENIC, TOTAL | 7440-38-2 | 7.9 | MG/KG | | | SED-D | 39 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 30 | REG | 0.02 | 26000502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.49 | MG/KG | | | SED-D | 39 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 30 | REG | 0.02 | 26000502 | CADMIUM, TOTAL | 7440-43-9 | 0.3 | MG/KG | | J | SED-D | 39 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 30 | REG | 0.02 | 26000502 | CHROMIUM, TOTAL | 7440-47-3 | 33 | MG/KG | | | SED-D | 39 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 30 | REG | 0.02 | 26000502 | COPPER, TOTAL | 7440-50-8 | 52 | MG/KG | | | SED-D | 39 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 30 | REG | 0.02 | 26000502 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 39 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 30 | REG | 0.02 | 26000502 | LEAD, TOTAL | 7439-92-1 | 31 | MG/KG | | | SED-D | 39 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 30 | REG | 0.02 | 26000502 | MERCURY, TOTAL | 7439-97-6 | 0.23 | MG/KG | | | SED-D | 39 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 30 | REG | 0.02 | 26000502 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 39 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 30 | REG | 0.02 | 26000502 | NICKEL, TOTAL | 7440-02-0 | 21 | MG/KG | | | SED-D | 39 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 30 | REG | 0.02 | 26000502 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | U | SED-D | 39 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 30 | REG | 0.02 | 26000502 | SILVER, TOTAL | 7440-22-4 | 2 | MG/KG | U | U | SED-D | 39 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | REG | 0.02 | 26000502 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 39 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 30 | REG | 0.02 | 26000502 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | UJ | SED-D | 39 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 30 | REG | 0.02 | 26000502 | ZINC, TOTAL | 7440-66-6 | 120 | MG/KG | | | SED-D | 39 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 30 | REG | 0.02 | 26000503 | CLAY | | 17.3 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 1.95 MICRONS | | 86.674 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.051 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 125 MICRONS | | 2.738 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.009 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 66.835 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.835 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 250 MICRONS | | 0.311 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 82.7 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 50.224 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.183 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 500 MICRONS | | 0.094 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 28.731 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 78.309 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.068 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | CUMULATIVE PERCENT > 89.39 MICRONS | | 11.488 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | GRAVEL | | 0 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | MEAN GRAIN SIZE | | 15.76 | UM | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | MEDIAN GRAIN SIZE | | 31.458 | UM | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | SAND | | 69.731 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000503 | SILT | | 55.969 | PERCENT | | | SED-D | 39 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 30 | REG | 0.02 | 26000504 | TOTAL ORGANIC CARBON | | 0.52 | PERCENT | | | SED-D | 39 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 30 | REG | 0.02 | 26000505 | ACID VOLATILE SULFIDE | | 51 | MG/KG | | J | SED-D | 39 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 30 | REG | 0.02 | 26000505 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | U | SED-D | 39 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 30 | REG | 0.02 | 26000505 | COPPER, EXTRACTABLE | 7440-50-8 | 33 | MG/KG | | | SED-D | 39 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 30 | REG | 0.02 | 26000505 | LEAD, EXTRACTABLE | 7439-92-1 | 23 | MG/KG | | | SED-D | 39 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 30 | REG | 0.02 | 26000505 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 39 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 30 | REG | 0.02 | 26000505 | SULFIDE, TOTAL | | 44 | MG/KG | | J | SED-D | 39 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 30 | REG | 0.02 | 26000505 | ZINC, EXTRACTABLE | 7440-66-6 | 67 | MG/KG | | | SED-D | 39 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 31 | REG | 0.02 | 26000301 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0.02 | 26000301 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | U | SED-D | 36.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | REG | 0 02 | 26000301 | 4,4'-DDD | 72-54-8 | 3.8 | UG/KG | | J | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | 4,4'-DDE | 72-55-9 | 31 | UG/KG | | | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0 02 | 26000301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 31 | REG | 0 02 | 26000301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 31 | REG | 0 02 | 26000301 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0 02 | 26000301 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 31 | REG | 0 02 | 26000301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 31 | REG | 0 02 | 26000301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0 02 | 26000301 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0 02 | 26000301 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | METHOXYCHLOR | 72-43-5 | 8 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | METHYLNAPHTHALENES | | 80 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 31 | REG | 0 02 | 26000301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| | | | | | | | | | | | | | | | | | 20 | UG/KG |



R0063144

Surface Sediment and Clam Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | REG | 0 02 | 26000301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PHENOL | 108-95-2 | 94 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0 02 | 26000301 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000301 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 38.5 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 31 | REG | 0 02 | 26000302 | ARSENIC, TOTAL | 7440-38-2 | 9.2 | MG/KG | | | SED-D | 38.5 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.31 | MG/KG | | | SED-D | 38.5 | EPA 7080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 31 | REG | 0 02 | 26000302 | CADMIUM, TOTAL | 7440-43-9 | 0.14 | MG/KG | | J | SED-D | 38.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 31 | REG | 0 02 | 26000302 | CHROMIUM, TOTAL | 7440-47-3 | 22 | MG/KG | | | SED-D | 38.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 31 | REG | 0 02 | 26000302 | COPPER, TOTAL | 7440-50-8 | 30 | MG/KG | | | SED-D | 38.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 31 | REG | 0 02 | 26000302 | DIBUTYLTIN | | 2 | UG/KG | U | J | SED-D | 38.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 31 | REG | 0 02 | 26000302 | LEAD, TOTAL | 7439-92-1 | 16 | MG/KG | | | SED-D | 38.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 31 | REG | 0 02 | 26000302 | MERCURY, TOTAL | 7439-97-6 | 0.13 | MG/KG | | | SED-D | 38.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 31 | REG | 0 02 | 26000302 | MONOBUTYLTIN | | 2 | UG/KG | U | J | SED-D | 38.5 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 31 | REG | 0 02 | 26000302 | NICKEL, TOTAL | 7440-02-0 | 16 | MG/KG | | | SED-D | 38.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 31 | REG | 0 02 | 26000302 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | J | SED-D | 38.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 31 | REG | 0 02 | 26000302 | SILVER, TOTAL | 7440-22-4 | 1.4 | MG/KG | | | SED-D | 38.5 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 31 | REG | 0 02 | 26000302 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | J | SED-D | 38.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 31 | REG | 0 02 | 26000302 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | J | SED-D | 38.5 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 31 | REG | 0 02 | 26000302 | ZINC, TOTAL | 7440-66-6 | 60 | MG/KG | | | SED-D | 38.5 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 31 | REG | 0 02 | 26000303 | CLAY | | 60 | MG/KG | | | SED-D | 38.5 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 0 98 MICRONS | | 50.611 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 1.95 MICRONS | | 100 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 1000 MICRONS | | 84.161 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 125 MICRONS | | 0.443 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 40.544 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 15 63 MICRONS | | 0.169 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 65.668 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 2000 MICRONS | | 20.433 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 250 MICRONS | | 0 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 19.083 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 79.489 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 66.082 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 500 MICRONS | | 13.527 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 3.793 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 53.057 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 72.764 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | GRAVEL | | 1.303 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | MEAN GRAIN SIZE | | 48.184 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0 02 | 26000303 | | | 0 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| | | | | | | 24.699 | UM | | | | | | | | | | | |



R0063145

VOL 18

CT-JCD

Surface Sediment and Clam Tissue Analytical Data

CTO-0096

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | REG | 0.02 | 26000303 | MEDIAN GRAIN SIZE | | 77.575 | UM | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0.02 | 26000303 | SAND | | 53.057 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0.02 | 26000303 | SILT | | 28.432 | PERCENT | | | SED-D | 38.5 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 31 | REG | 0.02 | 26000304 | TOTAL ORGANIC CARBON | | 0.487 | PERCENT | | | SED-D | 38.5 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 31 | REG | 0.02 | 26000305 | ACID VOLATILE SULFIDE | | 19 | MG/KG | | | SED-D | 39.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 31 | REG | 0.02 | 26000305 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | J2 | SED-D | 38.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 31 | REG | 0.02 | 26000305 | COPPER, EXTRACTABLE | 7440-50-8 | 24 | MG/KG | | | SED-D | 38.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 31 | REG | 0.02 | 26000305 | LEAD, EXTRACTABLE | 7439-92-1 | 16 | MG/KG | | | SED-D | 38.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 31 | REG | 0.02 | 26000305 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | J2 | SED-D | 38.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 31 | REG | 0.02 | 26000305 | SULFIDE, TOTAL | | 15 | MG/KG | | | SED-D | 38.5 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 31 | REG | 0.02 | 26000305 | ZINC, EXTRACTABLE | 7440-66-6 | 41 | MG/KG | | | SED-D | 38.5 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 32 | REG | 0.02 | 26000601 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 4,4'-DDD | 72-54-8 | 3 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 4,4'-DDE | 72-55-9 | 27 | UG/KG | | | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 32 | REG | 0.02 | 26000601 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | J2 | SED-D | 38.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |



R0063146

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | REG | 0.02 | 26000601 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 32 | REG | 0.02 | 26000601 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | FLUORENE | 86-73-7 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 32 | REG | 0.02 | 26000601 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 32 | REG | 0.02 | 26000601 | METHYLNAPHTHALENES | | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PHENOL | 108-95-2 | 30 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 32 | REG | 0.02 | 26000601 | PYRENE | 129-00-0 | 20 | UG/KG | U | R | SED-D | 36.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000601 | TOXAPHENE | 8001-35-2 | 80 | UG/KG | U | R | SED-D | 36.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 32 | REG | 0.02 | 26000602 | ARSENIC, TOTAL | 7440-38-2 | 8 | MG/KG | | | SED-D | 36.3 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 32 | REG | 0.02 | 26000602 | BERYLLIUM, TOTAL | 7440-41-7 | 0.31 | MG/KG | | | SED-D | 36.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 32 | REG | 0.02 | 26000602 | CADMIUM, TOTAL | 7440-43-9 | 0.13 | MG/KG | | J | SED-D | 36.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 32 | REG | 0.02 | 26000602 | CHROMIUM, TOTAL | 7440-47-3 | 82 | MG/KG | | | SED-D | 36.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 32 | REG | 0.02 | 26000602 | COPPER, TOTAL | 7440-50-8 | 27 | MG/KG | | | SED-D | 36.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 32 | REG | 0.02 | 26000602 | DIBUTYLTIN | | 2 | UG/KG | U | R | SED-D | 36.3 | GC-PFD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 32 | REG | 0.02 | 26000602 | LEAD, TOTAL | 7439-92-1 | 17 | MG/KG | | | SED-D | 36.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | REG | 0.02 | 26000602 | MERCURY, TOTAL | 7439-97-6 | 0.11 | MG/KG | | | SED-D | 38.3 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 32 | REG | 0.02 | 26000602 | MONOBUTYLTIN | | 2 | UG/KG | U | W | SED-D | 38.3 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 32 | REG | 0.02 | 26000602 | NICKEL, TOTAL | 7440-02-0 | 16 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 32 | REG | 0.02 | 26000602 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | U | SED-D | 38.3 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 32 | REG | 0.02 | 26000602 | SILVER, TOTAL | 7440-22-4 | 1.4 | MG/KG | | J | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 32 | REG | 0.02 | 26000602 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 38.3 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 32 | REG | 0.02 | 26000602 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | | W | SED-D | 38.3 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 32 | REG | 0.02 | 26000602 | ZINC, TOTAL | 7440-66-6 | 63 | MG/KG | | | SED-D | 38.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 32 | REG | 0.02 | 26000603 | CLAY | | 11.005 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 1.95 MICRONS | | 92.03 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.086 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 125 MICRONS | | 63.392 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.039 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 82.491 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 39.17 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 250 MICRONS | | 18.397 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 88.995 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 78.01 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 353.55 MICRONS | | 8.372 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 500 MICRONS | | 1.425 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 76.131 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 88.391 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.349 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 72.248 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | GRAVEL | | 0 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | MEAN GRAIN SIZE | | 63.644 | UM | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | MEDIAN GRAIN SIZE | | 151.4 | UM | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | SAND | | 76.131 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000603 | SILT | | 12.983 | PERCENT | | | SED-D | 38.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 32 | REG | 0.02 | 26000604 | TOTAL ORGANIC CARBON | | 0.436 | PERCENT | | | SED-D | 38.3 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 32 | REG | 0.02 | 26000605 | ACID VOLATILE SULFIDE | | 42 | MG/KG | | J | SED-D | 38.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 32 | REG | 0.02 | 26000605 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | U | SED-D | 38.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 32 | REG | 0.02 | 26000605 | COPPER, EXTRACTABLE | 7440-50-8 | 17 | MG/KG | | | SED-D | 38.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 32 | REG | 0.02 | 26000605 | LEAD, EXTRACTABLE | 7439-92-1 | 13 | MG/KG | | | SED-D | 38.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 32 | REG | 0.02 | 26000605 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 38.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 32 | REG | 0.02 | 26000605 | SULFIDE, TOTAL | | 41 | MG/KG | | J | SED-D | 38.3 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 32 | REG | 0.02 | 26000605 | ZINC, EXTRACTABLE | 7440-66-6 | 31 | MG/KG | | | SED-D | 38.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 33 | REG | 0.02 | 26000401 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | REG | 0.02 | 26000401 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 3- AND 4-METHYLPHENOL | 108-44-5 | 50 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 4,4'-DDD | 72-54-8 | 4.8 | UG/KG | | | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 4,4'-DDE | 72-55-9 | 41 | UG/KG | | J | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BENZO(G,H,I)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | U | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 33 | REG | 0.02 | 26000401 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 33 | REG | 0.02 | 26000401 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0.02 | 26000401 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0.02 | 26000401 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0.02 | 26000401 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | REG | 0 02 | 26000401 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 33 | REG | 0 02 | 26000401 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | UJ | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 33 | REG | 0 02 | 26000401 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PCB-1260 | 11096-82-5 | 31 | UG/KG | | J | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000401 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 33 | REG | 0 02 | 26000401 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 42.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000402 | ARSENIC, TOTAL | 7440-38-2 | 8.8 | MG/KG | | | SED-D | 42.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 33 | REG | 0 02 | 26000402 | BERYLLIUM, TOTAL | 7440-41-7 | 0.69 | MG/KG | | | SED-D | 42.1 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 33 | REG | 0 02 | 26000402 | CADMIUM, TOTAL | 7440-43-9 | 0.24 | MG/KG | | J | SED-D | 42.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 33 | REG | 0 02 | 26000402 | CHROMIUM, TOTAL | 7440-47-3 | 35 | MG/KG | | | SED-D | 42.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 33 | REG | 0 02 | 26000402 | COPPER, TOTAL | 7440-50-8 | 50 | MG/KG | | | SED-D | 42.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 33 | REG | 0 02 | 26000402 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 42.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 33 | REG | 0 02 | 26000402 | LEAD, TOTAL | 7439-92-1 | 26 | MG/KG | | | SED-D | 42.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 33 | REG | 0 02 | 26000402 | MERCURY, TOTAL | 7439-97-6 | 0.26 | MG/KG | | | SED-D | 42.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 33 | REG | 0 02 | 26000402 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 42.1 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 33 | REG | 0 02 | 26000402 | NICKEL, TOTAL | 7440-02-0 | 26 | MG/KG | | | SED-D | 42.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 33 | REG | 0 02 | 26000402 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | UJ | SED-D | 42.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 33 | REG | 0 02 | 26000402 | SILVER, TOTAL | 7440-22-4 | 2.2 | MG/KG | | J | SED-D | 42.1 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 33 | REG | 0 02 | 26000402 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | UJ | SED-D | 42.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 33 | REG | 0 02 | 26000402 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | UJ | SED-D | 42.1 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 33 | REG | 0 02 | 26000402 | ZINC, TOTAL | 7440-66-6 | 110 | MG/KG | | | SED-D | 42.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 33 | REG | 0 02 | 26000403 | CLAY | | 28.36 | PERCENT | | | SED-D | 42.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 79.131 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.116 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 125 MICRONS | | 7.65 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.097 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 60.218 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.558 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 250 MICRONS | | 0.912 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 71.62 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 38.509 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.449 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 500 MICRONS | | 0.31 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 84.492 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 62.232 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.204 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | CUMULATIVE PERCENT > 88.39 MICRONS | | 15.314 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | GRAVEL | | 0 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | MEAN GRAIN SIZE | | 10.991 | UM | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | MEDIAN GRAIN SIZE | | 15.798 | UM | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | SAND | | 24.492 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000403 | SILT | | 47.128 | PERCENT | | | SED-D | 42.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 33 | REG | 0 02 | 26000404 | TOTAL ORGANIC CARBON | | 0.585 | PERCENT | | | SED-D | 42.1 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 33 | REG | 0 02 | 26000405 | ACID VOLATILE SULFIDE | | 31 | MG/KG | | J | SED-D | 42.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 9 | MG/KG |
| 33 | REG | 0 02 | 26000405 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.5 | MG/KG | U | U | SED-D | 42.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 33 | REG | 0 02 | 26000405 | COPPER, EXTRACTABLE | 7440-50-8 | 29 | MG/KG | | | SED-D | 42.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 33 | REG | 0 02 | 26000405 | LEAD, EXTRACTABLE | 7439-92-1 | 21 | MG/KG | | | SED-D | 42.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 33 | REG | 0 02 | 26000405 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 42.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 33 | REG | 0 02 | 26000405 | SULFIDE, TOTAL | | 31 | MG/KG | | J | SED-D | 42.1 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 33 | REG | 0 02 | 26000405 | ZINC, EXTRACTABLE | 7440-66-6 | 40 | MG/KG | | | SED-D | 42.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 41 | REG | 0 02 | 15950701 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | UJ | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 4,4'-DDD | 72-54-8 | 20 | UG/KG | | | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 4,4'-DDE | 72-55-9 | 110 | UG/KG | | | SED-D | 49.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 49.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ACENAPHTHYLENE | 208-96-8 | 40 | UG/KG | U | U | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ALDRIN | 309-00-2 | 1 | UG/KG | U | UJ | SED-D | 49.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | UJ | SED-D | 49.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ANTHRACENE | 120-12-7 | 60 | UG/KG | | | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | UJ | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BENZO(A)ANTHRACENE | 56-55-3 | 140 | UG/KG | | | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BENZO(A)PYRENE | 50-32-8 | 340 | UG/KG | | | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BENZO(B)FLUORANTHENE | 205-99-2 | 440 | UG/KG | | | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BENZO(GHI)PERYLENE | 191-24-2 | 160 | UG/KG | | | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BENZO(K)FLUORANTHENE | 207-08-9 | 400 | UG/KG | | | SED-D | 49.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 41 | REG | 0 02 | 15950701 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 41 | REG | 0 02 | 15950701 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 41 | REG | 0 02 | 15950701 | CHRYSENE | 218-01-9 | 220 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | DI-N OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 80 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | FLUORANTHENE | 206-44-0 | 140 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 160 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 41 | REG | 0 02 | 15950701 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 41 | REG | 0 02 | 15950701 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PCB-1260 | 11096-82-5 | 220 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PHENANTHRENE | 85-01-8 | 80 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950701 | PYRENE | 129-00-0 | 140 | UG/KG | U | U | SED-D | 49 7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 41 | REG | 0 02 | 15950701 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 49 7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 41 | REG | 0 02 | 15950702 | ARSENIC, TOTAL | 7440-38-2 | 11 | MG/KG | | J | SED-D | 49 7 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 41 | REG | 0.02 | 15950702 | BERYLLIUM, TOTAL | 7440-41-7 | 0.6 | MG/KG | | | SED-D | 49.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 41 | REG | 0.02 | 15950702 | CADMIUM, TOTAL | 7440-43-9 | 0.72 | MG/KG | | J | SED-D | 49.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 41 | REG | 0.02 | 15950702 | CHROMIUM, TOTAL | 7440-47-3 | 44 | MG/KG | | | SED-D | 49.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 41 | REG | 0.02 | 15950702 | COPPER, TOTAL | 7440-50-8 | 120 | MG/KG | | | SED-D | 49.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 41 | REG | 0.02 | 15950702 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 49.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 41 | REG | 0.02 | 15950702 | LEAD, TOTAL | 7439-92-1 | 74 | MG/KG | | | SED-D | 49.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 41 | REG | 0.02 | 15950702 | MERCURY, TOTAL | 7439-97-6 | 1.1 | MG/KG | | | SED-D | 49.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 41 | REG | 0.02 | 15950702 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 49.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 41 | REG | 0.02 | 15950702 | NICKEL, TOTAL | 7440-02-0 | 20 | MG/KG | | | SED-D | 49.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 41 | REG | 0.02 | 15950702 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 49.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 41 | REG | 0.02 | 15950702 | SILVER, TOTAL | 7440-22-4 | 2.4 | MG/KG | | | SED-D | 49.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 41 | REG | 0.02 | 15950702 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 49.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 41 | REG | 0.02 | 15950702 | TRIBUTYLTIN | 688-73-3 | 17 | UG/KG | | U | SED-D | 49.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 41 | REG | 0.02 | 15950702 | ZINC, TOTAL | 7440-66-6 | 220 | MG/KG | | J | SED-D | 49.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 41 | REG | 0.02 | 15950703 | CLAY | | 29.679 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 77.94 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.081 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 125 MICRONS | | 4.378 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.03 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 46.439 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.959 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.03 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 250 MICRONS | | 1.308 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 70.322 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 34.498 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.898 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 500 MICRONS | | 0.619 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 23.38 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 59.822 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.304 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | CUMULATIVE PERCENT > 88.39 MICRONS | | 11.439 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | GRAVEL | | 0.03 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | MEAN GRAIN SIZE | | 10.013 | UM | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | MEDIAN GRAIN SIZE | | 12.993 | UM | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | SAND | | 23.349 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950703 | SILT | | 46.942 | PERCENT | | | SED-D | 49.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 41 | REG | 0.02 | 15950704 | TOTAL ORGANIC CARBON | | 1.072 | PERCENT | | | SED-D | 49.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 41 | REG | 0.02 | 15950705 | ACID VOLATILE SULFIDE | | 220 | MG/KG | | J | SED-D | 49.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 41 | REG | 0.02 | 15950705 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.8 | MG/KG | | | SED-D | 49.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 41 | REG | 0.02 | 15950705 | COPPER, EXTRACTABLE | 7440-50-8 | 120 | MG/KG | | | SED-D | 49.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 41 | REG | 0.02 | 15950705 | LEAD, EXTRACTABLE | 7439-92-1 | 72 | MG/KG | | | SED-D | 49.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 41 | REG | 0.02 | 15950705 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.08 | MG/KG | | J | SED-D | 49.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 41 | REG | 0.02 | 15950705 | SULFIDE, TOTAL | | 120 | MG/KG | | | SED-D | 49.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 41 | REG | 0.02 | 15950705 | ZINC, EXTRACTABLE | 7440-66-6 | 200 | MG/KG | | | SED-D | 49.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 42 | REG | 0.02 | 26010101 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 1,2-DICHLOROBENZENE | 95-50-1 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 1,3-DICHLOROBENZENE | 541-73-1 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 1,4-DICHLOROBENZENE | 106-46-7 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2,4-DICHLOROPHENOL | 120-83-2 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | REG | 0.02 | 26010101 | 2,4-DIMETHYLPHENOL | 105-67-9 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2,4-DINITROPHENOL | 51-28-5 | 200 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2,4-DINITROTOLUENE | 121-14-2 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2,6-DINITROTOLUENE | 606-20-2 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2-CHLORONAPHTHALENE | 91-58-7 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2-CHLOROPHENOL | 95-57-8 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2-METHYLPHENOL | 95-48-7 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 2-NITROPHENOL | 88-75-5 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 3- AND 4-METHYLPHENOL | 108-44-5 | 600 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 4,4'-DDD | 72-54-8 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 600 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 4,4'-DDE | 72-55-9 | 110 | UG/KG | | | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 4,4'-DDT | 50-29-3 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | 4-NITROPHENOL | 100-02-7 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ACENAPHTHENE | 83-32-9 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ACENAPHTHYLENE | 208-96-8 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ALDRIN | 309-00-2 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ALPHA-BHC (HCH) | 319-84-6 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ANTHRACENE | 120-12-7 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BENZO(A)ANTHRACENE | 56-55-3 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BENZO(A)PYRENE | 50-32-8 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BENZO(B)FLUORANTHENE | 205-99-2 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BENZO(GHI)PERYLENE | 191-24-2 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BENZO(K)FLUORANTHENE | 207-08-9 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BETA-BHC (HCH) | 319-85-7 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 1000 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | BUTYLBENZYLPHTHALATE | 85-68-7 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1000 | UG/KG |
| 42 | REG | 0.02 | 26010101 | CHLORDANE | 57-74-9 | 6 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | CHRYSENE | 218-01-9 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 6 | UG/KG |
| 42 | REG | 0.02 | 26010101 | DELTA-BHC (HCH) | 319-86-8 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | DI-N-BUTYLPHTHALATE | 84-74-2 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | DI-N-OCTYLPHTHALATE | 117-84-0 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0.02 | 26010101 | DIELDRIN | 60-57-1 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | DIETHYLPHTHALATE | 84-66-2 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | DIMETHYLPHTHALATE | 131-11-3 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ENDOSULFAN I | 959-98-8 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ENDOSULFAN II | 33213-65-9 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ENDOSULFAN SULFATE | 1031-07-8 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ENDRIN | 72-20-8 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | ENDRIN ALDEHYDE | 7421-93-4 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | FLUORANTHENE | 206-44-0 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0.02 | 26010101 | FLUORENE | 86-73-7 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | HEPTACHLOR | 76-44-8 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0.02 | 26010101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 2 | UG/KG | U | UJ | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | REG | 0 02 | 26010101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 2 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0 02 | 26010101 | HEXACHLOROBENZENE | 118-74-1 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | HEXACHLOROBUTADIENE | 87-68-3 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | HEXACHLOROETHANE | 67-72-1 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | ISOPHORONE | 78-59-1 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | LINDANE (GAMMA-BHC) | 58-89-9 | 2 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 42 | REG | 0 02 | 26010101 | METHOXYCHLOR | 72-43-5 | 6 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 6 | UG/KG |
| 42 | REG | 0 02 | 26010101 | METHYLNAPHTHALENES | | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0 02 | 26010101 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | N-NITROSODIMETHYLAMINE | 62-75-9 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | N-NITROSODIPHENYLAMINE | 86-30-6 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | NAPHTHALENE | 91-20-3 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | NITROBENZENE | 98-95-3 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PCB-1260 | 11096-82-5 | 30 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PENTACHLOROPHENOL | 87-86-5 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PHENANTHRENE | 85-01-8 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PHENOL | 108-95-2 | 300 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 42 | REG | 0 02 | 26010101 | PYRENE | 129-00-0 | 200 | UG/KG | U | U | SED-D | 67.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 42 | REG | 0 02 | 26010101 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | 67.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 42 | REG | 0 02 | 26010102 | ANTIMONY, TOTAL | 7440-36-0 | 2 | MG/KG | U | U | SED-D | 67.1 | EPA 7041 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0 02 | 26010102 | ARSENIC, TOTAL | 7440-38-2 | 8.5 | MG/KG | | | SED-D | 67.1 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0 02 | 26010102 | BERYLLIUM, TOTAL | 7440-41-7 | 0 61 | MG/KG | | | SED-D | 67.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0 3 | MG/KG |
| 42 | REG | 0 02 | 26010102 | CADMIUM, TOTAL | 7440-43-9 | 0 49 | MG/KG | | | SED-D | 67.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 42 | REG | 0 02 | 26010102 | CHROMIUM, TOTAL | 7440-47-3 | 49 | MG/KG | | | SED-D | 67.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0 02 | 26010102 | COPPER, TOTAL | 7440-50-8 | 120 | MG/KG | | | SED-D | 67.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 42 | REG | 0 02 | 26010102 | DIBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 67.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 42 | REG | 0 02 | 26010102 | LEAD, TOTAL | 7439-92-1 | 55 | MG/KG | | | SED-D | 67.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 42 | REG | 0 02 | 26010102 | MERCURY, TOTAL | 7439-97-6 | 0.27 | MG/KG | | | SED-D | 67.1 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 42 | REG | 0 02 | 26010102 | MONOBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 67.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 42 | REG | 0 02 | 26010102 | NICKEL, TOTAL | 7440-02-0 | 33 | MG/KG | | | SED-D | 67.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 42 | REG | 0 02 | 26010102 | SELENIUM, TOTAL | 7782-49-2 | 2 | MG/KG | U | U | SED-D | 67.1 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0 02 | 26010102 | SILVER, TOTAL | 7440-22-4 | 2.1 | MG/KG | U | U | SED-D | 67.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0 02 | 26010102 | THALLIUM, TOTAL | 7440-28-0 | 2 | MG/KG | U | U | SED-D | 67.1 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0 02 | 26010102 | TRIBUTYLTIN | 688-73-3 | 7.9 | UG/KG | | U | SED-D | 67.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 42 | REG | 0.02 | 26010102 | ZINC, TOTAL | 7440-66-6 | 190 | MG/KG | | | SED-D | 67.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 42 | REG | 0.02 | 26010103 | CLAY | | 43.404 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0 02 | 26010103 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 65.079 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 1000 MICRONS | | 18.085 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 125 MICRONS | | 22.782 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 14.981 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 35.545 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 178.78 MICRONS | | 21.173 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 2000 MICRONS | | 14.017 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 250 MICRONS | | 19.996 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 56.596 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 31.146 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 19.137 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 500 MICRONS | | 18.37 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 28.004 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 44.656 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 17.286 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 25.239 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | GRAVEL | | 14.017 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | MEAN GRAIN SIZE | | 22.739 | UM | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | MEDIAN GRAIN SIZE | | 6.729 | UM | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | SAND | | 13.987 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010103 | SILT | | 29.592 | PERCENT | | | SED-D | 67.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 42 | REG | 0.02 | 26010104 | TOTAL ORGANIC CARBON | | 1.821 | PERCENT | | | SED-D | 67.1 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 42 | REG | 0.02 | 26010105 | ACID VOLATILE SULFIDE | | 2900 | MG/KG | | J | SED-D | 67.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0.02 | 26010105 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.91 | MG/KG | | | SED-D | 67.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 42 | REG | 0.02 | 26010105 | COPPER, EXTRACTABLE | 7440-50-8 | 91 | MG/KG | | | SED-D | 67.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0.02 | 26010105 | LEAD, EXTRACTABLE | 7439-92-1 | 82 | MG/KG | | | SED-D | 67.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 42 | REG | 0.02 | 26010105 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.081 | MG/KG | | | SED-D | 67.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 42 | REG | 0.02 | 26010105 | SULFIDE, TOTAL | | 3600 | MG/KG | | | SED-D | 67.1 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 42 | REG | 0.02 | 26010105 | ZINC, EXTRACTABLE | 7440-66-6 | 160 | MG/KG | | | SED-D | 67.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 43 | REG | 0.02 | 26008101 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 1,2-DICHLOROBENZENE | 95-50-1 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 1,3-DICHLOROBENZENE | 541-73-1 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 1,4-DICHLOROBENZENE | 106-46-7 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 70 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2,4-DICHLOROPHENOL | 120-83-2 | 70 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2,4-DIMETHYLPHENOL | 105-67-9 | 70 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2,4-DINITROPHENOL | 51-28-5 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2,4-DINITROTOLUENE | 121-14-2 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2,6-DINITROTOLUENE | 606-20-2 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2-CHLORONAPHTHALENE | 91-58-7 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2-CHLOROPHENOL | 95-57-8 | 70 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 70 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2-METHYLPHENOL | 95-48-7 | 70 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 2-NITROPHENOL | 88-75-5 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 3- AND 4-METHYLPHENOL | 108-44-5 | 100 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 4,4'-DDE | 72-55-9 | 13 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8081 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 70 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | 4-NITROPHENOL | 100-02-7 | 70 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | ACENAPHTHENE | 83-32-9 | 180 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | ACENAPHTHYLENE | 208-96-8 | 40 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | ANTHRACENE | 120-12-7 | 650 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BENZIDINE | 92-87-5 | 200 | UG/KG | U | UJ | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BENZO(A)ANTHRACENE | 56-55-3 | 1600 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BENZO(A)PYRENE | 50-32-8 | 980 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 0.02 | 26008101 | BENZO(B)FLUORANTHENE | 205-99-2 | 1300 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BENZO(GHI)PERYLENE | 191-24-2 | 180 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BENZO(K)FLUORANTHENE | 207-08-9 | 1100 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 300 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | BUTYLBENZYLPHTHALATE | 85-68-7 | 70 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 43 | REG | 0.02 | 26008101 | CHRYSENE | 218-01-9 | 1700 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | DI-N-BUTYLPHTHALATE | 84-74-2 | 70 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | DI-N OCTYLPHTHALATE | 117-84-0 | 70 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | DIETHYLPHTHALATE | 84-66-2 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | DIMETHYLPHTHALATE | 131-11-3 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | FLUORANTHENE | 206-44-0 | 3600 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | FLUORENE | 86-73-7 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | HEXACHLOROBENZENE | 118-74-1 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | HEXACHLOROBUTADIENE | 87-68-3 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | HEXACHLOROETHANE | 67-72-1 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 220 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | ISOPHORONE | 78-59-1 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | METHYLNAPHTHALENES | | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | N-NITROSODIMETHYLAMINE | 62-75-9 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | N-NITROSODIPHENYLAMINE | 86-30-6 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | NITROBENZENE | 98-95-3 | 70 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | PENTACHLOROPHENOL | 87-86-5 | 70 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | PHENANTHRENE | 85-01-8 | 610 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008101 | PHENOL | 108-95-2 | 70 | UG/KG | U | U | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008101 | PYRENE | 129-00-0 | 2800 | UG/KG | | | SED-D | 72.5 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 0.02 | 26008102 | ARSENIC, TOTAL | 7440-38-2 | 11 | MG/KG | | | SED-D | 72.5 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 0.02 | 26008102 | BERYLLIUM, TOTAL | 7440-41-7 | 0.73 | MG/KG | | | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 0.02 | 26008102 | CADMIUM, TOTAL | 7440-43-9 | 0.95 | MG/KG | | | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.4 | MG/KG |
| 43 | REG | 0.02 | 26008102 | CHROMIUM, TOTAL | 7440-47-3 | 58 | MG/KG | | | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 43 | REG | 0.02 | 26008102 | COPPER, TOTAL | 7440-50-8 | 260 | MG/KG | | | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 0.02 | 26008102 | DIBUTYLTIN | | 4 | UG/KG | U | U | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 4 | MG/KG |
| 43 | REG | 0.02 | 26008102 | LEAD, TOTAL | 7439-92-1 | 80 | MG/KG | | | SED-D | 72.5 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 4 | UG/KG |
| 43 | REG | 0.02 | 26008102 | MERCURY, TOTAL | 7439-97-6 | 0.62 | MG/KG | | | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 43 | REG | 0.02 | 26008102 | MONOBUTYLTIN | | 3.6 | UG/KG | J | J | SED-D | 72.5 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 43 | REG | 0.02 | 26008102 | NICKEL, TOTAL | 7440-02-0 | 29 | MG/KG | | | SED-D | 72.5 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 4 | UG/KG |
| 43 | REG | 0.02 | 26008102 | SELENIUM, TOTAL | 7782-49-2 | 2 | MG/KG | U | U | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 43 | REG | 0.02 | 26008102 | SILVER, TOTAL | 7440-22-4 | 2.5 | MG/KG | | | SED-D | 72.5 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 0.02 | 26008102 | THALLIUM, TOTAL | 7440-28-0 | 2 | MG/KG | U | U | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 0.02 | 26008102 | TRIBUTYLTIN | 688-73-3 | 28 | UG/KG | | | SED-D | 72.5 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 0.02 | 26008102 | ZINC, TOTAL | 7440-66-6 | 300 | MG/KG | | | SED-D | 72.5 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 4 | UG/KG |
| 43 | REG | 0.02 | 26008103 | CLAY | | 51.017 | PERCENT | | | SED-D | 72.5 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 4 | MG/KG |
| 43 | REG | 0.02 | 26008103 | CUMULATIVE PERCENT > 0.00 MICRONS | | 100 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0.02 | 26008103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 98.3 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0.02 | 26008103 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.000 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 125 MICRONS | | 2.697 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.733 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 17.64 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 2.249 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.456 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 250 MICRONS | | 1.899 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 48.383 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 10.037 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.662 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 500 MICRONS | | 1.418 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 6.07 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 35.491 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 1.108 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 3.936 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | GRAVEL | | 0.456 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | MEAN GRAIN SIZE | | 2.425 | UM | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | MEDIAN GRAIN SIZE | | 3.469 | UM | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | SAND | | 8.614 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008103 | SILT | | 42.313 | PERCENT | | | SED-D | 72.5 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 43 | REG | 0 02 | 26008104 | TOTAL ORGANIC CARBON | | 2.15 | PERCENT | | | SED-D | 72.5 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 43 | REG | 0 02 | 26008105 | ACID VOLATILE SULFIDE | | 4000 | MG/KG | | J | SED-D | 72.5 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 0 02 | 26008105 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.1 | MG/KG | | | SED-D | 72.5 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | 0 02 | 26008105 | COPPER, EXTRACTABLE | 7440-50-8 | 220 | MG/KG | | | SED-D | 72.5 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 4 | MG/KG |
| 43 | REG | 0 02 | 26008105 | LEAD, EXTRACTABLE | 7439-92-1 | 78 | MG/KG | | | SED-D | 72.5 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 7 | MG/KG |
| 43 | REG | 0 02 | 26008105 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.04 | MG/KG | U | U | SED-D | 72.5 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 43 | REG | 0 02 | 26008105 | SULFIDE, TOTAL | | 4400 | MG/KG | | | SED-D | 72.5 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 0 02 | 26008105 | ZINC, EXTRACTABLE | 7440-66-6 | 280 | MG/KG | | | SED-D | 72.5 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 43 | REG | 0 02 | 26008199 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | 4,4'-DDE | 72-55-9 | 37 | UG/KG | | | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.6 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7041 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 43 | REG | 0 02 | 26008199 | ARSENIC, TOTAL | 7440-38-2 | 2.6 | MG/KG | | | CLAM | | EPA 7060 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 43 | REG | 0 02 | 26008199 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | U | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 43 | REG | 0.02 | 26008199 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 43 | REG | 0.02 | 26008199 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | U | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 43 | REG | 0.02 | 26008199 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 0.02 | 26008199 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | U | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 43 | REG | 0.02 | 26008199 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0.02 | 26008199 | COPPER, TOTAL | 7440-50-8 | 2.4 | MG/KG | | | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 43 | REG | 0.02 | 26008199 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 43 | REG | 0.02 | 26008199 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 0 02 | 26008199 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | 0 02 | 26008199 | DIELDRIN | 60-57-1 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ENDOSULFAN I | 959-98-8 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ENDOSULFAN II | 33213-65-9 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ENDOSULFAN SULFATE | 1031-07-8 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ENDRIN | 72-20-8 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ENDRIN ALDEHYDE | 7421-93-4 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | HEPTACHLOR | 76-44-8 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | LEAD, TOTAL | 7439-92-1 | 0 5 | MG/KG | U | U | CLAM | | EPA 7421 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 43 | REG | 0 02 | 26008199 | LINDANE (GAMMA-BHC) | 58-89-9 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 43 | REG | 0 02 | 26008199 | LIPIDS | | 1240 | MG/KG | | | CLAM | | EPA 9071 | DVRCORER | FAU | SEDIMENT | VV | 50 | MG/KG |
| 43 | REG | 0 02 | 26008199 | MERCURY, TOTAL | 7439-97-6 | 0 02 | MG/KG | U | U | CLAM | | EPA 7470 | DVRCORER | FAU | SEDIMENT | VV | 0 02 | MG/KG |
| 43 | REG | 0 02 | 26008199 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 0 02 | 26008199 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | MONOBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | 0 02 | 26008199 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 20 | UG/KG |
| 43 | REG | 0 02 | 26008199 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | U | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | 0 02 | 26008199 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | SELENIUM, TOTAL | 7782-49-2 | 0 5 | MG/KG | U | U | CLAM | | EPA 7740 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 43 | REG | 0 02 | 26008199 | SILVER, TOTAL | 7440-22-4 | 0 3 | MG/KG | U | U | CLAM | | EPA 7760 | DVRCORER | FAU | SEDIMENT | VV | 0 3 | MG/KG |
| 43 | REG | 0 02 | 26008199 | THALLIUM, TOTAL | 7440-28-0 | 0 5 | MG/KG | U | U | CLAM | | EPA 7841 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 43 | REG | 0 02 | 26008199 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 0 02 | 26008199 | TRIBUTYLTIN | 688-73-3 | 1 5 | UG/KG | U | J | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | 0 02 | 26008199 | ZINC, TOTAL | 7440-66-6 | 15 | MG/KG | U | J | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010001 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 1,2-DICHLOROBENZENE | 95-50-1 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 1,3-DICHLOROBENZENE | 541-73-1 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 1,4-DICHLOROBENZENE | 106-46-7 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 300 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2,4-DICHLOROPHENOL | 120-83-2 | 300 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2,4-DIMETHYLPHENOL | 105-67-9 | 300 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2,4-DINITROPHENOL | 51-28-5 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2,4-DINITROTOLUENE | 121-14-2 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2,6-DINITROTOLUENE | 606-20-2 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2-CHLORONAPHTHALENE | 91-58-7 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2-CHLOROPHENOL | 95-57-8 | 300 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 300 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2-METHYLPHENOL | 95-48-7 | 300 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | 2-NITROPHENOL | 88-75-5 | 100 | UG/KG | U | U | SED-D | 66 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |



R0063159

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | REG | 0.02 | 26010001 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | 3- AND 4-METHYLPHENOL | 106-44-5 | 600 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 600 | UG/KG |
| 44 | REG | 0.02 | 26010001 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | 4,4'-DDE | 72-55-9 | 99 | UG/KG | J | J | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 300 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0.02 | 26010001 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | 4-NITROPHENOL | 100-02-7 | 300 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ACENAPHTHENE | 83-32-9 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ACENAPHTHYLENE | 208-96-8 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ANTHRACENE | 120-12-7 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BENZO(A)ANTHRACENE | 56-55-3 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BENZO(A)PYRENE | 50-32-8 | 230 | UG/KG | J | J | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BENZO(B)FLUORANTHENE | 205-99-2 | 320 | UG/KG | J | J | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BENZO(GHI)PERYLENE | 191-24-2 | 200 | UG/KG | J | J | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BENZO(K)FLUORANTHENE | 207-08-9 | 200 | UG/KG | J | J | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 1000 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1000 | UG/KG |
| 44 | REG | 0.02 | 26010001 | BUTYLBENZYLPHTHALATE | 85-68-7 | 300 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0.02 | 26010001 | CHLORDANE | 57-74-9 | 6 | UG/KG | J | J | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 6 | UG/KG |
| 44 | REG | 0.02 | 26010001 | CHRYSENE | 218-01-9 | 200 | UG/KG | J | J | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | DI-N-BUTYLPHTHALATE | 84-74-2 | 300 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0.02 | 26010001 | DI-N-OCTYLPHTHALATE | 117-84-0 | 300 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0.02 | 26010001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | DIETHYLPHTHALATE | 84-66-2 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | DIMETHYLPHTHALATE | 131-11-3 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | FLUORANTHENE | 206-44-0 | 150 | UG/KG | J | J | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | FLUORENE | 86-73-7 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | HEXACHLOROBENZENE | 118-74-1 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | HEXACHLOROBUTADIENE | 87-68-3 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | HEXACHLOROETHANE | 67-72-1 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 200 | UG/KG | J | J | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | ISOPHORONE | 78-59-1 | 100 | UG/KG | U | U | SED-D | 65.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0.02 | 26010001 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 44 | REG | 0.02 | 26010001 | METHOXYCHLOR | 72-43-5 | 6 | UG/KG | U | U | SED-D | 65.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 6 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | REG | 0 02 | 26010001 | METHYLNAPHTHALENES | | 300 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 100 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | N-NITROSODIMETHYLAMINE | 62-75-9 | 100 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | N-NITROSODIPHENYLAMINE | 86-30-6 | 100 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | NITROBENZENE | 98-95-3 | 300 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 65 8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 65 8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 65 8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 65 8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 65 8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 65 8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PCB-1260 | 11096-82-5 | 30 | UG/KG | U | U | SED-D | 65 8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PENTACHLOROPHENOL | 87-86-5 | 300 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PHENANTHRENE | 85-01-8 | 100 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PHENOL | 108-95-2 | 300 | UG/KG | U | U | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 44 | REG | 0 02 | 26010001 | PYRENE | 129-00-0 | 180 | UG/KG | | | SED-D | 65 8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 44 | REG | 0 02 | 26010001 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | 65 8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 44 | REG | 0 02 | 26010002 | ANTIMONY, TOTAL | 7440-36-0 | 1 | MG/KG | U | U | SED-D | 65 8 | EPA 7041 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010002 | ARSENIC, TOTAL | 7440-38-2 | 10 | MG/KG | | | SED-D | 65 8 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010002 | BERYLLIUM, TOTAL | 7440-41-7 | 0.66 | MG/KG | | | SED-D | 65 8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0 3 | MG/KG |
| 44 | REG | 0 02 | 26010002 | CADMIUM, TOTAL | 7440-43-9 | 0.64 | MG/KG | | | SED-D | 65 8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0 1 | MG/KG |
| 44 | REG | 0 02 | 26010002 | CHROMIUM, TOTAL | 7440-47-3 | 86 | MG/KG | | | SED-D | 65 8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010002 | COPPER, TOTAL | 7440-50-8 | 160 | MG/KG | | | SED-D | 65 8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 44 | REG | 0 02 | 26010002 | DIBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 65 8 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 44 | REG | 0 02 | 26010002 | LEAD, TOTAL | 7439-92-1 | 79 | MG/KG | | | SED-D | 65 8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 44 | REG | 0 02 | 26010002 | MERCURY, TOTAL | 7439-97-6 | 0 5 | MG/KG | | | SED-D | 65 8 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0 06 | MG/KG |
| 44 | REG | 0 02 | 26010002 | MONOBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 65 8 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 44 | REG | 0 02 | 26010002 | NICKEL, TOTAL | 7440-02-0 | 32 | MG/KG | | | SED-D | 65 8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 44 | REG | 0 02 | 26010002 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 65 8 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010002 | SILVER, TOTAL | 7440-22-4 | 2 6 | MG/KG | | | SED-D | 65 8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010002 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 65 8 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010002 | TRIBUTYLTIN | 688-73-3 | 8 8 | UG/KG | | | SED-D | 65 8 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 44 | REG | 0 02 | 26010002 | ZINC, TOTAL | 7440-66-6 | 250 | MG/KG | | | SED-D | 65 8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 44 | REG | 0 02 | 26010003 | CLAY | | 32 47 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 0 98 MICRONS | | 100 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 1 95 MICRONS | | 74 479 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 1000 MICRONS | | 37 567 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 125 MICRONS | | 41 475 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 1414 21 MICRONS | | 37 148 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 15 63 MICRONS | | 51 313 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 176 78 MICRONS | | 40 087 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 2000 MICRONS | | 38 788 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 250 MICRONS | | 39 033 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 3 91 MICRONS | | 67 53 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 31 25 MICRONS | | 47 987 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 353 55 MICRONS | | 38 734 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 500 MICRONS | | 38 227 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 62 5 MICRONS | | 45 65 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 7 81 MICRONS | | 60 086 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 707 11 MICRONS | | 37 91 | PERCENT | | | SED-D | 65 8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | REG | 0 02 | 26010003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 43.861 | PERCENT | | | SED-D | 65.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | GRAVEL | | 36.768 | PERCENT | | | SED-D | 65.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | MEDIAN GRAIN SIZE | | 20.509 | UM | | | SED-D | 65.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | SAND | | 8.883 | PERCENT | | | SED-D | 65.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010003 | SILT | | 21.879 | PERCENT | | | SED-D | 65.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 44 | REG | 0 02 | 26010004 | TOTAL ORGANIC CARBON | | 1.73 | PERCENT | | | SED-D | 65.8 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 44 | REG | 0 02 | 26010005 | ACID VOLATILE SULFIDE | | 2600 | MG/KG | | J | SED-D | 65.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010005 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.2 | MG/KG | | | SED-D | 65.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 44 | REG | 0 02 | 26010005 | COPPER, EXTRACTABLE | 7440-50-8 | 120 | MG/KG | | | SED-D | 65.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010005 | LEAD, EXTRACTABLE | 7439-92-1 | 70 | MG/KG | | | SED-D | 65.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 44 | REG | 0 02 | 26010005 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.068 | MG/KG | | | SED-D | 65.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 44 | REG | 0 02 | 26010005 | SULFIDE, TOTAL | | 3900 | MG/KG | | | SED-D | 65.8 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 44 | REG | 0 02 | 26010005 | ZINC, EXTRACTABLE | 7440-66-6 | 200 | MG/KG | | | SED-D | 65.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 45 | REG | 0 02 | 26009901 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 1,2-DICHLOROBENZENE | 95-50-1 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 1,3-DICHLOROBENZENE | 541-73-1 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 1,4-DICHLOROBENZENE | 106-46-7 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2,4-DICHLOROPHENOL | 120-83-2 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2,4-DIMETHYLPHENOL | 105-67-9 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2,4-DINITROPHENOL | 51-28-5 | 200 | UG/KG | U | UJ | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2,4-DINITROTOLUENE | 121-14-2 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2,6-DINITROTOLUENE | 606-20-2 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2-CHLORONAPHTHALENE | 91-58-7 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2-CHLOROPHENOL | 95-57-8 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 300 | UG/KG | U | UJ | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2-METHYLPHENOL | 95-48-7 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 2-NITROPHENOL | 88-75-5 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 3- AND 4-METHYLPHENOL | 108-44-5 | 700 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 4,4'-DDD | 72-54-8 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 700 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 4,4'-DDE | 72-55-9 | 110 | UG/KG | | J | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 4,4'-DDT | 50-29-3 | 2 | UG/KG | U | UJ | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | 4-NITROPHENOL | 100-02-7 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0 02 | 26009901 | ACENAPHTHENE | 83-32-9 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | ACENAPHTHYLENE | 208-96-8 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | ALDRIN | 309-00-2 | 2 | UG/KG | U | UJ | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0 02 | 26009901 | ALPHA-BHC (HCH) | 319-84-6 | 2 | UG/KG | U | UJ | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0 02 | 26009901 | ANTHRACENE | 120-12-7 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BENZO(A)ANTHRACENE | 56-55-3 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BENZO(A)PYRENE | 50-32-8 | 240 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BENZO(B)FLUORANTHENE | 205-99-2 | 270 | UG/KG | | | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BENZO(GHI)PERYLENE | 191-24-2 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BENZO(K)FLUORANTHENE | 207-08-9 | 240 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BETA-BHC (HCH) | 319-85-7 | 2 | UG/KG | U | UJ | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0 02 | 26009901 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 45 | REG | 0.02 | 26009901 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 1000 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1000 | UG/KG |
| 45 | REG | 0.02 | 26009901 | BUTYLBENZYLPHTHALATE | 85-68-7 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0.02 | 26009901 | CHLORDANE | 57-74-9 | 7 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 7 | UG/KG |
| 45 | REG | 0.02 | 26009901 | CHRYSENE | 218-01-9 | 170 | UG/KG | | | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | DELTA-BHC (HCH) | 319-86-8 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | DI-N-BUTYLPHTHALATE | 84-74-2 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0.02 | 26009901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0.02 | 26009901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | DIELDRIN | 60-57-1 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | DIETHYLPHTHALATE | 84-66-2 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | DIMETHYLPHTHALATE | 131-11-3 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | ENDOSULFAN I | 959-98-8 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | ENDOSULFAN II | 33213-65-9 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | ENDOSULFAN SULFATE | 1031-07-8 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | ENDRIN | 72-20-8 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | ENDRIN ALDEHYDE | 7421-93-4 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | FLUORANTHENE | 206-44-0 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | FLUORENE | 86-73-7 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | HEPTACHLOR | 76-44-8 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | HEXACHLOROBENZENE | 118-74-1 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | HEXACHLOROBUTADIENE | 87-68-3 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | HEXACHLOROETHANE | 67-72-1 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | ISOPHORONE | 78-59-1 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | LINDANE (GAMMA-BHC) | 58-89-9 | 2 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 45 | REG | 0.02 | 26009901 | METHOXYCHLOR | 72-43-5 | 7 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 7 | UG/KG |
| 45 | REG | 0.02 | 26009901 | METHYLNAPHTHALENES | | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0.02 | 26009901 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | NAPHTHALENE | 91-20-3 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | NITROBENZENE | 98-95-3 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PCB-1260 | 11096-82-5 | 30 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PENTACHLOROPHENOL | 87-86-5 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PHENANTHRENE | 85-01-8 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PHENOL | 108-95-2 | 300 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 45 | REG | 0.02 | 26009901 | PYRENE | 129-00-0 | 200 | UG/KG | U | U | SED-D | 70.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 45 | REG | 0.02 | 26009901 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | 70.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 45 | REG | 0.02 | 26009902 | ANTIMONY, TOTAL | 7440-36-0 | 2 | MG/KG | U | U | SED-D | 70.7 | EPA 7041 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 45 | REG | 0.02 | 26009902 | ARSENIC, TOTAL | 7440-38-2 | 11 | MG/KG | | | SED-D | 70.7 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 45 | REG | 0.02 | 26009902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.68 | MG/KG | | | SED-D | 70.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 45 | REG | 0.02 | 26009902 | CADMIUM, TOTAL | 7440-43-9 | 0.79 | MG/KG | | | SED-D | 70.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 45 | REG | 0.02 | 26009902 | CHROMIUM, TOTAL | 7440-47-3 | 44 | MG/KG | | | SED-D | 70.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |



R0063163

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 45 | REG | 0.02 | 26009902 | COPPER, TOTAL | 7440-50-8 | 130 | MG/KG | | | SED-D | 70.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 45 | REG | 0.02 | 26009902 | DIBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 70.7 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 45 | REG | 0.02 | 26009902 | LEAD, TOTAL | 7439-92-1 | 65 | MG/KG | | | SED-D | 70.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 45 | REG | 0.02 | 26009902 | MERCURY, TOTAL | 7439-97-6 | 0.38 | MG/KG | | | SED-D | 70.7 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 45 | REG | 0.02 | 26009902 | MONOBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 70.7 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 45 | REG | 0.02 | 26009902 | NICKEL, TOTAL | 7440-02-0 | 24 | MG/KG | | | SED-D | 70.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 45 | REG | 0.02 | 26009902 | SELENIUM, TOTAL | 7782-49-2 | 2 | MG/KG | U | U | SED-D | 70.7 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 45 | REG | 0.02 | 26009902 | SILVER, TOTAL | 7440-22-4 | 2.4 | MG/KG | | | SED-D | 70.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 45 | REG | 0.02 | 26009902 | THALLIUM, TOTAL | 7440-28-0 | 2 | MG/KG | U | U | SED-D | 70.7 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 45 | REG | 0.02 | 26009902 | TRIBUTYLTIN | 688-73-3 | 8.9 | UG/KG | | UJ | SED-D | 70.7 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 45 | REG | 0.02 | 26009902 | ZINC, TOTAL | 7440-66-6 | 210 | MG/KG | | | SED-D | 70.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 45 | REG | 0.02 | 26009903 | CLAY | | 44.058 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 95.191 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 1000 MICRONS | | 12.531 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 125 MICRONS | | 19.079 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 11.375 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 37.444 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 18.249 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 2000 MICRONS | | 9.85 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 250 MICRONS | | 14.936 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 55.942 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 31.704 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 14.959 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 500 MICRONS | | 13.938 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 29.471 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 46.374 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 13.427 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 25.258 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | GRAVEL | | 0.85 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | MEAN GRAIN SIZE | | 6.577 | UM | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | MEDIAN GRAIN SIZE | | 6.008 | UM | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | SAND | | 19.621 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009903 | SILT | | 26.471 | PERCENT | | | SED-D | 70.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 45 | REG | 0.02 | 26009904 | TOTAL ORGANIC CARBON | | 1.443 | PERCENT | | | SED-D | 70.7 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 45 | REG | 0.02 | 26009905 | ACID VOLATILE SULFIDE | | 2200 | MG/KG | | J | SED-D | 70.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 45 | REG | 0.02 | 26009905 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.7 | MG/KG | | | SED-D | 70.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 45 | REG | 0.02 | 26009905 | COPPER, EXTRACTABLE | 7440-50-8 | 130 | MG/KG | | | SED-D | 70.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 45 | REG | 0.02 | 26009905 | LEAD, EXTRACTABLE | 7439-92-1 | 72 | MG/KG | | | SED-D | 70.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 7 | MG/KG |
| 45 | REG | 0.02 | 26009905 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.14 | MG/KG | | | SED-D | 70.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 45 | REG | 0.02 | 26009905 | SULFIDE, TOTAL | | 3800 | MG/KG | | | SED-D | 70.7 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 45 | REG | 0.02 | 26009905 | ZINC, EXTRACTABLE | 7440-66-6 | 230 | MG/KG | | | SED-D | 70.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 46 | REG | 0.02 | 26009801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 100 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0.02 | 26009801 | 1,2-DICHLOROBENZENE | 95-50-1 | 100 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0.02 | 26009801 | 1,3-DICHLOROBENZENE | 541-73-1 | 100 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0.02 | 26009801 | 1,4-DICHLOROBENZENE | 106-46-7 | 100 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0.02 | 26009801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 300 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0.02 | 26009801 | 2,4-DICHLOROPHENOL | 120-83-2 | 300 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0.02 | 26009801 | 2,4-DIMETHYLPHENOL | 105-67-9 | 300 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0.02 | 26009801 | 2,4-DINITROPHENOL | 51-28-5 | 100 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0.02 | 26009801 | 2,4-DINITROTOLUENE | 121-14-2 | 100 | UG/KG | U | U | SED-D | 63.2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |



R0063164

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781 104

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 0 02 | 26009801 | 2,6 DINITROTOLUENE | 606-20-2 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 2-CHLORONAPHTHALENE | 91-58-7 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 2-CHLOROPHENOL | 95-57-8 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 2-METHYLPHENOL | 95-48-7 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 2-NITROPHENOL | 88-75-5 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 3- AND 4-METHYLPHENOL | 108-44-5 | 500 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 500 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 4,4'-DDE | 72-55-9 | 92 | UG/KG | J | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | 4-NITROPHENOL | 100-02-7 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ACENAPHTHENE | 83-32-9 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ACENAPHTHYLENE | 208-96-8 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ALDRIN | 309-00-2 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ANTHRACENE | 120-12-7 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BENZO(A)ANTHRACENE | 56-55-3 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BENZO(A)PYRENE | 50-32-8 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BENZO(B)FLUORANTHENE | 205-99-2 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BENZO(GHI)PERYLENE | 191-24-2 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BENZO(K)FLUORANTHENE | 207-08-9 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 1000 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1000 | UG/KG |
| 46 | REG | 0 02 | 26009801 | BUTYLBENZYLPHTHALATE | 85-68-7 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 5 | UG/KG |
| 46 | REG | 0 02 | 26009801 | CHRYSENE | 218-01-9 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | DI-N-BUTYLPHTHALATE | 84-74-2 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | DI-N-OCTYLPHTHALATE | 117-84-0 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | DIETHYLPHTHALATE | 84-66-2 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | DIMETHYLPHTHALATE | 131-11-3 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ENDRIN | 72-20-8 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | FLUORANTHENE | 206-44-0 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | FLUORENE | 86-73-7 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | J | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | HEXACHLOROBENZENE | 118-74-1 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | HEXACHLOROBUTADIENE | 87-68-3 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |



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58-JC

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 0 02 | 26009801 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | HEXACHLOROETHANE | 67-72-1 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | ISOPHORONE | 78-59-1 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009801 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 5 | UG/KG |
| 46 | REG | 0.02 | 26009801 | METHYLNAPHTHALENES | - | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | N NITROSODIMETHYLAMINE | 62-75-9 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | N NITROSODIPHENYLAMINE | 86-30-6 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | NITROBENZENE | 98-95-3 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PCB-1260 | 11096-82-5 | 30 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PENTACHLOROPHENOL | 87-86-5 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PHENANTHRENE | 85-01-8 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PHENOL | 108-95-2 | 300 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 46 | REG | 0 02 | 26009801 | PYRENE | 129-00-0 | 100 | UG/KG | U | U | SED-D | 63 2 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 0 02 | 26009801 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | 63 2 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 0 02 | 26009802 | ANTIMONY, TOTAL | 7440-36-0 | 1 | MG/KG | U | U | SED-D | 63 2 | EPA 7041 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009802 | ARSENIC, TOTAL | 7440-38-2 | 8.4 | MG/KG | | | SED-D | 63 2 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009802 | BERYLLIUM, TOTAL | 7440-41-7 | 0.54 | MG/KG | | | SED-D | 63 2 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 46 | REG | 0 02 | 26009802 | CADMIUM, TOTAL | 7440-43-9 | 0.68 | MG/KG | | | SED-D | 63 2 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 46 | REG | 0 02 | 26009802 | CHROMIUM, TOTAL | 7440-47-3 | 46 | MG/KG | | | SED-D | 63 2 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009802 | COPPER, TOTAL | 7440-50-8 | 120 | MG/KG | | | SED-D | 63 2 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 46 | REG | 0 02 | 26009802 | DIBUTYLTIN | - | 3 | UG/KG | U | U | SED-D | 63 2 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | 0 02 | 26009802 | LEAD, TOTAL | 7439-92-1 | 60 | MG/KG | | | SED-D | 63 2 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 8 | MG/KG |
| 46 | REG | 0 02 | 26009802 | MERCURY, TOTAL | 7439-97-6 | 0.46 | MG/KG | | | SED-D | 63.2 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 46 | REG | 0 02 | 26009802 | MONOBUTYLTIN | - | 3 | UG/KG | U | U | SED-D | 63 2 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | 0 02 | 26009802 | NICKEL, TOTAL | 7440-02-0 | 30 | MG/KG | | | SED-D | 63.2 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 8 | MG/KG |
| 46 | REG | 0 02 | 26009802 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 63.2 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009802 | SILVER, TOTAL | 7440-22-4 | 2.2 | MG/KG | | | SED-D | 63 2 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009802 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 63 2 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009802 | TRIBUTYLTIN | 688-73-3 | 18 | UG/KG | | | SED-D | 63 2 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | 0 02 | 26009802 | ZINC, TOTAL | 7440-66-6 | 200 | MG/KG | | | SED-D | 63 2 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 46 | REG | 0 02 | 26009803 | CLAY | - | 46.361 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 0.98 MICRONS | - | 100 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 1.95 MICRONS | - | 88.308 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 1000 MICRONS | - | 17.88 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 125 MICRONS | - | 22.368 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 1414.21 MICRONS | - | 10.403 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 15.63 MICRONS | - | 38.722 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 176.78 MICRONS | - | 20.933 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 2000 MICRONS | - | 16.364 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 250 MICRONS | - | 20.870 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 3.91 MICRONS | - | 53.639 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |



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C3 8-JC3

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 29.734 | PERCENT | | | SED-D | 63 2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 353.55 MICRONS | | 19.261 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 500 MICRONS | | 18.65 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 28.24 | PERCENT | | | SED-D | 63 2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 40.79 | PERCENT | | | SED-D | 63 2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 17.972 | PERCENT | | | SED-D | 63 2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 25.22 | PERCENT | | | SED-D | 63 2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | GRAVEL | | 15.394 | PERCENT | | | SED-D | 63 2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | MEAN GRAIN SIZE | | 25.713 | UM | | | SED-D | 63 2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | MEDIAN GRAIN SIZE | | 4.754 | UM | | | SED-D | 63 2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | SAND | | 12.846 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009803 | SILT | | 25.4 | PERCENT | | | SED-D | 63.2 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 46 | REG | 0 02 | 26009804 | TOTAL ORGANIC CARBON | | 1.878 | PERCENT | | | SED-D | 63 2 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 46 | REG | 0 02 | 26009805 | ACID VOLATILE SULFIDE | | 2400 | MG/KG | | J | SED-D | 63 2 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009805 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.1 | MG/KG | | | SED-D | 63.2 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0 8 | MG/KG |
| 46 | REG | 0 02 | 26009805 | COPPER, EXTRACTABLE | 7440-50-8 | 87 | MG/KG | | | SED-D | 63.2 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009805 | LEAD, EXTRACTABLE | 7439-92-1 | 49 | MG/KG | | | SED-D | 63.2 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 5 | MG/KG |
| 46 | REG | 0 02 | 26009805 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.082 | MG/KG | | | SED-D | 63.2 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 46 | REG | 0 02 | 26009805 | SULFIDE, TOTAL | | 4100 | MG/KG | | | SED-D | 63.2 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009805 | ZINC, EXTRACTABLE | 7440-66-6 | 150 | MG/KG | | | SED-D | 63.2 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 8 | MG/KG |
| 46 | REG | 0 02 | 26009899 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | 4,4'-DDE | 72-55-9 | 88 | UG/KG | | | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ALDRIN | 309-00-2 | 0 5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ALPHA-BHC (HCH) | 319-84-6 | 0 5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ANTIMONY, TOTAL | 7440-36-0 | 0 5 | MG/KG | U | UJ | CLAM | | EPA 7041 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 46 | REG | 0 02 | 26009899 | ARSENIC, TOTAL | 7440-38-2 | 3 2 | MG/KG | | | CLAM | | EPA 7060 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 46 | REG | 0 02 | 26009899 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | UJ | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 46 | REG | 0 02 | 26009899 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | UJ | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 46 | REG | 0 02 | 26009899 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 2 | UG/KG |
| 46 | REG | 0 02 | 26009899 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | | | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 46 | REG | 0 02 | 26009899 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | COPPER, TOTAL | 7440-50-8 | 1.5 | MG/KG | | | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0 4 | MG/KG |
| 46 | REG | 0 02 | 26009899 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009899 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 0 02 | 26009899 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | FLUORENE | 86-73-7 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | UJ | CLAM | | EPA 7421 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 46 | REG | 0 02 | 26009899 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 46 | REG | 0 02 | 26009899 | LIPIDS | | 777 | MG/KG | | J | CLAM | | EPA 9071 | DVRCORER | FAU | SEDIMENT | VV | 50 | MG/KG |
| 46 | REG | 0 02 | 26009899 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | UJ | CLAM | | EPA 7470 | DVRCORER | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 46 | REG | 0 02 | 26009899 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 2 | UG/KG |
| 46 | REG | 0 02 | 26009899 | METHYLNAPHTHALENES | | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009899 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 0 02 | 26009899 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | UJ | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 0 02 | 26009899 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | PYRENE | 129-00-0 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | UJ | CLAM | | EPA 7740 | DVRCORER | FAU | SEDIMENT | VV | 0.6 | MG/KG |
| 46 | REG | 0 02 | 26009899 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | UJ | CLAM | | EPA 7760 | DVRCORER | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 46 | REG | 0 02 | 26009899 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | CLAM | | EPA 7841 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 46 | REG | 0 02 | 26009899 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 0 02 | 26009899 | TRIBUTYLTIN | 688-73-3 | 1.6 | UG/KG | | J | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 0 02 | 26009899 | ZINC, TOTAL | 7440-66-6 | 13 | MG/KG | | | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 1 | MG/KG |
| 47 | REG | 0 02 | 26008201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 4,4'-DDD | 72-54-8 | 15 | UG/KG | | | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 4,4'-DDE | 72-55-9 | 110 | UG/KG | | | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0 02 | 26008201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | UJ | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| | | | | | | | | | | | | | | | | | 40 | UG/KG |



R0063168

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 47 | REG | 0.02 | 26008201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ANTHRACENE | 120-12-7 | 150 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | J | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BENZO(A)ANTHRACENE | 56-55-3 | 150 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BENZO(A)PYRENE | 50-32-8 | 290 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BENZO(B)FLUORANTHENE | 205-99-2 | 330 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BENZO(GHI)PERYLENE | 191-24-2 | 110 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BENZO(K)FLUORANTHENE | 207-08-9 | 360 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 47 | REG | 0.02 | 26008201 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0.02 | 26008201 | CHRYSENE | 218-01-9 | 330 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 4 | UG/KG |
| 47 | REG | 0.02 | 26008201 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | DI N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | DI-N OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0.02 | 26008201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0.02 | 26008201 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | FLUORANTHENE | 206-44-0 | 250 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 110 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 47 | REG | 0.02 | 26008201 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 4 | UG/KG |
| 47 | REG | 0.02 | 26008201 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0.02 | 26008201 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |



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3E-JC

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 47 | REG | 0 02 | 26008201 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PCB-1260 | 11096-82-5 | 340 | UG/KG | | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PHENANTHRENE | 85-01-8 | 77 | UG/KG | | J | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PHENOL | 108-95-2 | 210 | UG/KG | | J | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 47 | REG | 0 02 | 26008201 | PYRENE | 129-00-0 | 250 | UG/KG | | J | SED-D | 47.8 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008201 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 47.8 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 47 | REG | 0 02 | 26008202 | ARSENIC, TOTAL | 7440-38-2 | 7.7 | MG/KG | | | SED-D | 47.8 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 47 | REG | 0 02 | 26008202 | BERYLLIUM, TOTAL | 7440-41-7 | 0.38 | MG/KG | | | SED-D | 47.8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 47 | REG | 0 02 | 26008202 | CADMIUM, TOTAL | 7440-43-9 | 0.61 | MG/KG | | J | SED-D | 47.8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 47 | REG | 0 02 | 26008202 | CHROMIUM, TOTAL | 7440-47-3 | 34 | MG/KG | | | SED-D | 47.8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 47 | REG | 0 02 | 26008202 | COPPER, TOTAL | 7440-50-8 | 180 | MG/KG | | | SED-D | 47.8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 47 | REG | 0 02 | 26008202 | DIBUTYLTIN | | 2.9 | UG/KG | | | SED-D | 47.8 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 47 | REG | 0 02 | 26008202 | LEAD, TOTAL | 7439-92-1 | 54 | MG/KG | | | SED-D | 47.8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 47 | REG | 0 02 | 26008202 | MERCURY, TOTAL | 7439-97-6 | 0.66 | MG/KG | | | SED-D | 47.8 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 47 | REG | 0 02 | 26008202 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 47.8 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 47 | REG | 0 02 | 26008202 | NICKEL, TOTAL | 7440-02-0 | 19 | MG/KG | | | SED-D | 47.8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 47 | REG | 0 02 | 26008202 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 47.8 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 47 | REG | 0 02 | 26008202 | SILVER, TOTAL | 7440-22-4 | 1.5 | MG/KG | | | SED-D | 47.8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 47 | REG | 0 02 | 26008202 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 47.8 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 47 | REG | 0 02 | 26008202 | TRIBUTYLTIN | 688-73-3 | 15 | UG/KG | | | SED-D | 47.8 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 47 | REG | 0 02 | 26008202 | ZINC, TOTAL | 7440-66-6 | 210 | MG/KG | | | SED-D | 47.8 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 47 | REG | 0 02 | 26008203 | CLAY | | 26.46 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 80.42 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 1000 MICRONS | | 3.731 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 125 MICRONS | | 17.021 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 3.32 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 61.59 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 10.456 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 2000 MICRONS | | 2.579 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 250 MICRONS | | 5.962 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 73.54 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 56.521 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 5.257 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 500 MICRONS | | 4.552 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 49.822 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 67.927 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 4.208 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 41.191 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | GRAVEL | | 2.579 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | MEAN GRAIN SIZE | | 13.108 | UM | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | MEDIAN GRAIN SIZE | | 61.359 | UM | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | SAND | | 47.248 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008203 | SILT | | 23.718 | PERCENT | | | SED-D | 47.8 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 47 | REG | 0 02 | 26008204 | TOTAL ORGANIC CARBON | | 1.276 | PERCENT | | | SED-D | 47.8 | MENZEL AVACIANO | DVRCORER | SED | SEDIMENT | VV | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 47 | REG | 0 02 | 26008205 | ACID VOLATILE SULFIDE | | 310 | MG/KG | | J | SED-D | 47 8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 47 | REG | 0 02 | 26008205 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.77 | MG/KG | | | SED-D | 47.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 47 | REG | 0 02 | 26008205 | COPPER, EXTRACTABLE | 7440-50-8 | 180 | MG/KG | | | SED-D | 47.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 47 | REG | 0 02 | 26008205 | LEAD, EXTRACTABLE | 7439-92-1 | 67 | MG/KG | | | SED-D | 47.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 4 | MG/KG |
| 47 | REG | 0 02 | 26008205 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.057 | MG/KG | | J | SED-D | 47.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 47 | REG | 0 02 | 26008205 | SULFIDE, TOTAL | | 300 | MG/KG | | | SED-D | 47.8 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 47 | REG | 0 02 | 26008205 | ZINC, EXTRACTABLE | 7440-66-6 | 220 | MG/KG | | | SED-D | 47.8 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 48 | REG | 0 02 | 26010601 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2,4-DICHLOROPHENOL | 120-83-2 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2,4-DIMETHYLPHENOL | 105-67-9 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2-CHLOROPHENOL | 95-57-8 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2-METHYLPHENOL | 95-48-7 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 3- AND 4-METHYLPHENOL | 106-44-5 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 4,4'-DDD | 72-54-8 | 38 | UG/KG | | | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 4,4'-DDE | 72-55-9 | 110 | UG/KG | | | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 4-CHLORO-3 METHYLPHENOL | 59-50-7 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | 4-NITROPHENOL | 100-02-7 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | ACENAPHTHENE | 83-32-9 | 360 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | ACENAPHTHYLENE | 208-96-8 | 600 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0 02 | 26010601 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0 02 | 26010601 | ANTHRACENE | 120-12-7 | 1400 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BENZO(A)ANTHRACENE | 56-55-3 | 1900 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BENZO(A)PYRENE | 50-32-8 | 1500 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BENZO(B)FLUORANTHENE | 205-99-2 | 1800 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BENZO(GHI)PERYLENE | 191-24-2 | 440 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BENZO(K)FLUORANTHENE | 207-08-9 | 1300 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0 02 | 26010601 | BUTYLBENZYLPHTHALATE | 85-68-7 | 60 | UG/KG | U | U | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 48 | REG | 0 02 | 26010601 | CHLORDANE | 57-74-9 | 8 | UG/KG | | | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0 02 | 26010601 | CHRYSENE | 218-01-9 | 2100 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 6 | UG/KG |
| 48 | REG | 0 02 | 26010601 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48 | REG | 0.02 | 26010601 | DI-N-BUTYLPHTHALATE | 84-74-2 | 60 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0.02 | 26010601 | DI-N-OCTYLPHTHALATE | 117-84-0 | 190 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0.02 | 26010601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 330 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | ENDRIN | 72-20-8 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | FLUORANTHENE | 206-44-0 | 4400 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | FLUORENE | 86-73-7 | 550 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0.02 | 26010601 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 550 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | METHOXYCHLOR | 72-43-5 | 6 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 48 | REG | 0.02 | 26010601 | METHYLNAPHTHALENES | | 83 | UG/KG | | | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 6 | UG/KG |
| 48 | REG | 0.02 | 26010601 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | NITROBENZENE | 98-95-3 | 60 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PCB-1260 | 11096-82-5 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PENTACHLOROPHENOL | 87-86-5 | 60 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PHENANTHRENE | 85-01-8 | 2700 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PHENOL | 108-95-2 | 60 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010601 | PYRENE | 129-00-0 | 3300 | UG/KG | | | SED-D | 63.7 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0.02 | 26010601 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | UJ | SED-D | 63.7 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 48 | REG | 0.02 | 26010602 | ARSENIC, TOTAL | 7440-38-2 | 15 | MG/KG | | | SED-D | 63.7 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 48 | REG | 0.02 | 26010602 | BERYLLIUM, TOTAL | 7440-41-7 | 0.55 | MG/KG | | | SED-D | 63.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 48 | REG | 0.02 | 26010602 | CADMIUM, TOTAL | 7440-43-9 | 0.83 | MG/KG | | | SED-D | 63.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 48 | REG | 0.02 | 26010602 | CHROMIUM, TOTAL | 7440-47-3 | 330 | MG/KG | | | SED-D | 63.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 48 | REG | 0.02 | 26010602 | COPPER, TOTAL | 7440-50-8 | 330 | MG/KG | | | SED-D | 63.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 48 | REG | 0.02 | 26010602 | DIBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 63.7 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 48 | REG | 0.02 | 26010602 | LEAD, TOTAL | 7439-92-1 | 84 | MG/KG | | | SED-D | 63.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 48 | REG | 0.02 | 26010602 | MERCURY, TOTAL | 7439-97-6 | 0.52 | MG/KG | | | SED-D | 63.7 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 48 | REG | 0.02 | 26010602 | MONOBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 63.7 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 48 | REG | 0.02 | 26010602 | NICKEL, TOTAL | 7440-02-0 | 28 | MG/KG | | | SED-D | 63.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| | | | | | | | | | | | | | | | | | 6 | MG/KG |



R0063172

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48 | REG | 0 02 | 26010602 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 63.7 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 48 | REG | 0 02 | 26010602 | SILVER, TOTAL | 7440-22-4 | 2 2 | MG/KG | | | SED-D | 63.7 | EPA 7760 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 48 | REG | 0 02 | 26010602 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 63.7 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 48 | REG | 0 02 | 26010602 | TRIBUTYLTIN | 688-73-3 | 20 | UG/KG | | U | SED-D | 63.7 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 48 | REG | 0 02 | 26010602 | ZINC, TOTAL | 7440-66-6 | 390 | MG/KG | | | SED-D | 63.7 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 48 | REG | 0 02 | 26010603 | CLAY | | 36 4 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 1.95 MICRONS | | 70 541 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 1000 MICRONS | | 10.009 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 125 MICRONS | | 21.561 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 8.985 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 41.124 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 19.471 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 2000 MICRONS | | 8.097 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 250 MICRONS | | 17.587 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 3 91 MICRONS | | 61.6 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 32.472 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 353.55 MICRONS | | 18.814 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 500 MICRONS | | 13.708 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 29.011 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 50.93 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 11.857 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 23.393 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | GRAVEL | | 8.097 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | MEAN GRAIN SIZE | | 16.856 | UM | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | MEDIAN GRAIN SIZE | | 8.343 | UM | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | SAND | | 20.914 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010603 | SILT | | 32.59 | PERCENT | | | SED-D | 63.7 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 48 | REG | 0 02 | 26010604 | TOTAL ORGANIC CARBON | | 2.323 | PERCENT | | | SED-D | 63.7 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 48 | REG | 0 02 | 26010605 | ACID VOLATILE SULFIDE | | 3300 | MG/KG | | J | SED-D | 63.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 48 | REG | 0 02 | 26010605 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.1 | MG/KG | | | SED-D | 63.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0 6 | MG/KG |
| 48 | REG | 0 02 | 26010605 | COPPER, EXTRACTABLE | 7440-50-8 | 300 | MG/KG | | | SED-D | 63.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 48 | REG | 0 02 | 26010605 | LEAD, EXTRACTABLE | 7439-92-1 | 120 | MG/KG | | | SED-D | 63.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 48 | REG | 0 02 | 26010605 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.11 | MG/KG | | | SED-D | 63.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 48 | REG | 0 02 | 26010605 | SULFIDE, TOTAL | | 3900 | MG/KG | | | SED-D | 63.7 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 48 | REG | 0 02 | 26010605 | ZINC, EXTRACTABLE | 7440-66-6 | 410 | MG/KG | | | SED-D | 63.7 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 49 | REG | 0 02 | 26010501 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2,4-DICHLOROPHENOL | 120-83-2 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2,4-DIMETHYLPHENOL | 105-67-9 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2-CHLOROPHENOL | 95-57-8 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2-METHYLPHENOL | 95-48-7 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | REG | 0.02 | 26010501 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | 3- AND 4-METHYLPHENOL | 108-44-5 | 70 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 49 | REG | 0.02 | 26010501 | 4,4'-DDD | 72-54-8 | 13 | UG/KG | | | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | 4,4'-DDE | 72-55-9 | 87 | UG/KG | | | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | | | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0.02 | 26010501 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | 4-NITROPHENOL | 100-02-7 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ACENAPHTHYLENE | 208-96-8 | 110 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ANTHRACENE | 120-12-7 | 300 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BENZO(A)ANTHRACENE | 56-55-3 | 500 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BENZO(A)PYRENE | 50-32-8 | 1100 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BENZO(B)FLUORANTHENE | 205-99-2 | 1400 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BENZO(GHI)PERYLENE | 191-24-2 | 340 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BENZO(K)FLUORANTHENE | 207-08-9 | 960 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | BUTYLBENZYLPHTHALATE | 85-68-7 | 50 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 49 | REG | 0.02 | 26010501 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0.02 | 26010501 | CHRYSENE | 218-01-9 | 620 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 5 | UG/KG |
| 49 | REG | 0.02 | 26010501 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | DI-N-BUTYLPHTHALATE | 84-74-2 | 80 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 230 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0.02 | 26010501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 270 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0.02 | 26010501 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | FLUORANTHENE | 206-44-0 | 620 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | FLUORENE | 86-73-7 | 46 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0.02 | 26010501 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 360 | UG/KG | | | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 58.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0.02 | 26010501 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 58.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | REG | 0 02 | 26010501 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | SED-D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 5 | UG/KG |
| 49 | REG | 0 02 | 26010501 | METHYLNAPHTHALENES | | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | NITROBENZENE | 98-95-3 | 50 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PCB 1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PCB-1260 | 11096-82-5 | 390 | UG/KG | | | SED-D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PENTACHLOROPHENOL | 87-86-5 | 50 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PHENANTHRENE | 85-01-8 | 250 | UG/KG | | | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PHENOL | 108-95-2 | 50 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 49 | REG | 0 02 | 26010501 | PYRENE | 129-00-0 | 2000 | UG/KG | | | SED-D | 56.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010501 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 56.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010502 | ARSENIC, TOTAL | 7440-38-2 | 13 | MG/KG | | J | SED-D | 56.1 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 49 | REG | 0 02 | 26010502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.69 | MG/KG | | | SED-D | 56.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 49 | REG | 0 02 | 26010502 | CADMIUM, TOTAL | 7440-43-9 | 0.35 | MG/KG | | | SED-D | 56.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 49 | REG | 0 02 | 26010502 | CHROMIUM, TOTAL | 7440-47-3 | 59 | MG/KG | | | SED-D | 56.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 49 | REG | 0 02 | 26010502 | COPPER, TOTAL | 7440-50-8 | 230 | MG/KG | | | SED-D | 56.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 49 | REG | 0 02 | 26010502 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 56.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 49 | REG | 0 02 | 26010502 | LEAD, TOTAL | 7439-92-1 | 77 | MG/KG | | | SED-D | 56.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 7 | MG/KG |
| 49 | REG | 0 02 | 26010502 | MERCURY, TOTAL | 7439-97-6 | 0.71 | MG/KG | | | SED-D | 56.1 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 49 | REG | 0 02 | 26010502 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 56.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 49 | REG | 0 02 | 26010502 | NICKEL, TOTAL | 7440-02-0 | 30 | MG/KG | | | SED-D | 56.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 7 | MG/KG |
| 49 | REG | 0 02 | 26010502 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | UJ | SED-D | 56.1 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 49 | REG | 0 02 | 26010502 | SILVER, TOTAL | 7440-22-4 | 2.7 | MG/KG | | | SED-D | 56.1 | EPA 7760 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 49 | REG | 0 02 | 26010502 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 56.1 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 49 | REG | 0 02 | 26010502 | TRIBUTYLTIN | 688-73-3 | 43 | UG/KG | | UJ | SED-D | 56.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 49 | REG | 0 02 | 26010502 | ZINC, TOTAL | 7440-66-6 | 300 | MG/KG | | | SED-D | 56.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 49 | REG | 0 02 | 26010503 | CLAY | | 38.731 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 0 98 MICRONS | | 100 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 1.95 MICRONS | | 71.417 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.956 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 125 MICRONS | | 10.657 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 1414.81 MICRONS | | 0.698 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 37.013 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 178.78 MICRONS | | 4.42 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.523 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 250 MICRONS | | 2.569 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 67.269 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 29.449 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.949 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 500 MICRONS | | 1.849 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 24.091 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 54.083 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 1.283 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | REG | 0 02 | 26010503 | CUMULATIVE PERCENT > 88.39 MICRONS | | 18 241 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | GRAVEL | | 0 523 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | MEAN GRAIN SIZE | | 8.765 | UM | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | MEDIAN GRAIN SIZE | | 9.224 | UM | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | SAND | | 23.558 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010503 | SILT | | 43.188 | PERCENT | | | SED-D | 56.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 49 | REG | 0 02 | 26010504 | TOTAL ORGANIC CARBON | | 1.601 | PERCENT | | | SED-D | 56.1 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 49 | REG | 0 02 | 26010505 | ACID VOLATILE SULFIDE | | 3000 | MG/KG | | J | SED-D | 56.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 49 | REG | 0 02 | 26010505 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.1 | MG/KG | | | SED-D | 56.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 49 | REG | 0 02 | 26010505 | COPPER, EXTRACTABLE | 7440-50-8 | 220 | MG/KG | | | SED-D | 56.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 49 | REG | 0 02 | 26010505 | LEAD, EXTRACTABLE | 7439-92-1 | 75 | MG/KG | | | SED-D | 56.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 5 | MG/KG |
| 49 | REG | 0 02 | 26010505 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.046 | MG/KG | | | SED-D | 56.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 49 | REG | 0 02 | 26010505 | SULFIDE, TOTAL | | 3000 | MG/KG | | | SED-D | 56.1 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 49 | REG | 0 02 | 26010505 | ZINC, EXTRACTABLE | 7440-66-6 | 270 | MG/KG | | | SED-D | 56.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 7 | MG/KG |
| 49 | REG | 0 02 | 26010599 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | 4,4'-DDE | 72-55-9 | 5.4 | UG/KG | | | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | J | CLAM | | EPA 7041 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 49 | REG | 0 02 | 26010599 | ARSENIC, TOTAL | 7440-38-2 | 2.7 | MG/KG | | | CLAM | | EPA 7060 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 49 | REG | 0 02 | 26010599 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | U | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 49 | REG | 0 02 | 26010599 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | U | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 49 | REG | 0 02 | 26010599 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 2 | UG/KG |
| 49 | REG | 0 02 | 26010599 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | J | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 49 | REG | 0 02 | 26010599 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | COPPER, TOTAL | 7440-50-8 | 1.3 | MG/KG | | | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 49 | REG | 0 02 | 26010599 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0 02 | 26010599 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | U | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | J | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| | | | | | | | | | | | | EPA 7421 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | REG | 0 02 | 26010599 | LINDANE (GAMMA-BHC) | 58-89-9 | 0 5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 49 | REG | 0 02 | 26010599 | LIPIDS | | 1160 | MG/KG | | J | CLAM | | EPA 9071 | DVRCORER | FAU | SEDIMENT | VV | 50 | MG/KG |
| 49 | REG | 0 02 | 26010599 | MERCURY, TOTAL | 7439-97-6 | 0 02 | MG/KG | U | U | CLAM | | EPA 7470 | DVRCORER | FAU | SEDIMENT | VV | 0 02 | MG/KG |
| 49 | REG | 0 02 | 26010599 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 2 | UG/KG |
| 49 | REG | 0 02 | 26010599 | METHYLNAPHTHALENES | | 10 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | MONOBUTYLTIN | | 1 | UG/KG | U | W | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0 02 | 26010599 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 20 | UG/KG |
| 49 | REG | 0 02 | 26010599 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | | J | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 1 | MG/KG |
| 49 | REG | 0 02 | 26010599 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | PYRENE | 129-00-0 | 30 | UG/KG | | J | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | SELENIUM, TOTAL | 7782-49-2 | 0 5 | MG/KG | U | U | CLAM | | EPA 7740 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 49 | REG | 0 02 | 26010599 | SILVER, TOTAL | 7440-22-4 | 0 3 | MG/KG | U | U | CLAM | | EPA 7760 | DVRCORER | FAU | SEDIMENT | VV | 0 3 | MG/KG |
| 49 | REG | 0 02 | 26010599 | THALLIUM, TOTAL | 7440-28-0 | 0 5 | MG/KG | U | U | CLAM | | EPA 7841 | DVRCORER | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 49 | REG | 0 02 | 26010599 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 49 | REG | 0 02 | 26010599 | TRIBUTYLTIN | 688-73-3 | 1 8 | UG/KG | | J | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 49 | REG | 0 02 | 26010599 | ZINC, TOTAL | 7440-66-6 | 14 | MG/KG | | | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 1 | MG/KG |
| 50 | REG | 0 02 | 26010401 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 50 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2,4-DICHLOROPHENOL | 120-83-2 | 50 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2,4-DIMETHYLPHENOL | 105-67-9 | 50 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2-CHLOROPHENOL | 95-57-8 | 50 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2-METHYLPHENOL | 95-48-7 | 50 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | W | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | U | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 4,4'-DDE | 72-55-9 | 70 | UG/KG | | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 60 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | 4-NITROPHENOL | 100-02-7 | 60 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ACENAPHTHYLENE | 208-96-8 | 81 | UG/KG | | | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |



R0063177

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | REG | 0 02 | 26010401 | ANTHRACENE | 120-12-7 | 1200 | UG/KG | | | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | W | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BENZO(A)ANTHRACENE | 56-55-3 | 1000 | UG/KG | | | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BENZO(A)PYRENE | 50-32-8 | 870 | UG/KG | | | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BENZO(B)FLUORANTHENE | 205-99-2 | 1200 | UG/KG | | | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BENZO(GHI)PERYLENE | 191-24-2 | 220 | UG/KG | | | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BENZO(K)FLUORANTHENE | 207-08-9 | 870 | UG/KG | | | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | BUTYLBENZYLPHTHALATE | 85-68-7 | 50 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 50 | REG | 0 02 | 26010401 | CHRYSENE | 218-01-9 | 1200 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 5 | UG/KG |
| 50 | REG | 0 02 | 26010401 | DI-N-BUTYLPHTHALATE | 84-74-2 | 50 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | DI-N-OCTYLPHTHALATE | 117-84-0 | 220 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCOREN | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ENDRIN | 72-20-8 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | FLUORANTHENE | 206-44-0 | 2000 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | FLUORENE | 86-73-7 | 190 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 240 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 50 | REG | 0 02 | 26010401 | METHYLNAPHTHALENES | | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 5 | UG/KG |
| 50 | REG | 0 02 | 26010401 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | NITROBENZENE | 98-95-3 | 50 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0 02 | 26010401 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0 02 | 26010401 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | J | SED-D | 63 1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | REG | 0.02 | 26010401 | PCB-1260 | 11096-82-5 | 30 | UG/KG | U | UJ | SED-D | 63.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0.02 | 26010401 | PENTACHLOROPHENOL | 87-86-5 | 50 | UG/KG | U | U | SED-D | 63.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0.02 | 26010401 | PHENANTHRENE | 85-01-8 | 610 | UG/KG | | | SED-D | 63.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0.02 | 26010401 | PHENOL | 108-95-2 | 50 | UG/KG | U | UJ | SED-D | 63.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 50 | UG/KG |
| 50 | REG | 0.02 | 26010401 | PYRENE | 129-00-0 | 1800 | UG/KG | | J | SED-D | 63.1 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0.02 | 26010401 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | UJ | SED-D | 63.1 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 50 | REG | 0.02 | 26010402 | ARSENIC, TOTAL | 7440-38-2 | 11 | MG/KG | | J | SED-D | 63.1 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 50 | REG | 0.02 | 26010402 | BERYLLIUM, TOTAL | 7440-41-7 | 0.27 | MG/KG | | | SED-D | 63.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 50 | REG | 0.02 | 26010402 | CADMIUM, TOTAL | 7440-43-9 | 1.3 | MG/KG | | J | SED-D | 63.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 50 | REG | 0.02 | 26010402 | CHROMIUM, TOTAL | 7440-47-3 | 43 | MG/KG | | | SED-D | 63.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 50 | REG | 0.02 | 26010402 | COPPER, TOTAL | 7440-50-8 | 170 | MG/KG | | | SED-D | 63.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 50 | REG | 0.02 | 26010402 | DIBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 63.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 50 | REG | 0.02 | 26010402 | LEAD, TOTAL | 7439-92-1 | 84 | MG/KG | | | SED-D | 63.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 50 | REG | 0.02 | 26010402 | MERCURY, TOTAL | 7439-97-6 | 0.33 | MG/KG | | | SED-D | 63.1 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 50 | REG | 0.02 | 26010402 | MONOBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 63.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 50 | REG | 0.02 | 26010402 | NICKEL, TOTAL | 7440-02-0 | 36 | MG/KG | | | SED-D | 63.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 6 | MG/KG |
| 50 | REG | 0.02 | 26010402 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 63.1 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 50 | REG | 0.02 | 26010402 | SILVER, TOTAL | 7440-22-4 | 4.1 | MG/KG | | | SED-D | 63.1 | EPA 7760 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 50 | REG | 0.02 | 26010402 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 63.1 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 50 | REG | 0.02 | 26010402 | TRIBUTYLTIN | 688-73-3 | 22 | UG/KG | | U | SED-D | 63.1 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 50 | REG | 0.02 | 26010402 | ZINC, TOTAL | 7440-66-6 | 620 | MG/KG | | | SED-D | 63.1 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 50 | REG | 0.02 | 26010403 | CLAY | | 22.595 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 80.375 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 1000 MICRONS | | 39.501 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 125 MICRONS | | 59.672 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 28.973 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 84.936 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 68.066 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 2000 MICRONS | | 29.446 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 250 MICRONS | | 66.934 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 77.406 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 62.757 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 353.55 MICRONS | | 53.378 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 500 MICRONS | | 46.703 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 61.57 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 69.685 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 40.709 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | CUMULATIVE PERCENT > 98.39 MICRONS | | 60.721 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | GRAVEL | | 29.446 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | MEAN GRAIN SIZE | | 57.909 | UM | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | MEDIAN GRAIN SIZE | | 411.808 | UM | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | SAND | | 32.134 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010403 | SILT | | 18.836 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010404 | TOTAL ORGANIC CARBON | | 1.864 | PERCENT | | | SED-D | 63.1 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 50 | REG | 0.02 | 26010406 | ACID VOLATILE SULFIDE | | 3900 | MG/KG | | J | SED-D | 68.1 | MENZELAVAGGARO | DVRCORER | SED | SEDIMENT | VV | | |
| 50 | REG | 0.02 | 26010406 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.1 | MG/KG | | | SED-D | 63.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 50 | REG | 0.02 | 26010405 | COPPER, EXTRACTABLE | 7440-50-8 | 160 | MG/KG | | | SED-D | 63.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 50 | REG | 0.02 | 26010405 | LEAD, EXTRACTABLE | 7439-92-1 | 89 | MG/KG | | | SED-D | 63.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 50 | REG | 0.02 | 26010405 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.054 | MG/KG | | | SED-D | 63.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 5 | MG/KG |
| 50 | REG | 0.02 | 26010405 | SULFIDE, TOTAL | | 4900 | MG/KG | | | SED-D | 63.1 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | REG | 0.02 | 26010405 | ZINC, EXTRACTABLE | 7440-66-6 | 410 | MG/KG | | | SED-D | 63.1 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 8 | MG/KG |
| 51 | REG | 0.02 | 26010301 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 1,2-DICHLOROBENZENE | 95-50-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 1,3-DICHLOROBENZENE | 541-73-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 1,4-DICHLOROBENZENE | 106-46-7 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2,4-DICHLOROPHENOL | 120-83-2 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2,4-DINITROPHENOL | 51-28-5 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2,4-DINITROTOLUENE | 121-14-2 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2,6-DINITROTOLUENE | 606-20-2 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2-CHLORONAPHTHALENE | 91-58-7 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2-CHLOROPHENOL | 95-57-8 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2-METHYLPHENOL | 95-48-7 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 2-NITROPHENOL | 88-75-5 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 3- AND 4-METHYLPHENOL | 108-44-5 | 100 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 4,4'-DDD | 72-54-8 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 100 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 4,4'-DDE | 72-55-9 | 81 | UG/KG | | | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 4,4'-DDT | 50-29-3 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | 4-NITROPHENOL | 100-02-7 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ACENAPHTHENE | 83-32-9 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ACENAPHTHYLENE | 208-96-8 | 72 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ALDRIN | 309-00-2 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ALPHA-BHC (HCH) | 319-84-6 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ANTHRACENE | 120-12-7 | 290 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BENZIDINE | 92-87-5 | 200 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BENZO(A)ANTHRACENE | 56-55-3 | 40 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BENZO(A)PYRENE | 50-32-8 | 510 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BENZO(B)FLUORANTHENE | 205-99-2 | 620 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BENZO(GHI)PERYLENE | 191-24-2 | 140 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BENZO(K)FLUORANTHENE | 207-08-9 | 620 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BETA-BHC (HCH) | 319-85-7 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 300 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 300 | UG/KG |
| 51 | REG | 0.02 | 26010301 | CHLORDANE | 57-74-9 | 7 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | CHRYSENE | 218-01-9 | 580 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 7 | UG/KG |
| 51 | REG | 0.02 | 26010301 | DELTA-BHC (HCH) | 319-86-8 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 220 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | DIELDRIN | 60-57-1 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | DIETHYLPHTHALATE | 84-66-2 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | DIMETHYLPHTHALATE | 131-11-3 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 0.02 | 26010301 | ENDOSULFAN I | 959-98-8 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ENDOSULFAN II | 33213-65-9 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ENDOSULFAN SULFATE | 1031-07-8 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ENDRIN | 72-20-8 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ENDRIN ALDEHYDE | 7421-93-4 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | FLUORANTHENE | 206-44-0 | 250 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | FLUORENE | 86-73-7 | 38 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | HEPTACHLOR | 76-44-8 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | HEXACHLOROBENZENE | 118-74-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | HEXACHLOROBUTADIENE | 87-68-3 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | HEXACHLOROETHANE | 67-72-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 180 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | ISOPHORONE | 78-59-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | LINDANE (GAMMA-BHC) | 58-89-9 | 2 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010301 | METHOXYCHLOR | 72-43-5 | 7 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 7 | UG/KG |
| 51 | REG | 0.02 | 26010301 | METHYLNAPHTHALENES | | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | NITROBENZENE | 98-95-3 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PCB-1016 | 12674-11-2 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PCB-1221 | 11104-28-2 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PCB-1232 | 11141-16-5 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PCB-1242 | 53469-21-9 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PCB-1248 | 12672-29-6 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PCB-1254 | 11097-69-1 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PCB-1260 | 11096-82-5 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PENTACHLOROPHENOL | 87-86-5 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PHENANTHRENE | 85-01-8 | 250 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PHENOL | 108-95-2 | 70 | UG/KG | U | U | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 0.02 | 26010301 | PYRENE | 129-00-0 | 870 | UG/KG | | | SED-D | 72.4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010301 | TOXAPHENE | 8001-35-2 | 40 | UG/KG | U | U | SED-D | 72.4 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 0.02 | 26010302 | ARSENIC, TOTAL | 7440-38-2 | 13 | MG/KG | | | SED-D | 72.4 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 0.02 | 26010302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.72 | MG/KG | | | SED-D | 72.4 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.4 | MG/KG |
| 51 | REG | 0.02 | 26010302 | CADMIUM, TOTAL | 7440-43-9 | 1.5 | MG/KG | | | SED-D | 72.4 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 51 | REG | 0.02 | 26010302 | CHROMIUM, TOTAL | 7440-47-3 | 51 | MG/KG | | | SED-D | 72.4 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 0.02 | 26010302 | COPPER, TOTAL | 7440-50-8 | 210 | MG/KG | | | SED-D | 72.4 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 4 | MG/KG |
| 51 | REG | 0.02 | 26010302 | DIBUTYLTIN | | 4 | UG/KG | U | E | SED-D | 72.4 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 4 | UG/KG |
| 51 | REG | 0.02 | 26010302 | LEAD, TOTAL | 7439-92-1 | 72 | MG/KG | | | SED-D | 72.4 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 51 | REG | 0.02 | 26010302 | MERCURY, TOTAL | 7439-97-6 | 0.4 | MG/KG | | | SED-D | 72.4 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 51 | REG | 0.02 | 26010302 | MONOBUTYLTIN | | 4 | UG/KG | U | E | SED-D | 72.4 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 4 | UG/KG |
| 51 | REG | 0.02 | 26010302 | NICKEL, TOTAL | 7440-02-0 | 29 | MG/KG | | | SED-D | 72.4 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 51 | REG | 0.02 | 26010302 | SELENIUM, TOTAL | 7782-49-2 | 2 | MG/KG | U | U | SED-D | 72.4 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 0.02 | 26010302 | SILVER, TOTAL | 7440-22-4 | 2.5 | MG/KG | | | SED-D | 72.4 | EPA 7760 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 0.02 | 26010302 | THALLIUM, TOTAL | 7440-28-0 | 2 | MG/KG | U | U | SED-D | 72.4 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 0.02 | 26010302 | TRIBUTYLTIN | 688-73-3 | 88 | UG/KG | | | SED-D | 72.4 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 4 | UG/KG |
| 51 | REG | 0.02 | 26010302 | ZINC, TOTAL | 7440-66-6 | 260 | MG/KG | | | SED-D | 72.4 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 4 | MG/KG |
| 51 | REG | 0.02 | 26010303 | CLAY | | 38.819 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VV | | |



R0063181

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 1.95 MICRONS | | 88.02 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 1000 MICRONS | | 4.627 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 125 MICRONS | | 9.386 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 4.19 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 27.634 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 8.134 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 2000 MICRONS | | 3.908 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 250 MICRONS | | 7.101 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 61.461 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 18.865 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 8.295 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 500 MICRONS | | 5.726 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 14.941 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 50.712 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 5.214 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 11.758 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | GRAVEL | | 3.908 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | MEAN GRAIN SIZE | | 4.891 | UM | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | MEDIAN GRAIN SIZE | | 7.981 | UM | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | SAND | | 11.035 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010303 | SILT | | 46.54 | PERCENT | | | SED-D | 72.4 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 51 | REG | 0.02 | 26010304 | TOTAL ORGANIC CARBON | | 2.076 | PERCENT | | | SED-D | 72.4 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 51 | REG | 0.02 | 26010305 | ACID VOLATILE SULFIDE | | 3800 | MG/KG | | J | SED-D | 72.4 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 0.02 | 26010305 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1 | MG/KG | U | U | SED-D | 72.4 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 0.02 | 26010305 | COPPER, EXTRACTABLE | 7440-50-8 | 170 | MG/KG | | | SED-D | 72.4 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 4 | MG/KG |
| 51 | REG | 0.02 | 26010305 | LEAD, EXTRACTABLE | 7439-92-1 | 85 | MG/KG | | | SED-D | 72.4 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 7 | MG/KG |
| 51 | REG | 0.02 | 26010305 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.07 | MG/KG | U | U | SED-D | 72.4 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 51 | REG | 0.02 | 26010305 | SULFIDE, TOTAL | | 5400 | MG/KG | | | SED-D | 72.4 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 0.02 | 26010305 | ZINC, EXTRACTABLE | 7440-66-6 | 230 | MG/KG | | | SED-D | 72.4 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 10 | MG/KG |
| 51 | REG | 0.02 | 26010399 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | EJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | 4,4'-DDE | 72-55-9 | 20 | UG/KG | U | EJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | EJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | EJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | EJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | EJ | CLAM | | EPA 7041 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 51 | REG | 0.02 | 26010399 | ARSENIC, TOTAL | 7440-38-2 | 2.8 | MG/KG | | EJ | CLAM | | EPA 7060 | DVRCORER | FAU | SEDIMENT | VV | 0.8 | MG/KG |
| 51 | REG | 0.02 | 26010399 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | EJ | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 51 | REG | 0.02 | 26010399 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | EJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | EJ | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 51 | REG | 0.02 | 26010399 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | EJ | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010399 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | EJ | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 51 | REG | 0.02 | 26010399 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | EJ | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 0.02 | 26010399 | COPPER, TOTAL | 7440-50-8 | 1.4 | MG/KG | | | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 51 | REG | 0.02 | 26010399 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | DIBUTYLTIN | | 1 | UG/KG | U | W | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 0.02 | 26010399 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | FLUORENE | 86-73-7 | 10 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | W | CLAM | | EPA 7421 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 51 | REG | 0.02 | 26010399 | LIPIDS | | 418 | MG/KG | | | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 51 | REG | 0.02 | 26010399 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | | | CLAM | | EPA 9071 | DVRCORER | FAU | SEDIMENT | VV | 60 | MG/KG |
| 51 | REG | 0.02 | 26010399 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | W | CLAM | | EPA 7470 | DVRCORER | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 51 | REG | 0.02 | 26010399 | METHYLNAPHTHALENES | | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 0.02 | 26010399 | MONOBUTYLTIN | | 1 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | W | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 0.02 | 26010399 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 0.02 | 26010399 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | W | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 0.02 | 26010399 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | PYRENE | 129-00-0 | 20 | UG/KG | U | W | CLAM | | GC/MS | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | W | CLAM | | EPA 7740 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 51 | REG | 0.02 | 26010399 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | W | CLAM | | EPA 7760 | DVRCORER | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 51 | REG | 0.02 | 26010399 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | W | CLAM | | EPA 7841 | DVRCORER | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 51 | REG | 0.02 | 26010399 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | W | CLAM | | EPA 8080 | DVRCORER | FAU | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 0.02 | 26010399 | TRIBUTYLTIN | 688-73-3 | 1.9 | UG/KG | U | J | CLAM | | GC-FPD | DVRCORER | FAU | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 0.02 | 26010399 | ZINC, TOTAL | 7440-66-6 | 13 | MG/KG | | | CLAM | | EPA 6010 | DVRCORER | FAU | SEDIMENT | VV | 1 | MG/KG |
| 52 | REG | 0.02 | 26010201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2,4-DICHLOROPHENOL | 120-83-2 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2-CHLOROPHENOL | 95-57-8 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | REG | 0.02 | 26010201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2-METHYLPHENOL | 95-48-7 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 3- AND 4-METHYLPHENOL | 108-44-5 | 90 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 90 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 4,4'-DDE | 72-55-9 | 94 | UG/KG | J | J | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | 4-NITROPHENOL | 100-02-7 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ACENAPHTHYLENE | 208-96-8 | 29 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ANTHRACENE | 120-12-7 | 110 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 100 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BENZO(A)ANTHRACENE | 56-55-3 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BENZO(A)PYRENE | 50-32-8 | 430 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BENZO(B)FLUORANTHENE | 205-99-2 | 840 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BENZO(GHI)PERYLENE | 191-24-2 | 140 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BENZO(K)FLUORANTHENE | 207-08-9 | 910 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 200 | UG/KG |
| 52 | REG | 0.02 | 26010201 | CHLORDANE | 57-74-9 | 6 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | CHRYSENE | 218-01-9 | 260 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 8 | UG/KG |
| 52 | REG | 0.02 | 26010201 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | DI-N-BUTYLPHTHALATE | 84-74-2 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | DI-N-OCTYLPHTHALATE | 117-84-0 | 170 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0.02 | 26010201 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | FLUORANTHENE | 206-44-0 | 88 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0.02 | 26010201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0.02 | 26010201 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCOREA | SED | SEDIMENT | VV | 30 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | REG | 0 02 | 26010201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 140 | UG/KG | | | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 1 | UG/KG |
| 52 | REG | 0 02 | 26010201 | METHOXYCHLOR | 72-43-5 | 6 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 6 | UG/KG |
| 52 | REG | 0 02 | 26010201 | METHYLNAPHTHALENES | | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | NITROBENZENE | 98-95-3 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PCB-1260 | 11096-82-5 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PENTACHLOROPHENOL | 87-86-5 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PHENANTHRENE | 85-01-8 | 66 | UG/KG | | | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PHENOL | 108-95-2 | 60 | UG/KG | U | U | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 60 | UG/KG |
| 52 | REG | 0 02 | 26010201 | PYRENE | 129-00-0 | 490 | UG/KG | J | J | SED-D | 65 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010201 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | 65 | EPA 8080 | DVRCORER | SED | SEDIMENT | VV | 30 | UG/KG |
| 52 | REG | 0 02 | 26010202 | ARSENIC, TOTAL | 7440-38-2 | 9.7 | MG/KG | | J | SED-D | 65 | EPA 7060 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 52 | REG | 0 02 | 26010202 | BERYLLIUM, TOTAL | 7440-41-7 | 0.66 | MG/KG | | | SED-D | 65 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0 3 | MG/KG |
| 52 | REG | 0 02 | 26010202 | CADMIUM, TOTAL | 7440-43-9 | 0 94 | MG/KG | | J | SED-D | 65 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 0 1 | MG/KG |
| 52 | REG | 0 02 | 26010202 | CHROMIUM, TOTAL | 7440-47-3 | 63 | MG/KG | | | SED-D | 65 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 52 | REG | 0 02 | 26010202 | COPPER, TOTAL | 7440-50-8 | 260 | MG/KG | | | SED-D | 65 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 52 | REG | 0 02 | 26010202 | DIBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 65 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 52 | REG | 0 02 | 26010202 | LEAD, TOTAL | 7439-92-1 | 89 | MG/KG | | | SED-D | 65 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 52 | REG | 0 02 | 26010202 | MERCURY, TOTAL | 7439-97-6 | 0.49 | MG/KG | | | SED-D | 65 | EPA 7470 | DVRCORER | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 52 | REG | 0 02 | 26010202 | MONOBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 65 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 52 | REG | 0 02 | 26010202 | NICKEL, TOTAL | 7440-02-0 | 34 | MG/KG | | | SED-D | 65 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 52 | REG | 0 02 | 26010202 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 65 | EPA 7740 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 52 | REG | 0 02 | 26010202 | SILVER, TOTAL | 7440-22-4 | 2 9 | MG/KG | | | SED-D | 65 | EPA 7760 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 52 | REG | 0 02 | 26010202 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 65 | EPA 7841 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 52 | REG | 0 02 | 26010202 | TRIBUTYLTIN | 688-73-3 | 21 | UG/KG | | U | SED-D | 65 | GC-FPD | DVRCORER | SED | SEDIMENT | VV | 3 | UG/KG |
| 52 | REG | 0 02 | 26010202 | ZINC, TOTAL | 7440-66-6 | 340 | MG/KG | | | SED-D | 65 | EPA 6010 | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 52 | REG | 0 02 | 26010203 | CLAY | | 40.1 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 87.647 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 1000 MICRONS | | 10.594 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 125 MICRONS | | 14.143 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 10.045 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 29.429 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 13.315 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 2000 MICRONS | | 9.003 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 250 MICRONS | | 12.823 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 58.9 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 20.8 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 353.56 MICRONS | | 12.317 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 500 MICRONS | | 11.604 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 18.257 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 49.092 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 11.189 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 15.773 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | GRAVEL | | 9.003 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | MEAN GRAIN SIZE | | 7.09 | UM | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | MEDIAN GRAIN SIZE | | 7.37 | UM | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | SAND | | 9.254 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010203 | SILT | | 41.843 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010204 | TOTAL ORGANIC CARBON | | 2.139 | PERCENT | | | SED-D | 65 | PLUMB 1981 | DVRCORER | SED | SEDIMENT | VU | | |
| 52 | REG | 0 02 | 26010205 | ACID VOLATILE SULFIDE | | 3700 | MG/KG | | L | SED-D | 65 | MENZEL&VACCARO | DVRCORER | SED | SEDIMENT | VV | | |
| 52 | REG | 0 02 | 26010205 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.1 | MG/KG | | | SED-D | 65 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 52 | REG | 0 02 | 26010205 | COPPER, EXTRACTABLE | 7440-50-8 | 170 | MG/KG | | | SED-D | 65 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 52 | REG | 0 02 | 26010205 | LEAD, EXTRACTABLE | 7439-92-1 | 69 | MG/KG | | | SED-D | 65 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 3 | MG/KG |
| 52 | REG | 0 02 | 26010205 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.06 | MG/KG | | | SED-D | 65 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0 | MG/KG |
| 52 | REG | 0 02 | 26010205 | SULFIDE, TOTAL | | 4300 | MG/KG | U | J | SED-D | 65 | EPA DRAFT | DVRCORER | SED | SEDIMENT | VV | 0 06 | MG/KG |
| 52 | REG | 0 02 | 26010205 | ZINC, EXTRACTABLE | 7440-66-6 | 240 | MG/KG | | | SED-D | 65 | EPA 9030 | DVRCORER | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | DVRCORER | SED | SEDIMENT | VV | 9 | MG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 3- AND 4-METHYLPHENOL | 106-44-5 | 70 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 4,4'-DDD | 72-54-8 | 10 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 4,4'-DDE | 72-55-9 | 180 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 0 02 | 26006801 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | ALDRIN | 309-00-2 | 1 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0 02 | 26006801 | ANTHRACENE | 120-12-7 | 44 | UG/KG | | | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | UJ | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0 02 | 26006801 | BENZO(A)PYRENE | 50-32-8 | 150 | UG/KG | | | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010.1 | REG | 0 02 | 26006801 | BENZO(B)FLUORANTHENE | 205-99-2 | 130 | UG/KG | | | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | BENZO(GHI)PERYLENE | 191-24-2 | 66 | UG/KG | | | SED-D | 64 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | | | | | | | | | | | | | | | | | 20 | UG/KG |



R0063186

C3-803

VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.1 | REG | 0.02 | 26006801 | BENZO(K)FLUORANTHENE | 207-08-9 | 200 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | CHLORDANE | 57-74-9 | 4 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | CHRYSENE | 218-01-9 | 88 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | DI-N-OCTYLPHTHALATE | 117-84-0 | 220 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | DIELDRIN | 60-57-1 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | ENDRIN | 72-20-8 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | FLUORANTHENE | 206-44-0 | 180 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | FLUORENE | 86-73-7 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 86 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | ISOPHORONE | 78-59-1 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | METHYLNAPHTHALENES | | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | NITROBENZENE | 98-95-3 | 40 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PCB-1016 | 12674-11-2 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PCB-1221 | 11104-28-2 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PCB-1232 | 11141-16-5 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PCB-1242 | 53469-21-9 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PCB-1248 | 12672-29-6 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PCB-1254 | 11097-69-1 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PCB-1260 | 11096-82-5 | 20 | UG/KG | | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PHENANTHRENE | 85-01-8 | 44 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PHENOL | 108-95-2 | 40 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | PYRENE | 129-00-0 | 120 | UG/KG | | U | SED-D | 54.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 0.02 | 26006801 | TOXAPHENE | 8001-35-2 | 80 | UG/KG | U | U | SED-D | 54.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



R0063187

NOV 1 7 8

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 1 | REG | 0.02 | 26006802 | ARSENIC, TOTAL | 7440-38-2 | 14 | MG/KG | | J | SED-D | 84.4 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | BERYLLIUM, TOTAL | 7440-41-7 | 0.44 | MG/KG | | | SED-D | 84.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | CADMIUM, TOTAL | 7440-43-9 | 2.4 | MG/KG | | J | SED-D | 84.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | CHROMIUM, TOTAL | 7440-47-3 | 53 | MG/KG | | | SED-D | 84.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | COPPER, TOTAL | 7440-50-8 | 130 | MG/KG | | | SED-D | 84.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 84.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 1 | REG | 0.02 | 26006802 | LEAD, TOTAL | 7439-92-1 | 42 | MG/KG | | | SED-D | 84.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | MERCURY, TOTAL | 7439-97-6 | 0.59 | MG/KG | | | SED-D | 84.4 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 84.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 1 | REG | 0.02 | 26006802 | NICKEL, TOTAL | 7440-02-0 | 37 | MG/KG | | | SED-D | 84.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | SELENIUM, TOTAL | 7782-49-2 | 1.3 | MG/KG | | | SED-D | 84.4 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | SILVER, TOTAL | 7440-22-4 | 2.2 | MG/KG | | | SED-D | 84.4 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 84.4 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 0.02 | 26006802 | TRIBUTYLTIN | 688-73-3 | 17 | UG/KG | | | SED-D | 84.4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 1 | REG | 0.02 | 26006802 | ZINC, TOTAL | 7440-66-6 | 240 | MG/KG | | | SED-D | 84.4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 1 | REG | 0.02 | 26006805 | ACID VOLATILE SULFIDE | | 7.9 | MG/KG | | J | SED-D | 84.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 0.02 | 26006805 | CADMIUM, EXTRACTABLE | 7440-43-9 | 2.4 | MG/KG | | | SED-D | 84.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40010 1 | REG | 0.02 | 26006805 | COPPER, EXTRACTABLE | 7440-50-8 | 70 | MG/KG | | | SED-D | 84.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 1 | REG | 0.02 | 26006805 | LEAD, EXTRACTABLE | 7439-92-1 | 35 | MG/KG | | | SED-D | 84.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40010 1 | REG | 0.02 | 26006805 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.044 | MG/KG | | | SED-D | 84.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 40010 1 | REG | 0.02 | 26006805 | SULFIDE, TOTAL | | 15 | MG/KG | | | SED-D | 84.4 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 0.02 | 26006805 | ZINC, EXTRACTABLE | 7440-66-6 | 190 | MG/KG | | | SED-D | 84.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40010 1 | REG | 0.02 | 26006899 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | 4,4'-DDE | 72-55-9 | 4.8 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | U | CLAM | | EPA 7041 | BOXCORE | FAU | SEDIMENT | VV | 0.8 | MG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ARSENIC, TOTAL | 7440-38-2 | 2.5 | MG/KG | | | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010 1 | REG | 0.02 | 26006899 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 40010 1 | REG | 0.02 | 26006899 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 40010 1 | REG | 0.02 | 26006899 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 40010 1 | REG | 0.02 | 26006899 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 40010 1 | REG | 0.02 | 26006899 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.8 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.8 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.8 | UG/KG |
| 40010 1 | REG | 0.02 | 26006899 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.8 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.1 | REG | 0.02 | 26006899 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010.1 | REG | 0.02 | 26006899 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | LIPIDS | | 952 | MG/KG | | | CLAM | | EPA 9071 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 40010.1 | REG | 0.02 | 26006899 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 40010.1 | REG | 0.02 | 26006899 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | MONODUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010.1 | REG | 0.02 | 26006899 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | U | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 40010.1 | REG | 0.02 | 26006899 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010.1 | REG | 0.02 | 26006899 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | TRIBUTYLTIN | 688-73-3 | 1.3 | UG/KG | | J | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 0.02 | 26006899 | ZINC, TOTAL | 7440-66-6 | 13 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REP1 | 0.02 | 26006803 | CLAY | | 19.848 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 1.95 MICRONS | | 83.983 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.08 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 125 MICRONS | | 5.125 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.083 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 15.63 MICRONS | | 60.109 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 3.315 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.057 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 250 MICRONS | | 1.844 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 60.184 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 38.108 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 353.56 MICRONS | | 1.149 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 500 MICRONS | | 0.304 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 14.891 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 74.327 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.132 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 0.89 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | GRAVEL | | 0.057 | PERCENT | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | MEAN GRAIN SIZE | | 10.908 | UM | | | SED-D | 84.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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E-BCD

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.1 | REP1 | 0.02 | 26006803 | MEDIAN GRAIN SIZE | | 20.921 | UM | | | SED-D | 64.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | SAND | | 14.834 | PERCENT | | | SED-D | 64.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006803 | SILT | | 65.263 | PERCENT | | | SED-D | 64.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP1 | 0.02 | 26006804 | TOTAL ORGANIC CARBON | | 1.865 | PERCENT | | | SED-D | 64.4 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CLAY | | 22.108 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 82.221 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.021 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 125 MICRONS | | 4.177 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 58.249 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.782 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 250 MICRONS | | 0.698 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 77.992 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 33.74 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.421 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 500 MICRONS | | 0.224 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 11.881 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 88.802 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.099 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 7.483 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | MEAN GRAIN SIZE | | 8.721 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | MEDIAN GRAIN SIZE | | 18.941 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | SAND | | 11.881 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006903 | SILT | | 88.012 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP2 | 0.02 | 26006904 | TOTAL ORGANIC CARBON | | 2.036 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CLAY | | 24.436 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 1.95 MICRONS | | 90.682 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.034 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 125 MICRONS | | 3.445 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 52.928 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.766 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 250 MICRONS | | 0.65 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 78.564 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 31.08 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.389 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 500 MICRONS | | 0.146 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 11.397 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 87.494 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.088 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 8.84 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | MEAN GRAIN SIZE | | 9.088 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | MEDIAN GRAIN SIZE | | 17.148 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | SAND | | 11.397 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REP3 | 0.02 | 26007003 | SILT | | 84.197 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.1 | REP3 | 0.02 | 26007004 | TOTAL ORGANIC CARBON | | 1.837 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010.2 | REG | 0.02 | 26006601 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 2-NITROPHENOL | 88-75-5 | 80 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 4,4'-DDD | 72-54-8 | 20 | UG/KG | U | J | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 4,4'-DDE | 72-55-9 | 180 | UG/KG | | J | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | ALFHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BENZO(A)PYRENE | 50-32-8 | 43 | UG/KG | | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BENZO(B)FLUORANTHENE | 205-99-2 | 43 | UG/KG | | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BENZO(GHI)PERYLENE | 191-24-2 | 21 | UG/KG | | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BENZO(K)FLUORANTHENE | 207-08-9 | 43 | UG/KG | | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | CHRYSENE | 218-01-9 | 43 | UG/KG | | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 53.4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.2 | REG | 0.02 | 26006601 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 53.4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 2 | REG | 0 02 | 26006601 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | FLUORANTHENE | 206-44-0 | 84 | UG/KG | | | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 21 | UG/KG | | | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | PYRENE | 129-00-0 | 84 | UG/KG | | | SED-D | 53 4 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006601 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 53 4 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006602 | ANTIMONY, TOTAL | 7440-36-0 | 1 | MG/KG | U | U | SED-D | 53 4 | EPA 7041 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | ARSENIC, TOTAL | 7440-38-2 | 9 | MG/KG | | | SED-D | 53 4 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | BERYLLIUM, TOTAL | 7440-41-7 | 0.43 | MG/KG | | | SED-D | 53 4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | CADMIUM, TOTAL | 7440-43-9 | 1.5 | MG/KG | | | SED-D | 53 4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | CHROMIUM, TOTAL | 7440-47-3 | 45 | MG/KG | | | SED-D | 53 4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | COPPER, TOTAL | 7440-50-8 | 130 | MG/KG | | | SED-D | 53 4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | DIBUTYLTIN | | 2 | UG/KG | U | R | SED-D | 53 4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 2 | REG | 0 02 | 26006602 | LEAD, TOTAL | 7439-92-1 | 36 | MG/KG | | | SED-D | 53 4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | MERCURY, TOTAL | 7439-97-6 | 0.43 | MG/KG | | | SED-D | 53 4 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | MONOBUTYLTIN | | 2 | UG/KG | U | R | SED-D | 53 4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 2 | REG | 0 02 | 26006602 | NICKEL, TOTAL | 7440-02-0 | 32 | MG/KG | | | SED-D | 53 4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | SELENIUM, TOTAL | 7782-49-2 | 1.7 | MG/KG | | | SED-D | 53 4 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | SILVER, TOTAL | 7440-22-4 | 2.4 | MG/KG | | | SED-D | 53 4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 53 4 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006602 | TRIBUTYLTIN | 688-73-3 | 5.6 | UG/KG | | R | SED-D | 53 4 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 2 | REG | 0 02 | 26006602 | ZINC, TOTAL | 7440-66-6 | 240 | MG/KG | | | SED-D | 53 4 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 2 | REG | 0 02 | 26006605 | ACID VOLATILE SULFIDE | | 59 | MG/KG | | J | SED-D | 53 4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |



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5-8C3

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 2 | REG | 0 02 | 26006605 | CADMIUM, EXTRACTABLE | 7440-43-9 | 2.6 | MG/KG | | | SED-D | 63.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40010 2 | REG | 0 02 | 26006605 | COPPER, EXTRACTABLE | 7440-50-8 | 82 | MG/KG | | | SED-D | 63.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006605 | LEAD, EXTRACTABLE | 7439-92-1 | 34 | MG/KG | | | SED-D | 63.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40010 2 | REG | 0 02 | 26006605 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 63.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40010 2 | REG | 0 02 | 26006605 | SULFIDE, TOTAL | | 41 | MG/KG | | | SED-D | 63.4 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REG | 0 02 | 26006605 | ZINC, EXTRACTABLE | 7440-66-6 | 210 | MG/KG | | | SED-D | 63.4 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | 4,4'-DDE | 72-55-9 | 26 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7041 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ARSENIC, TOTAL | 7440-38-2 | 3 | MG/KG | | | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | COPPER, TOTAL | 7440-50-8 | 1.6 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-PPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | | | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | LIPIDS | | 1440 | MG/KG | | | CLAM | | EPA 8270 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | | | CLAM | | EPA 7471 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 5 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | MONOBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-PPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | NAPHTHALENE | 91-20-3 | 50 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |



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C8C-J-- 7 OF 8

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 2 | REG | 0 02 | 26006699 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0.02 | 26006699 | PYRENE | 129-00-0 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | UJ | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010 2 | REG | 0 02 | 26006699 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010 2 | REG | 0 02 | 26006699 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010 2 | REP1 | 0 02 | 26006603 | CLAY | | 24.969 | PERCENT | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 1.95 MICRONS | | 79.854 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.026 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 125 MICRONS | | 0.798 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 49.483 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.399 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 250 MICRONS | | 0.221 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 75.031 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 50.039 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 353 55 MICRONS | | 0.158 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 500 MICRONS | | 0.105 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 62 5 MICRONS | | 4.266 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 63.947 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.058 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 1.928 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | GRAVEL | | 0 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | MEAN GRAIN SIZE | | 7.049 | UM | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | MEDIAN GRAIN SIZE | | 15.222 | UM | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | SAND | | 4.266 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0 02 | 26006603 | SILT | | 70.765 | PERCENT | | | SED-D | 83.4 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP1 | 0.02 | 26006604 | TOTAL ORGANIC CARBON | | 1.93 | PERCENT | | | SED-D | 83.4 | MENZELAVACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CLAY | | 22.081 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 83.277 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 1000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 125 MICRONS | | 2.824 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 66.869 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.432 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 250 MICRONS | | 0.803 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 77.919 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 2 | REP2 | 0 02 | 26007103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 50.891 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.2 | REP2 | 0.02 | 26007103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.218 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | CUMULATIVE PERCENT > 500 MICRONS | | 0.091 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 10.53 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 70.706 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.02 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 5.308 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | MEAN GRAIN SIZE | | 9.893 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | MEDIAN GRAIN SIZE | | 18.607 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | SAND | | 10.53 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007103 | SILT | | 87.389 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP2 | 0.02 | 26007104 | TOTAL ORGANIC CARBON | | 1.235 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CLAY | | 22.792 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 81.883 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.03 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 125 MICRONS | | 1.628 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 57.291 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.741 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 250 MICRONS | | 0.286 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 77.208 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 34.326 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.195 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 500 MICRONS | | 0.115 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 10.345 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 99.892 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.07 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 4.243 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | MEAN GRAIN SIZE | | 9.453 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | MEDIAN GRAIN SIZE | | 19.471 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | SAND | | 10.345 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007203 | SILT | | 89.864 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.2 | REP3 | 0.02 | 26007204 | TOTAL ORGANIC CARBON | | 2.7 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010.3 | REG | 0.02 | 26006799 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | 4,4'-DDE | 72-55-9 | 57 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7041 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ARSENIC, TOTAL | 7440-38-2 | 3.2 | MG/KG | | L | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.3 | REG | 0.02 | 26006799 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | COPPER, TOTAL | 7440-50-8 | 1.6 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | LIPIDS | | 664 | MG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | CLAM | | EPA 8071 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | MONOBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | U | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.6 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | U | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40010.3 | REG | 0.02 | 26006799 | TRIBUTYLTIN | 688-73-3 | 1.9 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40010.3 | REG | 0.02 | 26006799 | ZINC, TOTAL | 7440-66-6 | 14 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP1 | 0.02 | 26006701 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 100 | UG/KG | U | U | SED-D | 64.8 | EPA 8270 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 40010.3 | REP1 | 0.02 | 26006701 | 1,2-DICHLOROBENZENE | 95-50-1 | 100 | UG/KG | U | U | SED-D | 64.8 | EPA 8270 | BOXCORE | FAU | SEDIMENT | VV | 100 | UG/KG |
| 40010.3 | REP1 | 0.02 | 26006701 | 1,3-DICHLOROBENZENE | 541-73-1 | 100 | UG/KG | U | U | SED-D | 64.8 | EPA 8270 | BOXCORE | FAU | SEDIMENT | VV | 100 | UG/KG |
| 40010.3 | REP1 | 0.02 | 26006701 | 1,4-DICHLOROBENZENE | 106-46-7 | 100 | UG/KG | U | U | SED-D | 64.8 | EPA 8270 | BOXCORE | FAU | SEDIMENT | VV | 100 | UG/KG |
| 40010.3 | REP1 | 0.02 | 26006701 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 200 | UG/KG | U | U | SED-D | 64.8 | EPA 8270 | BOXCORE | FAU | SEDIMENT | VV | 100 | UG/KG |
| 40010.3 | REP1 | 0.02 | 26006701 | 2,4-DICHLOROPHENOL | 120-83-2 | 200 | UG/KG | U | U | SED-D | 64.8 | EPA 8270 | BOXCORE | FAU | SEDIMENT | VV | 200 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 3 | REP1 | 0 02 | 26006701 | 2,4-DIMETHYLPHENOL | 105-67-9 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 2,4-DINITROPHENOL | 51-28-5 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 2,4-DINITROTOLUENE | 121-14-2 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 2,6-DINITROTOLUENE | 606-20-2 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 2-CHLORONAPHTHALENE | 91-58-7 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 2-CHLOROPHENOL | 95-57-8 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 2-METHYLPHENOL | 95-48-7 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 2-NITROPHENOL | 88-75-5 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 3- AND 4-METHYLPHENOL | 106-44-5 | 400 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 4,4'-DDD | 72-54-8 | 20 | UG/KG | | | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 4,4'-DDE | 72-55-9 | 220 | UG/KG | | | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | 4-NITROPHENOL | 100-02-7 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ACENAPHTHENE | 83-32-9 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ACENAPHTHYLENE | 208-96-8 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ANTHRACENE | 120-12-7 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BENZO(A)ANTHRACENE | 56-55-3 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BENZO(A)PYRENE | 50-32-8 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BENZO(B)FLUORANTHENE | 205-99-2 | 290 | UG/KG | J | J | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BENZO(GHI)PERYLENE | 191-24-2 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BENZO(K)FLUORANTHENE | 207-08-9 | 220 | UG/KG | J | J | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 900 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | BUTYLBENZYLPHTHALATE | 85-68-7 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 900 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | CHRYSENE | 218-01-9 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | DI-N-BUTYLPHTHALATE | 84-74-2 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | DI-N-OCTYLPHTHALATE | 117-84-0 | 200 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | DIETHYLPHTHALATE | 84-66-2 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | DIMETHYLPHTHALATE | 131-11-3 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | FLUORANTHENE | 206-44-0 | 370 | UG/KG | J | J | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | FLUORENE | 86-73-7 | 100 | UG/KG | U | U | SED-D | 54 8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0 02 | 26006701 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 54 8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 3 | REP1 | 0.02 | 26006701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | HEXACHLOROBENZENE | 118-74-1 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | HEXACHLOROBUTADIENE | 87-68-3 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | HEXACHLOROETHANE | 67-72-1 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | ISOPHORONE | 78-59-1 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | METHYLNAPHTHALENES | | 200 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | N-NITROSODIMETHYLAMINE | 62-75-9 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | N-NITROSODIPHENYLAMINE | 86-30-6 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | NITROBENZENE | 98-95-3 | 200 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PCB 1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PENTACHLOROPHENOL | 87-86-5 | 200 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PHENANTHRENE | 85-01-8 | 100 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PHENOL | 108-95-2 | 200 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | PYRENE | 129-00-0 | 220 | UG/KG | U | U | SED-D | 84.8 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006701 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 84.8 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | ANTIMONY, TOTAL | 7440-36-0 | 1 | MG/KG | U | U | SED-D | 84.8 | EPA 7041 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | ARSENIC, TOTAL | 7440-38-2 | 9.1 | MG/KG | | | SED-D | 84.8 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | BERYLLIUM, TOTAL | 7440-41-7 | 0.44 | MG/KG | | | SED-D | 84.8 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | CADMIUM, TOTAL | 7440-43-9 | 1.8 | MG/KG | | | SED-D | 84.8 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | CHROMIUM, TOTAL | 7440-47-3 | 42 | MG/KG | | | SED-D | 84.8 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | COPPER, TOTAL | 7440-50-8 | 120 | MG/KG | | | SED-D | 84.8 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 84.8 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | LEAD, TOTAL | 7439-92-1 | 44 | MG/KG | | | SED-D | 84.8 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | MERCURY, TOTAL | 7439-97-6 | 0.4 | MG/KG | | | SED-D | 84.8 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 84.8 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | NICKEL, TOTAL | 7440-02-0 | 31 | MG/KG | | | SED-D | 84.8 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | SELENIUM, TOTAL | 7782-49-2 | 1.8 | MG/KG | | | SED-D | 84.8 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | SILVER, TOTAL | 7440-22-4 | 1.5 | MG/KG | | | SED-D | 84.8 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 84.8 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | TRIBUTYLTIN | 688-73-3 | 4.6 | UG/KG | | | SED-D | 84.8 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP1 | 0.02 | 26006702 | ZINC, TOTAL | 7440-66-6 | 190 | MG/KG | | | SED-D | 84.8 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP1 | 0.02 | 26006703 | CLAY | | 22.003 | PERCENT | | | SED-D | 84.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 84.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 85.574 | PERCENT | | | SED-D | 84.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 1000 MICRONS | | 1.13 | PERCENT | | | SED-D | 84.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 125 MICRONS | | 17.843 | PERCENT | | | SED-D | 84.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.000 | PERCENT | | | SED-D | 84.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 59.862 | PERCENT | | | SED-D | 84.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.000 | PERCENT | | | SED-D | 84.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.299 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 250 MICRONS | | 4.114 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 77.997 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 43.517 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 353.55 MICRONS | | 3.152 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 500 MICRONS | | 2.017 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 33.477 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 70.987 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 1.548 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | CUMULATIVE PERCENT > 88.39 MICRONS | | 28.714 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | GRAVEL | | 0.299 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | MEAN GRAIN SIZE | | 17.35 | UM | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | MEDIAN GRAIN SIZE | | 23.317 | UM | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | SAND | | 33.178 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006703 | SILT | | 44.52 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006704 | TOTAL ORGANIC CARBON | | 1.871 | PERCENT | | | SED-D | 54.8 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010.3 | REP1 | 0.02 | 26006705 | ACID VOLATILE SULFIDE | | 8.5 | MG/KG | | J | SED-D | 54.8 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010.3 | REP1 | 0.02 | 26006705 | CADMIUM, EXTRACTABLE | 7440-43-9 | 2 | MG/KG | | | SED-D | 54.8 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.3 | REP1 | 0.02 | 26006705 | COPPER, EXTRACTABLE | 7440-50-8 | 66 | MG/KG | | | SED-D | 54.8 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40010.3 | REP1 | 0.02 | 26006705 | LEAD, EXTRACTABLE | 7439-92-1 | 31 | MG/KG | | | SED-D | 54.8 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.3 | REP1 | 0.02 | 26006705 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 54.8 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40010.3 | REP1 | 0.02 | 26006705 | SULFIDE, TOTAL | | 1.8 | MG/KG | | | SED-D | 54.8 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40010.3 | REP1 | 0.02 | 26006705 | ZINC, EXTRACTABLE | 7440-66-6 | 150 | MG/KG | | | SED-D | 54.8 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 54.8 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 4,4'-DDD | 72-54-8 | 12 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 4,4'-DDE | 72-55-9 | 140 | UG/KG | | | SED-D | 51.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.3 | REP2 | 0.02 | 26007301 | ANTHRACENE | 120-12-7 | 41 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BENZO(A)PYRENE | 50-32-8 | 170 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BENZO(B)FLUORANTHENE | 205-99-2 | 170 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BENZO(GHI)PERYLENE | 191-24-2 | 82 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BENZO(K)FLUORANTHENE | 207-08-9 | 170 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | CHRYSENE | 218-01-9 | 83 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 140 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | FLUORANTHENE | 206-44-0 | 83 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 41 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.3 | REP2 | 0.02 | 26007301 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 3 | REP2 | 0 02 | 26007301 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | UJ | SED-D | 51.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007301 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007301 | PHENANTHRENE | 85-01-8 | 41 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007301 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007301 | PYRENE | 129-00-0 | 83 | UG/KG | | | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007301 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 51.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | ARSENIC, TOTAL | 7440-38-2 | 13 | MG/KG | | J | SED-D | 51.7 | EPA 6020 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.41 | MG/KG | | | SED-D | 51.7 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | CADMIUM, TOTAL | 7440-43-9 | 1.9 | MG/KG | | J | SED-D | 51.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | CHROMIUM, TOTAL | 7440-47-3 | 56 | MG/KG | | | SED-D | 51.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | COPPER, TOTAL | 7440-50-8 | 180 | MG/KG | | | SED-D | 51.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 51.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | LEAD, TOTAL | 7439-92-1 | 41 | MG/KG | | | SED-D | 51.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | MERCURY, TOTAL | 7439-97-6 | 0.46 | MG/KG | | | SED-D | 51.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 51.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | NICKEL, TOTAL | 7440-02-0 | 37 | MG/KG | | | SED-D | 51.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | SELENIUM, TOTAL | 7782-49-2 | 1.4 | MG/KG | | | SED-D | 51.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | SILVER, TOTAL | 7440-22-4 | 2.8 | MG/KG | | | SED-D | 51.7 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 51.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | | U | SED-D | 51.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007302 | ZINC, TOTAL | 7440-66-6 | 250 | MG/KG | | | SED-D | 51.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP2 | 0 02 | 26007303 | CLAY | | 22.899 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 1.95 MICRONS | | 99.434 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.08 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 125 MICRONS | | 3.101 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.002 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 80.889 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.659 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.005 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 250 MICRONS | | 0.514 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 77.104 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 24.495 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.29 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 500 MICRONS | | 0.197 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 7.403 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 67.781 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.109 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 3.901 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | GRAVEL | | 0.005 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | MEAN GRAIN SIZE | | 8.208 | UM | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | MEDIAN GRAIN SIZE | | 15.912 | UM | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | SAND | | 7.387 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007303 | SILT | | 69.701 | PERCENT | | | SED-D | 51.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP2 | 0 02 | 26007304 | TOTAL ORGANIC CARBON | | 2.099 | PERCENT | | | SED-D | 51.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010 3 | REP2 | 0 02 | 26007305 | ACID VOLATILE SULFIDE | | 82 | MG/KG | | J | SED-D | 51.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | | |
| 40010 3 | REP2 | 0 02 | 26007305 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.9 | MG/KG | | | SED-D | 51.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP2 | 0 02 | 26007305 | COPPER, EXTRACTABLE | 7440-50-8 | 77 | MG/KG | | | SED-D | 51.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40010.3 | REP2 | 0 02 | 26007305 | LEAD, EXTRACTABLE | 7439-92-1 | 36 | MG/KG | | | SED-D | 51.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010.3 | REP2 | 0 02 | 26007305 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.04 | MG/KG | U | U | SED-D | 51.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 40010.3 | REP2 | 0 02 | 26007305 | SULFIDE, TOTAL | | 20 | MG/KG | | | SED-D | 51.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 3 | REP2 | 0 02 | 26007305 | ZINC, EXTRACTABLE | 7440-66-6 | 190 | MG/KG | | | SED-D | 51.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 3- AND 4-METHYLPHENOL | 106-44-5 | 60 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 4,4'-DDD | 72-54-8 | 13 | UG/KG | | | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 4,4'-DDE | 72-55-9 | 180 | UG/KG | | | SED-D | 53 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | | | SED-D | 53 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 53 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 53 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ANTHRACENE | 120-12-7 | 43 | UG/KG | | | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BENZO(A)PYRENE | 50-32-8 | 150 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BENZO(B)FLUORANTHENE | 205-99-2 | 150 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BENZO(GHI)PERYLENE | 191-24-2 | 84 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BENZO(K)FLUORANTHENE | 207-08-9 | 170 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 53 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 53 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | CHRYSENE | 218-01-9 | 110 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 53 2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | DI-N-OCTYLPHTHALATE | 117-84-0 | 240 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 53 2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 3 | REP3 | 0 02 | 26007401 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | FLUORANTHENE | 206-44-0 | 180 | UG/KG | | | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 43 | UG/KG | | | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | METHYLNAPHTHALENES | | 30 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PHENANTHRENE | 85-01-8 | 43 | UG/KG | | | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | PYRENE | 129-00-0 | 180 | UG/KG | | | SED-D | 53.2 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007401 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 53.2 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | ARSENIC, TOTAL | 7440-38-2 | 13 | MG/KG | | | SED-D | 53.2 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | BERYLLIUM, TOTAL | 7440-41-7 | 0.43 | MG/KG | | | SED-D | 53.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | CADMIUM, TOTAL | 7440-43-9 | 1.4 | MG/KG | | | SED-D | 53.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | CHROMIUM, TOTAL | 7440-47-3 | 53 | MG/KG | | | SED-D | 53.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | COPPER, TOTAL | 7440-50-8 | 150 | MG/KG | | | SED-D | 53.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 53.2 | GC-PFD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | LEAD, TOTAL | 7439-92-1 | 28 | MG/KG | | | SED-D | 53.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | MERCURY, TOTAL | 7439-97-6 | 0.59 | MG/KG | | | SED-D | 53.2 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | MONOBUTYLTIN | | 9 | UG/KG | U | U | SED-D | 53.2 | GC-PFD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | NICKEL, TOTAL | 7440-02-0 | 34 | MG/KG | | | SED-D | 53.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | SELENIUM, TOTAL | 7782-49-2 | 1.9 | MG/KG | | | SED-D | 53.2 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | SILVER, TOTAL | 7440-22-4 | 2.4 | MG/KG | | | SED-D | 53.2 | EPA 7760 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 53.2 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | TRIBUTYLTIN | 688-73-3 | 16 | UG/KG | | U | SED-D | 53.2 | GC-PFD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 3 | REP3 | 0 02 | 26007402 | ZINC, TOTAL | 7440-66-6 | 340 | MG/KG | | | SED-D | 53.2 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 3 | REP3 | 0 02 | 26007403 | CLAY | | 33.676 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VV | | |



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-2803

VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 81.033 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.039 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 125 MICRONS | | 1.589 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.017 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 43.186 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.917 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 250 MICRONS | | 0.389 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 75.624 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 23.782 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.25 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 500 MICRONS | | 0.111 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 6.2 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 43.392 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.081 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | CUMULATIVE PERCENT > 88.39 MICRONS | | 3.184 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | GRAVEL | | 0 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | MEAN GRAIN SIZE | | 8.662 | UM | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | MEDIAN GRAIN SIZE | | 6.778 | UM | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | SAND | | 6.2 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007403 | SILT | | 89.494 | PERCENT | | | SED-D | 53.2 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40010 3 | REP3 | 0.02 | 26007404 | TOTAL ORGANIC CARBON | | 1.947 | PERCENT | | | SED-D | 53.2 | MENZELAVOGARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40010 3 | REP3 | 0.02 | 26007405 | ACID VOLATILE SULFIDE | | 116 | MG/KG | | J | SED-D | 53.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | | |
| 40010 3 | REP3 | 0.02 | 26007405 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.9 | MG/KG | | | SED-D | 53.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 3 | REP3 | 0.02 | 26007405 | COPPER, EXTRACTABLE | 7440-50-8 | 78 | MG/KG | | | SED-D | 53.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 40010 3 | REP3 | 0.02 | 26007405 | LEAD, EXTRACTABLE | 7439-92-1 | 84 | MG/KG | | | SED-D | 53.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 3 | REP3 | 0.02 | 26007405 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.04 | MG/KG | U | U | SED-D | 53.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40010 3 | REP3 | 0.02 | 26007405 | SULFIDE, TOTAL | | 41 | MG/KG | | | SED-D | 53.2 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 40010 3 | REP3 | 0.02 | 26007405 | ZINC, EXTRACTABLE | 7440-66-6 | 190 | MG/KG | | | SED-D | 53.2 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2,4-DINITROPHENOL | 51-28-5 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 80 | UG/KG | U | UJ | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | UJ | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | | | SED-D | 47.3 | EPA 8081 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 4,4'-DDE | 72-55-9 | 0.8 | UG/KG | | | SED-D | 47.3 | EPA 8081 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 47.3 | EPA 8081 | BOXCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 1 | REG | 0.02 | 26008501 | 4-BROMOPHENYL PHENYL ETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



R0063204

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.1 | REG | 0.02 | 26008501 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BENZO(A)PYRENE | 50-32-8 | 19 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BENZO(B)FLUORANTHENE | 205-99-2 | 19 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BENZO(K)FLUORANTHENE | 207-08-9 | 19 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | CHRYSENE | 218-01-9 | 19 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | DIMETHYLPHTHALATE | 131-11-3 | 80 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | FLUORANTHENE | 206-44-0 | 19 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | FLUORENE | 86-73-7 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | METHYLNAPHTHALENES | | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | R | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |



R0063205

C0829

V01 T8

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.1 | REG | 0.02 | 26008501 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | PYRENE | 129-00-0 | 39 | UG/KG | J | J | SED-D | 47.3 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008501 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 47.3 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.1 | REG | 0.02 | 26008502 | ARSENIC, TOTAL | 7440-38-2 | 7 | MG/KG | | J | SED-D | 47.3 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.38 | MG/KG | | | SED-D | 47.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | CADMIUM, TOTAL | 7440-43-9 | 0.66 | MG/KG | | L | SED-D | 47.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | CHROMIUM, TOTAL | 7440-47-3 | 27 | MG/KG | | | SED-D | 47.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | COPPER, TOTAL | 7440-50-8 | 30 | MG/KG | | | SED-D | 47.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 47.3 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.1 | REG | 0.02 | 26008502 | LEAD, TOTAL | 7439-92-1 | 44 | MG/KG | | | SED-D | 47.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | MERCURY, TOTAL | 7439-97-6 | 0.19 | MG/KG | | | SED-D | 47.3 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 47.3 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.1 | REG | 0.02 | 26008502 | NICKEL, TOTAL | 7440-02-0 | 17 | MG/KG | | | SED-D | 47.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | SED-D | 47.3 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | SILVER, TOTAL | 7440-22-4 | 1.5 | MG/KG | | | SED-D | 47.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | U | SED-D | 47.3 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 40018.1 | REG | 0.02 | 26008502 | TRIBUTYLTIN | 688-73-3 | 15 | UG/KG | | J | SED-D | 47.3 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.1 | REG | 0.02 | 26008502 | ZINC, TOTAL | 7440-66-6 | 93 | MG/KG | | | SED-D | 47.3 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018.1 | REG | 0.02 | 26008503 | CLAY | | 32.897 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 1.95 MICRONS | | 74.022 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.261 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 125 MICRONS | | 7.43 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.25 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 44.183 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 178.78 MICRONS | | 3.534 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.192 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 250 MICRONS | | 1.78 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 67.193 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 38.831 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 353.56 MICRONS | | 0.709 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 500 MICRONS | | 0.416 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 31.642 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 66.724 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.341 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | CUMULATIVE PERCENT > 88.39 MICRONS | | 17.737 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | GRAVEL | | 0.192 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | MEAN GRAIN SIZE | | 8.39 | UM | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | MEDIAN GRAIN SIZE | | 11.329 | UM | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | SAND | | 31.46 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.1 | REG | 0.02 | 26008503 | SILT | | 36.491 | PERCENT | | | SED-D | 47.3 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



R0063206

C3803

VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 1 | REG | 0 02 | 26008504 | TOTAL ORGANIC CARBON | | 0.915 | PERCENT | | | SED-D | 47.3 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40018 1 | REG | 0 02 | 26008505 | ACID VOLATILE SULFIDE | | 470 | MG/KG | | J | SED-D | 47.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 9 | MG/KG |
| 40018 1 | REG | 0 02 | 26008505 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.76 | MG/KG | | | SED-D | 47.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 6 | MG/KG |
| 40018 1 | REG | 0 02 | 26008505 | COPPER, EXTRACTABLE | 7440-50-8 | 30 | MG/KG | | | SED-D | 47.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018 1 | REG | 0 02 | 26008505 | LEAD, EXTRACTABLE | 7439-92-1 | 53 | MG/KG | | | SED-D | 47.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018 1 | REG | 0 02 | 26008505 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 47.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40018 1 | REG | 0 02 | 26008505 | SULFIDE, TOTAL | | 380 | MG/KG | | | SED-D | 47.3 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0 9 | MG/KG |
| 40018 1 | REG | 0 02 | 26008505 | ZINC, EXTRACTABLE | 7440-66-6 | 89 | MG/KG | | | SED-D | 47.3 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 1,2,4-TRICHLORODENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 1,2-DICHLORODENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 1,3-DICHLORODENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 1,4-DICHLORODENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2,4-DINITROPHENOL | 51-28-5 | 80 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2 METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 2-NITROPHENOL | 88-75-5 | 80 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 3,3 (I)CHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 3 AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 4,4'-DDD | 72-54-8 | 8 8 | UG/KG | | | SED-D | 49 1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 4,4'-DDE | 72-55-9 | 99 | UG/KG | | | SED-D | 49 1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | J | J | SED-D | 49 1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 49 1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 49 1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | J | J | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | J | J | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | J | J | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | J | J | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | J | J | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 49 1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 49 1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 2 | REG | 0 02 | 26008601 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 49 1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.2 | REG | 0.02 | 26008601 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.2 | REG | 0.02 | 26008601 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 49.1 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.2 | REG | 0.02 | 26008602 | ARSENIC, TOTAL | 7440-38-2 | 6.9 | MG/KG | J | J | SED-D | 49.1 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018.2 | REG | 0.02 | 26008602 | BERYLLIUM, TOTAL | 7440-41-7 | 0.39 | MG/KG | J | J | SED-D | 49.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40018.2 | REG | 0.02 | 26008602 | CADMIUM, TOTAL | 7440-43-9 | 0.67 | MG/KG | J | J | SED-D | 49.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40018.2 | REG | 0.02 | 26008602 | CHROMIUM, TOTAL | 7440-47-3 | 28 | MG/KG | J | J | SED-D | 49.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018.2 | REG | 0.02 | 26008602 | COPPER, TOTAL | 7440-50-8 | 33 | MG/KG | J | J | SED-D | 49.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018.2 | REG | 0.02 | 26008602 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 49.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.2 | REG | 0.02 | 26008602 | LEAD, TOTAL | 7439-92-1 | 43 | MG/KG | J | J | SED-D | 49.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40018.2 | REG | 0.02 | 26008602 | MERCURY, TOTAL | 7439-97-6 | 0.2 | MG/KG | J | J | SED-D | 49.1 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40018.2 | REG | 0.02 | 26008602 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 49.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 2 | REG | 0 02 | 26008602 | NICKEL, TOTAL | 7440-02-0 | 18 | MG/KG | | | SED-D | 49.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40018 2 | REG | 0 02 | 26008602 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 49.1 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 2 | REG | 0 02 | 26008602 | SILVER, TOTAL | 7440-22-4 | 1.6 | MG/KG | U | U | SED-D | 49.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 2 | REG | 0 02 | 26008602 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 49.1 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 2 | REG | 0.02 | 26008602 | TRIBUTYLTIN | 688-73-3 | 16 | UG/KG | | U | SED-D | 49.1 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 2 | REG | 0 02 | 26008602 | ZINC, TOTAL | 7440-66-6 | 100 | MG/KG | | J | SED-D | 49.1 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018 2 | REG | 0 02 | 26008603 | CLAY | | 29.815 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 1.95 MICRONS | | 75.888 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.038 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 125 MICRONS | | 8.253 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 48.47 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.074 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 250 MICRONS | | 0.5 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 70.185 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 36.12 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.292 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 500 MICRONS | | 0.094 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 27.304 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 59.623 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.047 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 16.677 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | GRAVEL | | 0 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | MEAN GRAIN SIZE | | 9.933 | UM | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | MEDIAN GRAIN SIZE | | 12.816 | UM | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | SAND | | 27.304 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008603 | SILT | | 42.881 | PERCENT | | | SED-D | 49.1 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018 2 | REG | 0 02 | 26008604 | TOTAL ORGANIC CARBON | | 0.99 | PERCENT | | | SED-D | 49.1 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40018 2 | REG | 0 02 | 26008605 | ACID VOLATILE SULFIDE | | 110 | MG/KG | | J | SED-D | 49.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | | |
| 40018 2 | REG | 0.02 | 26008605 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.98 | MG/KG | | | SED-D | 49.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 2 | REG | 0 02 | 26008605 | COPPER, EXTRACTABLE | 7440-50-8 | 29 | MG/KG | | | SED-D | 49.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 2 | REG | 0 02 | 26008605 | LEAD, EXTRACTABLE | 7439-92-1 | 51 | MG/KG | | | SED-D | 49.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018 2 | REG | 0 02 | 26008605 | MERCURY, EXTRACTABLE | 7439-97-6 | 0 08 | MG/KG | | J | SED-D | 49.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018 2 | REG | 0 02 | 26008605 | SULFIDE, TOTAL | | 120 | MG/KG | | | SED-D | 49.1 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40018 2 | REG | 0 02 | 26008605 | ZINC, EXTRACTABLE | 7440-66-6 | 88 | MG/KG | | | SED-D | 49.1 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 1,2,4-TRICHLOROBENZENE | 120 82-1 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0.02 | 26008301 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 80 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0.02 | 26008301 | 2,4-DICHLOROPHENOL | 120-83-2 | 50 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 80 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0.02 | 26008301 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26008301 | 2-CHLOROPHENOL | 95-57-8 | 80 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0.02 | 26008301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018 3 | REG | 0.02 | 26008301 | 2-METHYLPHENOL | 95-48-7 | 50 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.3 | REG | 0.02 | 26006301 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 3- AND 4-METHYLPHENOL | 106-44-5 | 70 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 4,4'-DDD | 72-54-8 | 19 | UG/KG | | J | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 4,4'-DDE | 72-55-9 | 71 | UG/KG | | J | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 50 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | 4-NITROPHENOL | 100-02-7 | 50 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ALDRIN | 309-00-2 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 310 | UG/KG | | | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 50 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 50 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 50 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ENDRIN | 72-20-8 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | FLUORENE | 86-73-7 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 0.02 | 26006301 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 0 02 | 26006301 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | METHYLNAPHTHALENES | | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | NITROBENZENE | 98-95-3 | 50 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PENTACHLOROPHENOL | 87-86-5 | 50 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PHENOL | 108-95-2 | 50 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | PYRENE | 129-00-0 | 24 | UG/KG | | | SED-D | 57.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006301 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 57.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006302 | ANTIMONY, TOTAL | 7440-36-0 | 1 | MG/KG | U | U | SED-D | 57.7 | EPA 7041 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | ARSENIC, TOTAL | 7440-38-2 | 6.9 | MG/KG | | | SED-D | 57.7 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.71 | MG/KG | | | SED-D | 57.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 2 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | CADMIUM, TOTAL | 7440-43-9 | 0.78 | MG/KG | | | SED-D | 57.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | CHROMIUM, TOTAL | 7440-47-3 | 38 | MG/KG | | | SED-D | 57.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | COPPER, TOTAL | 7440-50-8 | 43 | MG/KG | | | SED-D | 57.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 57.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 0 02 | 26006302 | LEAD, TOTAL | 7439-92-1 | 61 | MG/KG | | | SED-D | 57.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | MERCURY, TOTAL | 7439-97-6 | 0.12 | MG/KG | | | SED-D | 57.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0 05 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 57.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 0 02 | 26006302 | NICKEL, TOTAL | 7440-02-0 | 24 | MG/KG | | | SED-D | 57.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 57.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | SILVER, TOTAL | 7440-22-4 | 2.1 | MG/KG | | | SED-D | 57.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 57.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006302 | TRIBUTYLTIN | 688-73-3 | 5.2 | UG/KG | | UJ | SED-D | 57.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 0 02 | 26006302 | ZINC, TOTAL | 7440-66-6 | 130 | MG/KG | | | SED-D | 57.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018 3 | REG | 0 02 | 26006305 | ACID VOLATILE SULFIDE | | 290 | MG/KG | | J | SED-D | 57.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006305 | CADMIUM, EXTRACTABLE | 7440-43-9 | 1.4 | MG/KG | | | SED-D | 57.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40018 3 | REG | 0 02 | 26006305 | COPPER, EXTRACTABLE | 7440-50-8 | 36 | MG/KG | | | SED-D | 57.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006305 | LEAD, EXTRACTABLE | 7439-92-1 | 69 | MG/KG | | | SED-D | 57.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 40018 3 | REG | 0 02 | 26006305 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 57.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0 02 | MG/KG |
| 40018 3 | REG | 0 02 | 26006305 | SULFIDE, TOTAL | | 260 | MG/KG | | | SED-D | 57.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006305 | ZINC, EXTRACTABLE | 7440-66-6 | 120 | MG/KG | | | SED-D | 57.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | UJ | CLAM | | EPA 8080 | BONCORE | FAU | SEDIMENT | VV | 0 8 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | 4,4'-DDE | 72-55-9 | 22 | UG/KG | | | CLAM | | EPA 8080 | BONCORE | FAU | SEDIMENT | VV | 0 8 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BONCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BONCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BONCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BONCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BONCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | CLAM | | GC/MS | BONCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7041 | BONCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 0 02 | 26006399 | ARSENIC, TOTAL | 7440-38-2 | 3 | MG/KG | | J | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | BERYLLIUM, TOTAL | 7440-41-7 | 0.08 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.08 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | CADMIUM, TOTAL | 7440-43-9 | 0 2 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0 2 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0 4 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | 3 | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | COPPER, TOTAL | 7440-50-8 | 1.4 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0 4 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | DIBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ENDRIN | 72-20-8 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ENDRIN ALDEHYDE | 7421-93-4 | 0 5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | LEAD, TOTAL | 7439-92-1 | 0 5 | MG/KG | | J | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0 5 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | LIPIDS | | 921 | MG/KG | | | CLAM | | EPA 9071 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | | | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | MONOBUTYLTIN | | 1 | UG/KG | U | U | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | NAPHTHALENE | 91-20-3 | 80 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | U | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40018 3 | REG | 0 02 | 26006399 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | TRIBUTYLTIN | 688-73-3 | 1.4 | UG/KG | | J | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 0 02 | 26006399 | ZINC, TOTAL | 7440-66-6 | 18 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |



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VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Vonge | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.3 | REP1 | 0.02 | 26006303 | CLAY | | 38.087 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 1.95 MICRONS | | 88.674 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.029 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 125 MICRONS | | 2.013 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 39.158 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.808 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 250 MICRONS | | 0.423 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 61.913 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 25.949 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.275 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 500 MICRONS | | 0.132 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 17.364 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 47.083 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.074 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 7.864 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | GRAVEL | | 0 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | MEAN GRAIN SIZE | | 6.863 | UM | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | MEDIAN GRAIN SIZE | | 6.812 | UM | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | SAND | | 17.364 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006303 | SILT | | 44.65 | PERCENT | | | SED-D | 57.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP1 | 0.02 | 26006304 | TOTAL ORGANIC CARBON | | 0.949 | PERCENT | | | SED-D | 57.7 | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CLAY | | 29.884 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 77.047 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 1000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 125 MICRONS | | 2.83 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 45.635 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.895 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 250 MICRONS | | 0.351 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 71.316 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 33.749 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.141 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 500 MICRONS | | 0.058 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 24.41 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 57.52 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.021 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | CUMULATIVE PERCENT > 88.39 MICRONS | | 10.395 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | MEAN GRAIN SIZE | | 9.099 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | MEDIAN GRAIN SIZE | | 12.113 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | SAND | | 24.41 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006403 | SILT | | 46.908 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP2 | 0.02 | 26006404 | TOTAL ORGANIC CARBON | | 0.973 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CLAY | | 34.946 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 1.95 MICRONS | | 73.839 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



R0063213

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 1000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 125 MICRONS | | 2.893 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 40.503 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.577 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 250 MICRONS | | 0.172 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 85.054 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 30.592 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.105 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 500 MICRONS | | 0.081 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 22.258 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 54.243 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.017 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | CUMULATIVE PERCENT > 88.39 MICRONS | | 11.093 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | MEAN GRAIN SIZE | | 6.657 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | MEDIAN GRAIN SIZE | | 6.677 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | SAND | | 22.258 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006503 | SILT | | 42.796 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REP3 | 0.02 | 26006504 | TOTAL ORGANIC CARBON | | 0.954 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40020.1 | REG | 0.02 | 26007603 | CLAY | | 17.023 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 1.96 MICRONS | | 99.811 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.141 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 125 MICRONS | | 14.574 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 67.324 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 6.932 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 250 MICRONS | | 3.286 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 82.977 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 50.682 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.133 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 500 MICRONS | | 0.444 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 31.139 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 77.591 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.841 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 22.012 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | MEAN GRAIN SIZE | | 19.334 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | MEDIAN GRAIN SIZE | | 31.993 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | SAND | | 31.139 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007603 | SILT | | 51.838 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.1 | REG | 0.02 | 26007604 | TOTAL ORGANIC CARBON | | 0.73 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40020.2 | REG | 0.02 | 26007703 | CLAY | | 16.873 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.2 | REG | 0.02 | 26007703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.2 | REG | 0.02 | 26007703 | CUMULATIVE PERCENT > 1.96 MICRONS | | 97.808 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.2 | REG | 0.02 | 26007703 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.886 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.2 | REG | 0.02 | 26007703 | CUMULATIVE PERCENT > 125 MICRONS | | 12.664 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020.2 | REG | 0.02 | 26007703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.048 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



R0063214

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 15 63 MICRONS | | 62.068 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 6.292 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 250 MICRONS | | 2.047 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 83.127 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 49.766 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 353 55 MICRONS | | 0 959 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 500 MICRONS | | 0 233 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 32.58 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 78.072 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.116 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | CUMULATIVE PERCENT > 88.39 MICRONS | | 21.932 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | MEAN GRAIN SIZE | | 19.199 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | MEDIAN GRAIN SIZE | | 30 841 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | SAND | | 32.58 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007703 | SILT | | 60 546 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 2 | REG | 0 02 | 26007704 | TOTAL ORGANIC CARBON | | 0 694 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40020 3 | REG | 0 02 | 26007803 | CLAY | | 18.481 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 0 98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 1 95 MICRONS | | 86.439 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.04 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 125 MICRONS | | 10.343 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.02 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 15.63 MICRONS | | 88.348 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 5.825 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 250 MICRONS | | 2.089 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 81.519 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 48.237 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.97 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 500 MICRONS | | 0.238 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 25.329 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 76.475 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.121 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 18.896 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | MEAN GRAIN SIZE | | 15.28 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | MEDIAN GRAIN SIZE | | 27 263 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | SAND | | 25.329 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007803 | SILT | | 56.19 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40020 3 | REG | 0 02 | 26007804 | TOTAL ORGANIC CARBON | | 0.799 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40032 1 | REG | 0 02 | 26008701 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008701 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008701 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008701 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0 02 | 26008701 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40032.1 | REG | 0.02 | 26008701 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | UJ | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 4,4'-DDD | 72-54-8 | 5.3 | UG/KG | | | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 4,4'-DDE | 72-55-9 | 70 | UG/KG | | | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BENZIDINE | 92-87-5 | 70 | UG/KG | U | UJ | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BIS(2 CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 90 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |



R0063216

C3 B7 C3

NOV 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40032.1 | REG | 0.02 | 26008701 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PENTACHLOROPHENOL | 87-86-5 | 50 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8270 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008701 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 24.7 | EPA 8080 | BOXCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40032.1 | REG | 0.02 | 26008702 | ARSENIC, TOTAL | 7440-38-2 | 2.8 | MG/KG | | | SED-D | 24.7 | EPA 7060 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | | SED-D | 24.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | CADMIUM, TOTAL | 7440-43-9 | 0.25 | MG/KG | | | SED-D | 24.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | CHROMIUM, TOTAL | 7440-47-3 | 15 | MG/KG | | | SED-D | 24.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | COPPER, TOTAL | 7440-50-8 | 13 | MG/KG | | | SED-D | 24.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | DIBUTYLTIN | | 2.5 | UG/KG | | | SED-D | 24.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40032.1 | REG | 0.02 | 26008702 | LEAD, TOTAL | 7439-92-1 | 11 | MG/KG | | | SED-D | 24.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | MERCURY, TOTAL | 7439-97-6 | 0.066 | MG/KG | | | SED-D | 24.7 | EPA 7470 | BOXCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 24.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40032.1 | REG | 0.02 | 26008702 | NICKEL, TOTAL | 7440-02-0 | 8 | MG/KG | | | SED-D | 24.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 24.7 | EPA 7740 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | SILVER, TOTAL | 7440-22-4 | 0.8 | MG/KG | U | U | SED-D | 24.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 24.7 | EPA 7841 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40032.1 | REG | 0.02 | 26008702 | TRIBUTYLTIN | 688-73-3 | 20 | UG/KG | U | U | SED-D | 24.7 | GC-FPD | BOXCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40032.1 | REG | 0.02 | 26008702 | ZINC, TOTAL | 7440-66-6 | 42 | MG/KG | | | SED-D | 24.7 | EPA 6010 | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40032.1 | REG | 0.02 | 26008703 | CLAY | | 0.972 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 94.391 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.292 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REC | 0.02 | 26008703 | CUMULATIVE PERCENT > 125 MICRONS | | 82.042 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.292 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 69.464 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 19.214 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.077 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 250 MICRONS | | 0.833 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 88.089 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



R0063217

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 97.946 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 353.55 MICRONS | | 3.679 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 500 MICRONS | | 1.038 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 84.713 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 90.647 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.366 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | CUMULATIVE PERCENT > 88.39 MICRONS | | 76.33 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | GRAVEL | | 0.077 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | MEAN GRAIN SIZE | | 110.022 | UM | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | MEDIAN GRAIN SIZE | | 127.642 | UM | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | SAND | | 84.638 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008703 | SILT | | 8.315 | PERCENT | | | SED-D | 24.7 | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032.1 | REG | 0.02 | 26008704 | TOTAL ORGANIC CARBON | | 0.43 | PERCENT | | | SED-D | 24.7 | MENZELAVACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40032.1 | REG | 0.02 | 26008705 | ACID VOLATILE SULFIDE | | 16 | MG/KG | | J | SED-D | 24.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40032.1 | REG | 0.02 | 26008705 | CADMIUM, EXTRACTABLE | 7440-43-9 | 0.4 | MG/KG | U | U | SED-D | 24.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.4 | MG/KG |
| 40032.1 | REG | 0.02 | 26008705 | COPPER, EXTRACTABLE | 7440-50-8 | 11 | MG/KG | | | SED-D | 24.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40032.1 | REG | 0.02 | 26008705 | LEAD, EXTRACTABLE | 7439-92-1 | 12 | MG/KG | | | SED-D | 24.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 40032.1 | REG | 0.02 | 26008705 | MERCURY, EXTRACTABLE | 7439-97-6 | 0.01 | MG/KG | U | U | SED-D | 24.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 40032.1 | REG | 0.02 | 26008705 | SULFIDE, TOTAL | | 17 | MG/KG | | | SED-D | 24.7 | EPA 9030 | BOXCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 40032.1 | REG | 0.02 | 26008705 | ZINC, EXTRACTABLE | 7440-66-6 | 29 | MG/KG | | | SED-D | 24.7 | EPA DRAFT | BOXCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40032.1 | REG | 0.02 | 26008799 | 4,4'-DDD | 72-54-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | 4,4'-DDE | 72-55-9 | 50 | UG/KG | | | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | 4,4'-DDT | 50-29-3 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ALDRIN | 309-00-2 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ALPHA-BHC (HCH) | 319-84-6 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | CLAM | | EPA 7041 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ARSENIC, TOTAL | 7440-38-2 | 2.7 | MG/KG | | J | CLAM | | EPA 7060 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40032.1 | REG | 0.02 | 26008799 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | BERYLLIUM, TOTAL | 7440-41-7 | 0.05 | MG/KG | U | UJ | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.05 | MG/KG |
| 40032.1 | REG | 0.02 | 26008799 | BETA-BHC (HCH) | 319-85-7 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | CADMIUM, TOTAL | 7440-43-9 | 0.2 | MG/KG | U | UJ | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.2 | MG/KG |
| 40032.1 | REG | 0.02 | 26008799 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | CHROMIUM, TOTAL | 7440-47-3 | 0.4 | MG/KG | U | UJ | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 40032.1 | REG | 0.02 | 26008799 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | COPPER, TOTAL | 7440-50-8 | 1.1 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 0.4 | MG/KG |
| 40032.1 | REG | 0.02 | 26008799 | DELTA-BHC (HCH) | 319-86-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | DIELDRIN | 60-57-1 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ENDOSULFAN I | 959-98-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ENDOSULFAN II | 33213-65-9 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ENDOSULFAN SULFATE | 1031-07-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ENDRIN | 72-20-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032.1 | REG | 0.02 | 26008799 | ENDRIN ALDEHYDE | 7421-93-4 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40032 1 | REG | 0 02 | 26008799 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | FLUORENE | 86-73-7 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | HEPTACHLOR | 76-44-8 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | CLAM | | EPA 7421 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40032 1 | REG | 0 02 | 26008799 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.5 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | LIPIDS | | 1370 | MG/KG | | J | CLAM | | EPA 9071 | BOXCORE | FAU | SEDIMENT | VV | 50 | MG/KG |
| 40032 1 | REG | 0 02 | 26008799 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | CLAM | | EPA 7470 | BOXCORE | FAU | SEDIMENT | VV | 0.02 | MG/KG |
| 40032 1 | REG | 0 02 | 26008799 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 2 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | METHYLNAPHTHALENES | | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 40 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | NICKEL, TOTAL | 7440-02-0 | 1 | MG/KG | U | U | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | PYRENE | 129-00-0 | 20 | UG/KG | U | UJ | CLAM | | GC/MS | BOXCORE | FAU | SEDIMENT | VV | 20 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | CLAM | | EPA 7740 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40032 1 | REG | 0 02 | 26008799 | SILVER, TOTAL | 7440-22-4 | 0.3 | MG/KG | U | U | CLAM | | EPA 7760 | BOXCORE | FAU | SEDIMENT | VV | 0.3 | MG/KG |
| 40032 1 | REG | 0 02 | 26008799 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | CLAM | | EPA 7841 | BOXCORE | FAU | SEDIMENT | VV | 0.5 | MG/KG |
| 40032 1 | REG | 0 02 | 26008799 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | UJ | CLAM | | EPA 8080 | BOXCORE | FAU | SEDIMENT | VV | 10 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | TRIBUTYLTIN | 688-73-3 | 5.1 | UG/KG | | J | CLAM | | GC-FPD | BOXCORE | FAU | SEDIMENT | VV | 1 | UG/KG |
| 40032 1 | REG | 0 02 | 26008799 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | CLAM | | EPA 6010 | BOXCORE | FAU | SEDIMENT | VV | 1 | MG/KG |
| 40032 2 | REG | 0 02 | 26008803 | CLAY | | 6.973 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 1.95 MICRONS | | 94.229 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.122 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 125 MICRONS | | 49.133 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.089 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 15.63 MICRONS | | 89.882 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 12.043 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.059 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 250 MICRONS | | 4.398 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 93.427 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 89.21 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.784 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 500 MICRONS | | 0.57 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 82.563 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 91.822 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.181 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 70.127 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | GRAVEL | | 0.059 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | MEAN GRAIN SIZE | | 94.299 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | MEDIAN GRAIN SIZE | | 114.451 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008803 | SAND | | 88.839 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |



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C08375

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40032 2 | REG | 0 02 | 26008803 | SILT | | 10.834 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 2 | REG | 0 02 | 26008804 | TOTAL ORGANIC CARBON | | 0.467 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |
| 40032 3 | REG | 0 02 | 26008903 | CLAY | | 5.993 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 94.405 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0.02 | 26008903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.075 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 125 MICRONS | | 84.375 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.038 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 91.485 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 22.643 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 250 MICRONS | | 7.163 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 3 91 MICRONS | | 94.007 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 89.494 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0.02 | 26008903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 3.017 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 500 MICRONS | | 0.978 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 84.848 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 62.612 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0.02 | 26008903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.196 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0.02 | 26008903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 78.563 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | GRAVEL | | 0 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | MEAN GRAIN SIZE | | 118.868 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0.02 | 26008903 | MEDIAN GRAIN SIZE | | 131.116 | UM | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0 02 | 26008903 | SAND | | 84.848 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0.02 | 26008903 | SILT | | 8.16 | PERCENT | | | SED-D | | PLUMB 1981 | BOXCORE | SED | SEDIMENT | VU | | |
| 40032 3 | REG | 0.02 | 26008904 | TOTAL ORGANIC CARBON | | 0.395 | PERCENT | | | SED-D | | MENZEL&VACCARO | BOXCORE | SED | SEDIMENT | VV | | |



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Subsurface Sediment Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 1 | 26003901 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 1,2 DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 6 | REG | 1 | 26003901 | 4,4'-DDE | 72-55-9 | 7.1 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | BENZIDINE | 92-87-5 | 70 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BENZO(A)ANTHRACENE | 56-55-3 | 14 | UG/KG | J | J | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 6 | REG | 1 | 26003901 | BENZO(A)PYRENE | 50-32-8 | 56 | UG/KG | J | J | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BENZO(B)FLUORANTHENE | 205-99-2 | 68 | UG/KG | J | J | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BENZO(GHI)PERYLENE | 191-24-2 | 27 | UG/KG | J | J | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BENZO(K)FLUORANTHENE | 207-08-9 | 55 | UG/KG | J | J | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | J | J | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 6 | REG | 1 | 26003901 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | CHRYSENE | 218-01-9 | 41 | UG/KG | J | J | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 6 | REG | 1 | 26003901 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 89 | UG/KG | J | J | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | UJ | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 1 | 26003901 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 27 | UG/KG | | | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 1 | 26003901 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 6 | REG | 1 | 26003901 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | PCB-1260 | 11096-82-5 | 23 | UG/KG | | | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 1 | 26003901 | PYRENE | 129-00-0 | 14 | UG/KG | | | SED-D | 27 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003901 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 27 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 1 | 26003902 | ARSENIC, TOTAL | 7440-38-2 | 3.7 | MG/KG | | | SED-D | 27 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 1 | 26003902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.27 | MG/KG | | | SED-D | 27 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 6 | REG | 1 | 26003902 | CADMIUM, TOTAL | 7440-43-9 | 0.098 | MG/KG | | | SED-D | 27 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 6 | REG | 1 | 26003902 | CHROMIUM, TOTAL | 7440-47-3 | 18 | MG/KG | | | SED-D | 27 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 1 | 26003902 | COPPER, TOTAL | 7440-50-8 | 23 | MG/KG | | | SED-D | 27 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 1 | 26003902 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 27 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 1 | 26003902 | LEAD, TOTAL | 7439-92-1 | 8.2 | MG/KG | | | SED-D | 27 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 1 | 26003902 | MERCURY, TOTAL | 7439-97-6 | 0.055 | MG/KG | | | SED-D | 27 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 6 | REG | 1 | 26003902 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 27 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 1 | 26003902 | NICKEL, TOTAL | 7440-02-0 | 11 | MG/KG | | | SED-D | 27 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 1 | 26003902 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 27 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 1 | 26003902 | SILVER, TOTAL | 7440-22-4 | 1.1 | MG/KG | | | SED-D | 27 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 1 | 26003902 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 27 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 1 | 26003902 | TRIBUTYLTIN | 688-73-3 | 8.7 | UG/KG | | U | SED-D | 27 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 1 | 26003902 | ZINC, TOTAL | 7440-66-6 | 93 | MG/KG | | | SED-D | 27 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 1 | 26003903 | CLAY | | 5.888 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 4.00 MICRON | | 100 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |



R0063222

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 94.953 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.084 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 125 MICRONS | | 19.803 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.027 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 90.062 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 5.757 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.017 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 250 MICRONS | | 1.798 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 84.138 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 66.393 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.422 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 500 MICRONS | | 0.114 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 74.708 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 92.371 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.07 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 49.811 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | GRAVEL | | 0.017 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | MEAN GRAIN SIZE | | 70.32 | UM | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | MEDIAN GRAIN SIZE | | 88.156 | UM | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | SAND | | 74.691 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003903 | SILT | | 19.43 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 1 | 26003904 | TOTAL ORGANIC CARBON | | 0.238 | PERCENT | | | SED-D | 27 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004001 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 18.2 | MENZELAVADDARO | VBCORE | SED | SEDIMENT | VV | | |
| 6 | REG | 2 | 26004001 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 3- AND 4-METHYLPHENOL | 108-44-6 | 40 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 6 | REG | 2 | 26004001 | 4,4'-DDD | 72-54-8 | 0.6 | UG/KG | U | U | SED-D | 18.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 2 | 26004001 | 4,4'-DDE | 72-55-9 | 0.6 | UG/KG | U | U | SED-D | 18.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 2 | 26004001 | 4,4'-DDT | 50-29-3 | 0.6 | UG/KG | U | U | SED-D | 18.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 2 | 26004001 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | 4-NITROPHENOL | 100-02-7 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | ALDRIN | 309-00-2 | 0.6 | UG/KG | U | U | SED-D | 18.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 2 | 26004001 | ALPHA-BHC (HCH) | 319-84-6 | 0.6 | UG/KG | U | U | SED-D | 18.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 2 | 26004001 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |

8/11/06



R0063223

CTO-0026

Subsurface Sediment Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Packet Qualifier | Result Type | Protocol Reference | Method | Collection | Media | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 REG | 2 | 26004001 | BENZIDINE | 92-87-5 | | 60 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 60 UG/KG |
| | 6 REG | 2 | 26004001 | BENZO(A)ANTHRACENE | 56-55-3 | | 10 UG/KG | | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BENZO(A)PYRENE | 50-32-8 | | 12 UG/KG | | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BENZO(B)FLUORANTHENE | 205-99-2 | | 12 UG/KG | | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BENZO(GHI)PERYLENE | 191-24-2 | | 10 UG/KG | | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BENZO(K)FLUORANTHENE | 207-08-9 | | 12 UG/KG | | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BETA BHC (HCH) | 319-85-7 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | | 50 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | BUTYL BENZYL PHTHALATE | 85-68-7 | | 20 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 90 UG/KG |
| | 6 REG | 2 | 26004001 | CHLORDANE | 57-74-9 | | 2 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 20 UG/KG |
| | 6 REG | 2 | 26004001 | CHRYSENE | 218-01-9 | | 10 UG/KG | | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 2 UG/KG |
| | 6 REG | 2 | 26004001 | DELTA-BHC (HCH) | 319-86-8 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | DI-N-BUTYLPHTHALATE | 84-74-2 | | 20 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | DI-N-OCTYLPHTHALATE | 117-84-0 | | 20 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 20 UG/KG |
| | 6 REG | 2 | 26004001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 20 UG/KG |
| | 6 REG | 2 | 26004001 | DIELDRIN | 60-57-1 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | DIETHYLPHTHALATE | 84-66-2 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | DIMETHYLPHTHALATE | 131-11-3 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | ENDOSULFAN I | 959-98-8 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | ENDOSULFAN II | 33213-65-9 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | ENDOSULFAN SULFATE | 1031-07-8 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | ENDRIN | 72-20-8 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | ENDRIN ALDEHYDE | 7421-93-4 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | FLUORANTHENE | 206-44-0 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | FLUORENE | 86-73-7 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | HEPTACHLOR | 76-44-8 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | HEPTACHLOR EPOXIDE | 1024-57-3 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | HEXACHLOROBENZENE | 118-74-1 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | HEXACHLOROBUTADIENE | 87-68-3 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | HEXACHLOROETHANE | 67-72-1 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | ISOPHORONE | 78-59-1 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | LINDANE (GAMMA-BHC) | 58-89-9 | | 0.6 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 0.6 UG/KG |
| | 6 REG | 2 | 26004001 | METHOXYCHLOR | 72-43-5 | | 2 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 2 UG/KG |
| | 6 REG | 2 | 26004001 | METHYLNAPHTHALENES | | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | N-NITROSODIMETHYLAMINE | 62-75-9 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | N-NITROSODIPHENYLAMINE | 86-30-6 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | NAPHTHALENE | 91-20-3 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | NITROBENZENE | 98-95-3 | | 20 UG/KG | U | | SED-D | 10.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | PCB-1016 | 12674-11-2 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 20 UG/KG |
| | 6 REG | 2 | 26004001 | PCB-1221 | 11104-28-2 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | PCB-1232 | 11141-16-5 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | PCB-1242 | 53469-21-9 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | PCB-1248 | 12672-29-6 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | PCB-1254 | 11097-69-1 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | 2 | 26004001 | PCB-1260 | 11096-82-5 | | 10 UG/KG | U | | SED-D | 10.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | | 10 UG/KG |



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## Subsurface Sediment Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 2 | 26004001 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 2 | 26004001 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004001 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 18.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 2 | 26004002 | ARSENIC, TOTAL | 7440-38-2 | 4.2 | MG/KG | | | SED-D | 18.2 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 2 | 26004002 | BERYLLIUM, TOTAL | 7440-41-7 | 0.12 | MG/KG | | | SED-D | 18.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 6 | REG | 2 | 26004002 | CADMIUM, TOTAL | 7440-43-9 | 0.15 | MG/KG | | | SED-D | 18.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 6 | REG | 2 | 26004002 | CHROMIUM, TOTAL | 7440-47-3 | 12 | MG/KG | | | SED-D | 18.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 2 | 26004002 | COPPER, TOTAL | 7440-50-8 | 8.6 | MG/KG | | | SED-D | 18.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 2 | 26004002 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 18.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 2 | 26004002 | LEAD, TOTAL | 7439-92-1 | 3.7 | MG/KG | | | SED-D | 18.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 2 | 26004002 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 18.2 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 6 | REG | 2 | 26004002 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 18.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 2 | 26004002 | NICKEL, TOTAL | 7440-02-0 | 8.6 | MG/KG | | | SED-D | 18.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 2 | 26004002 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 18.2 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 2 | 26004002 | SILVER, TOTAL | 7440-22-4 | 0.88 | MG/KG | | | SED-D | 18.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 2 | 26004002 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | U | SED-D | 18.2 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 2 | 26004002 | TRIBUTYLTIN | 688-73-3 | 3.8 | UG/KG | | | SED-D | 18.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 2 | 26004002 | ZINC, TOTAL | 7440-66-6 | 33 | MG/KG | | | SED-D | 18.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 2 | 26004003 | CLAY | | 8.565 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 1.96 MICRONS | | 97.443 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 1000 MICRONS | | 1.788 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 125 MICRONS | | 39.699 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 1.708 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 86.139 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 176.78 MICRONS | | 14.281 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 2000 MICRONS | | 1.613 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 250 MICRONS | | 5.681 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 97.415 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 95.747 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 353.56 MICRONS | | 3.688 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 500 MICRONS | | 1.993 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 91.255 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 97.256 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 1.831 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 72.669 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | GRAVEL | | 1.813 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | MEAN GRAIN SIZE | | 110.978 | UM | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | MEDIAN GRAIN SIZE | | 109.817 | UM | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | SAND | | 88.842 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004003 | SILT | | 8.18 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 2 | 26004004 | TOTAL ORGANIC CARBON | | 0.201 | PERCENT | | | SED-D | 18.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004101 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 22.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | | |
| 6 | REG | 3 | 26004101 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 22.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 22.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 22.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 50 | UG/KG | U | U | SED-D | 22.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 3 | 26004101 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 22.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 3 | 26004101 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 22.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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CTO-0026

Subsurface Sediment Analytical Data

| Station ID | Sample Type | Sediment Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Replicate Qualifier | Result Type | Protocol Reference | Method | Collection Method | Matrix | Station Type | Storage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 REG | | 3 26004101 | 2,4-DINITROPHENOL | 51-28-5 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | 2,4-DINITROTOLUENE | 121-14-2 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | 2,6-DINITROTOLUENE | 606-20-2 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | 2-CHLORONAPHTHALENE | 91-58-7 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | 2-CHLOROPHENOL | 95-57-8 | | 30 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 20 UG/KG |
| | 6 REG | | 3 26004101 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | | 30 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 30 UG/KG |
| | 6 REG | | 3 26004101 | 2-METHYLPHENOL | 95-48-7 | | 30 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 30 UG/KG |
| | 6 REG | | 3 26004101 | 2-NITROPHENOL | 88-75-5 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | 3,3-DICHLOROBENZIDINE | 91-94-1 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | 3- AND 4-METHYLPHENOL | 108-44-5 | | 40 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 40 UG/KG |
| | 6 REG | | 3 26004101 | 4,4'-DDD | 72-54-8 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | 4,4'-DDE | 72-55-9 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | 4,4'-DDT | 50-29-3 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | | 30 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 30 UG/KG |
| | 6 REG | | 3 26004101 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | 4-NITROPHENOL | 100-02-7 | | 20 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 20 UG/KG |
| | 6 REG | | 3 26004101 | ACENAPHTHENE | 83-32-9 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | ACENAPHTHYLENE | 208-96-8 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | ALDRIN | 309-00-2 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | ALPHA-BHC (HCH) | 319-84-6 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | ANTHRACENE | 120-12-7 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BENZO(A)ANTHRACENE | 56-55-3 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BENZO(A)PYRENE | 50-32-8 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BENZO(B)FLUORANTHENE | 205-99-2 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BENZO(GHI)PERYLENE | 191-24-2 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BENZO(K)FLUORANTHENE | 207-08-9 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BETA-BHC (HCH) | 319-85-7 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | | 100 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 100 UG/KG |
| | 6 REG | | 3 26004101 | BUTYLBENZYLPHTHALATE | 85-68-7 | | 30 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 30 UG/KG |
| | 6 REG | | 3 26004101 | CHLORDANE | 57-74-9 | | 3 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 2 UG/KG |
| | 6 REG | | 3 26004101 | CHRYSENE | 218-01-9 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | DELTA-BHC (HCH) | 319-86-8 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | DI-N-BUTYLPHTHALATE | 84-74-2 | | 20 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 20 UG/KG |
| | 6 REG | | 3 26004101 | DI-N-OCTYLPHTHALATE | 117-84-0 | | 30 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 30 UG/KG |
| | 6 REG | | 3 26004101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | DIELDRIN | 60-57-1 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | DIETHYLPHTHALATE | 84-66-2 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | DIMETHYLPHTHALATE | 131-11-3 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | ENDOSULFAN I | 959-98-8 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | ENDOSULFAN II | 33213-65-9 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | ENDOSULFAN SULFATE | 1031-07-8 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | ENDRIN | 72-20-8 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | ENDRIN ALDEHYDE | 7421-93-4 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | FLUORANTHENE | 206-44-0 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | FLUORENE | 86-73-7 | | 10 UG/KG | U | | SED-D | 32.5 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | | 10 UG/KG |
| | 6 REG | | 3 26004101 | HEPTACHLOR | 76-44-8 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |
| | 6 REG | | 3 26004101 | HEPTACHLOR EPOXIDE | 1024-57-3 | | 0.7 UG/KG | U | | SED-D | 32.5 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | | 0.7 UG/KG |

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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 3 | 26004101 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 6 | REG | 3 | 26004101 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 6 | REG | 3 | 26004101 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 3 | 26004101 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 3 | 26004101 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 6 | REG | 3 | 26004101 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004101 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 32.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 3 | 26004102 | ARSENIC, TOTAL | 7440-38-2 | 3.7 | MG/KG | | | SED-D | 32.5 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 3 | 26004102 | BERYLLIUM, TOTAL | 7440-41-7 | 0.89 | MG/KG | | | SED-D | 32.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 6 | REG | 3 | 26004102 | CADMIUM, TOTAL | 7440-43-9 | 0.73 | MG/KG | | | SED-D | 32.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 6 | REG | 3 | 26004102 | CHROMIUM, TOTAL | 7440-47-3 | 36 | MG/KG | | | SED-D | 32.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 3 | 26004102 | COPPER, TOTAL | 7440-50-8 | 50 | MG/KG | | | SED-D | 32.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 3 | 26004102 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 32.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 3 | 26004102 | LEAD, TOTAL | 7439-92-1 | 18 | MG/KG | | | SED-D | 32.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 3 | 26004102 | MERCURY, TOTAL | 7439-97-6 | 0.074 | MG/KG | | | SED-D | 32.5 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 6 | REG | 3 | 26004102 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 32.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 3 | 26004102 | NICKEL, TOTAL | 7440-02-0 | 33 | MG/KG | | | SED-D | 32.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 3 | 26004102 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 32.5 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 3 | 26004102 | SILVER, TOTAL | 7440-22-4 | 2.7 | MG/KG | | | SED-D | 32.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 3 | 26004102 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 32.5 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 6 | REG | 3 | 26004102 | TRIBUTYLTIN | 688-73-3 | 4.4 | UG/KG | | | SED-C | 32.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 3 | 26004102 | ZINC, TOTAL | 7440-66-6 | 99 | MG/KG | | | SED-D | 32.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 3 | 26004103 | CLAY | | 41.208 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 99.518 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.103 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 125 MICRONS | | 0.793 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.092 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 25.538 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.345 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.077 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 3 | 26004103 | CUMULATIVE PERCENT > 250 MICRONS | | 0.215 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REQ | 3 | 26004103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 58.795 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 11.241 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.157 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | CUMULATIVE PERCENT > 500 MICRONS | | 0.126 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 2.072 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 44.653 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.115 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 1.459 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | GRAVEL | | 0.077 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | MEAN GRAIN SIZE | | 4.587 | UM | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | MEDIAN GRAIN SIZE | | 6.011 | UM | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | SAND | | 1.898 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004103 | SILT | | 88.723 | PERCENT | | | SED-D | 32.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REQ | 3 | 26004104 | TOTAL ORGANIC CARBON | | 0.283 | PERCENT | | | SED-D | 32.5 | MENZELAVOGANO | VBCORE | SED | SEDIMENT | VV | | |
| 6 | REQ | 4 | 26004201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REQ | 4 | 26004201 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 6 | REQ | 4 | 26004201 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REQ | 4 | 26004201 | 4,4'-DDE | 72-55-9 | 0.8 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REQ | 4 | 26004201 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REQ | 4 | 26004201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REQ | 4 | 26004201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | 4-NITROPHENOL | 100-02-7 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REQ | 4 | 26004201 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REQ | 4 | 26004201 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REQ | 4 | 26004201 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REQ | 4 | 26004201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REQ | 4 | 26004201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |



R0063228

Subsurface Sediment Analytical Data

CTO-0086

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 4 | 26004201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 80 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 6 | REG | 4 | 26004201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 4 | 26004201 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 6 | REG | 4 | 26004201 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | DELTA-BHC (HCH) | 319-86-8 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 4 | 26004201 | DI-N-OCTYLPHTHALATE | 117-84-0 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 4 | 26004201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | DIELDRIN | 60-57-1 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | ENDOSULFAN I | 959-98-8 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | ENDOSULFAN II | 33213-65-9 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | ENDOSULFAN SULFATE | 1031-07-8 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | ENDRIN | 72-20-8 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | ENDRIN ALDEHYDE | 7421-93-4 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | HEPTACHLOR | 76-44-8 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.6 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 6 | REG | 4 | 26004201 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 6 | REG | 4 | 26004201 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 4 | 26004201 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 4 | 26004201 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 4 | 26004201 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004201 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 14.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 4 | 26004202 | ARSENIC, TOTAL | 7440-38-2 | 8.1 | MG/KG | | | SED-D | 14.5 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 4 | 26004202 | BERYLLIUM, TOTAL | 7440-41-7 | 0.83 | MG/KG | | | SED-D | 14.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 6 | REG | 4 | 26004202 | CADMIUM, TOTAL | 7440-43-9 | 0.07 | MG/KG | | | SED-D | 14.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 6 | REG | 4 | 26004202 | CHROMIUM, TOTAL | 7440-47-3 | 14 | MG/KG | | | SED-D | 14.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 4 | 26004202 | COPPER, TOTAL | 7440-50-8 | 9.4 | MG/KG | | | SED-D | 14.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 4 | 26004202 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 14.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 4 | 26004202 | LEAD, TOTAL | 7439-92-1 | 14 | MG/KG | | | SED-D | 14.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 4 | 26004202 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 14.5 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 6 | REG | 4 | 26004202 | MONOBUTYLTIN | | 1 | UG/KG | U | W | SED-D | 14.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 4 | 26004202 | NICKEL, TOTAL | 7440-02-0 | 12 | MG/KG | | | SED-D | 14.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 4 | 26004202 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 14.5 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 4 | 26004202 | SILVER, TOTAL | 7440-22-4 | 0.7 | MG/KG | | | SED-D | 14.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 4 | 26004202 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | W | SED-D | 14.5 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 4 | 26004202 | TRIBUTYLTIN | 688-73-3 | 6 | UG/KG | | W | SED-D | 14.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 4 | 26004202 | ZINC, TOTAL | 7440-66-6 | 35 | MG/KG | | | SED-D | 14.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 4 | 26004203 | CLAY | | 7.79 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 93.714 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 1000 MICRONS | | 8.83 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 125 MICRONS | | 63.213 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 8.197 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 88.199 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 36.09 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 2000 MICRONS | | 7.239 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 250 MICRONS | | 16.59 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 92.21 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 88.587 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 10.985 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 500 MICRONS | | 9.711 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 80.829 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 91.209 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 9.244 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 74.908 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | GRAVEL | | 7.239 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | MEAN GRAIN SIZE | | 108.329 | UM | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | MEDIAN GRAIN SIZE | | 147.861 | UM | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | SAND | | 73.69 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004203 | SILT | | 11.281 | PERCENT | | | SED-D | 14.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 4 | 26004204 | TOTAL ORGANIC CARBON | | 0.169 | PERCENT | | | SED-D | 14.8 | MENZELAVACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 6 | REG | 5 | 26004301 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | W | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 1,2 DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 20 | UG/KG | U | W | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |



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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Validation Level | Detection Limit | Detection Limit Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 5 | 26004301 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 6 | REG | 5 | 26004301 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | 4,4'-DDE | 72-55-9 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | 4-NITROPHENOL | 100-02-7 | 20 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 20 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 6 | REG | 5 | 26004301 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 37 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | FLUORENE | 86-73-7 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 6 | REG | 5 | 26004301 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | R | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 6 | REG | 5 | 26004301 | METHYLNAPHTHALENES | | 10 | UG/KG | U | R | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 5 | 26004301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 6 | REG | 5 | 26004301 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 19.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004301 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | UJ | SED-D | 19.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 6 | REG | 5 | 26004302 | ARSENIC, TOTAL | 7440-38-2 | 1.4 | MG/KG | | | SED-D | 19.1 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 5 | 26004302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.25 | MG/KG | | | SED-D | 19.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 6 | REG | 5 | 26004302 | CADMIUM, TOTAL | 7440-43-9 | 0.08 | MG/KG | U | U | SED-D | 19.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 6 | REG | 5 | 26004302 | CHROMIUM, TOTAL | 7440-47-3 | 22 | MG/KG | | | SED-D | 19.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 5 | 26004302 | COPPER, TOTAL | 7440-50-8 | 38 | MG/KG | | | SED-D | 19.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 5 | 26004302 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 19.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 5 | 26004302 | LEAD, TOTAL | 7439-92-1 | 7.4 | MG/KG | | | SED-D | 19.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 5 | 26004302 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 19.1 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 6 | REG | 5 | 26004302 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 19.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 5 | 26004302 | NICKEL, TOTAL | 7440-02-0 | 17 | MG/KG | | | SED-D | 19.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 6 | REG | 5 | 26004302 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 19.1 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 5 | 26004302 | SILVER, TOTAL | 7440-22-4 | 1.4 | MG/KG | | | SED-D | 19.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 5 | 26004302 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | UJ | SED-D | 19.1 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 6 | REG | 5 | 26004302 | TRIBUTYLTIN | 688-73-3 | 3.6 | UG/KG | | | SED-D | 19.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 6 | REG | 5 | 26004302 | ZINC, TOTAL | 7440-66-6 | 49 | MG/KG | | | SED-D | 19.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 6 | REG | 5 | 26004303 | CLAY | | 8.408 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 1.95 MICRONS | | 94.125 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 1000 MICRONS | | 3.178 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 125 MICRONS | | 30.004 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 3.039 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 88.939 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 14.405 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 2000 MICRONS | | 2.782 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 250 MICRONS | | 6.21 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 93.592 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 77.621 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 4.393 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 500 MICRONS | | 3.507 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 88.183 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 80.797 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 3.349 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 48.188 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | GRAVEL | | 5.788 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | REG | 5 | 26004303 | MEAN GRAIN SIZE | | 57.595 | UM | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | MEDIAN GRAIN SIZE | | 64.444 | UM | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | SAND | | 59.43 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004303 | SILT | | 31.41 | PERCENT | | | SED-D | 19.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 6 | REG | 5 | 26004304 | TOTAL ORGANIC CARBON | | 0.085 | PERCENT | | | SED-D | 19.1 | MENZELAVACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 8 | REG | 1 | 26003101 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 8 | REG | 1 | 26003101 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 8 | REG | 1 | 26003101 | 4,4'-DDE | 72-55-9 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 8 | REG | 1 | 26003101 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 8 | REG | 1 | 26003101 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 8 | REG | 1 | 26003101 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 8 | REG | 1 | 26003101 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BENZIDINE | 92-87-5 | 70 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 8 | REG | 1 | 26003101 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BENZO(A)PYRENE | 50-32-8 | 14 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BENZO(B)FLUORANTHENE | 205-99-2 | 14 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BENZO(K)FLUORANTHENE | 207-08-9 | 14 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 8 | REG | 1 | 26003101 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 8 | REG | 1 | 26003101 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 8 | REG | 1 | 26003101 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 1 | 26003101 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 8 | REG | 1 | 26003101 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 1 | 26003101 | DI-N-OCTYLPHTHALATE | 117-84-0 | 20 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |



R0063233

-J583

VOL 18

Subsurface Sediment Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 REG | 1 | 26003101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | 8 REG | 1 | 26003101 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| | 8 REG | 1 | 26003101 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 8 REG | 1 | 26003101 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 8 REG | 1 | 26003101 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003101 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 8 REG | 1 | 26003101 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 26.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003102 | ARSENIC, TOTAL | 7440-38-2 | 3.4 | MG/KG | | | SED-D | 26.4 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | 8 REG | 1 | 26003102 | BERYLLIUM, TOTAL | 7440-41-7 | 0.14 | MG/KG | | | SED-D | 26.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| | 8 REG | 1 | 26003102 | CADMIUM, TOTAL | 7440-43-9 | 0.066 | MG/KG | | | SED-D | 26.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| | 8 REG | 1 | 26003102 | CHROMIUM, TOTAL | 7440-47-3 | 14 | MG/KG | | | SED-D | 26.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| | 8 REG | 1 | 26003102 | COPPER, TOTAL | 7440-50-8 | 12 | MG/KG | | | SED-D | 26.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| | 8 REG | 1 | 26003102 | DIBUTYLTIN | | 3.4 | UG/KG | | J | SED-D | 26.4 | GC-PPD | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| | 8 REG | 1 | 26003102 | LEAD, TOTAL | 7439-92-1 | 8.2 | MG/KG | | | SED-D | 26.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| | 8 REG | 1 | 26003102 | MERCURY, TOTAL | 7439-97-6 | 0.094 | MG/KG | | | SED-D | 26.4 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| | 8 REG | 1 | 26003102 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 26.4 | GC-PPD | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| | 8 REG | 1 | 26003102 | NICKEL, TOTAL | 7440-02-0 | 9.5 | MG/KG | | | SED-D | 26.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| | 8 REG | 1 | 26003102 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 26.4 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| | 8 REG | 1 | 26003102 | SILVER, TOTAL | 7440-22-4 | 0.68 | MG/KG | | | SED-D | 26.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |

8/11/95



R0063234

C0858

V01 78

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | REG | 1 | 26003102 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | UJ | SED-D | 26.4 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 8 | REG | 1 | 26003102 | TRIBUTYLTIN | 688-73-3 | 8 | UG/KG | | UJ | SED-D | 26.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 8 | REG | 1 | 26003102 | ZINC, TOTAL | 7440-66-6 | 42 | MG/KG | | | SED-D | 26.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 8 | REG | 1 | 26003103 | CLAY | | 3.185 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 97.079 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.016 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 125 MICRONS | | 33.674 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 95.629 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 11.407 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 250 MICRONS | | 3.252 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 88.815 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 84.839 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.722 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 500 MICRONS | | 0.231 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 88.099 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 88.883 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.078 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 79.912 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | GRAVEL | | 0 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | MEAN GRAIN SIZE | | 110.567 | UM | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | MEDIAN GRAIN SIZE | | 169.998 | UM | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | SAND | | 88.099 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003103 | SILT | | 4.748 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 1 | 26003104 | TOTAL ORGANIC CARBON | | 0.708 | PERCENT | | | SED-D | 26.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | UJ | SED-D | 26.4 | MENZIES-VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 8 | REG | 2 | 26003201 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 8 | REG | 2 | 26003201 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 2 | 26003201 | 4,4'-DDE | 72-55-9 | 0.8 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 2 | 26003201 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 8 | REG | 2 | 26003201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | UJ | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |

9/11/96



R0063235

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VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | REG | 2 | 26003201 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | ALDRIN | 309-00-2 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | ALPHA-BHC (HCH) | 319-84-6 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BENZIDINE | 92-87-5 | 60 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 8 | REG | 2 | 26003201 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BETA-BHC (HCH) | 319-85-7 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 60 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 8 | REG | 2 | 26003201 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 8 | REG | 2 | 26003201 | DELTA-BHC (HCH) | 319-86-8 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | DIELDRIN | 60-57-1 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | ENDOSULFAN I | 959-98-8 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | ENDOSULFAN II | 33213-65-9 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | ENDOSULFAN SULFATE | 1031-07-8 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | ENDRIN | 72-20-8 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | ENDRIN ALDEHYDE | 7421-93-4 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | HEPTACHLOR | 76-44-8 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | RED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.6 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 8 | REG | 2 | 26003201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 8 | REG | 2 | 26003201 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |



R0063236

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | REG | 2 | 26003201 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003201 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003201 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 21.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 8 | REG | 2 | 26003202 | ARSENIC, TOTAL | 7440-38-2 | 2 | MG/KG | U | U | SED-D | 21.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003202 | BERYLLIUM, TOTAL | 7440-41-7 | 0.13 | MG/KG | U | U | SED-D | 21.1 | EPA 7080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 8 | REG | 2 | 26003202 | CADMIUM, TOTAL | 7440-43-9 | 0.089 | MG/KG | U | U | SED-D | 21.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 2 | 26003202 | CHROMIUM, TOTAL | 7440-47-3 | 9.6 | MG/KG | U | U | SED-D | 21.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 8 | REG | 2 | 26003202 | COPPER, TOTAL | 7440-50-8 | 10 | MG/KG | U | U | SED-D | 21.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 8 | REG | 2 | 26003202 | DIBUTYLTIN | 7439-92-1 | 1 | UG/KG | U | U | SED-D | 21.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 2 | 26003202 | LEAD, TOTAL | 7439-97-6 | 4 | MG/KG | U | U | SED-D | 21.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 8 | REG | 2 | 26003202 | MERCURY, TOTAL | 7440-02-0 | 0.03 | MG/KG | U | U | SED-D | 21.1 | EPA 8010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 8 | REG | 2 | 26003202 | MONOBUTYLTIN | 7782-49-2 | 1 | UG/KG | U | U | SED-D | 21.1 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 8 | REG | 2 | 26003202 | NICKEL, TOTAL | 7440-22-4 | 7.8 | MG/KG | U | U | SED-D | 21.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 8 | REG | 2 | 26003202 | SELENIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 21.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 8 | REG | 2 | 26003202 | SILVER, TOTAL | 7440-66-6 | 0.8 | MG/KG | U | U | SED-D | 21.1 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 8 | REG | 2 | 26003202 | THALLIUM, TOTAL | 688-73-3 | 0.8 | MG/KG | U | U | SED-D | 21.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 2 | 26003202 | TRIBUTYLTIN | 7440-66-6 | 4.9 | UG/KG | U | U | SED-D | 21.1 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 2 | 26003202 | ZINC, TOTAL | | 24 | MG/KG | U | U | SED-D | 21.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 8 | REG | 2 | 26003203 | CLAY | | 1.41 | PERCENT | | | SED-D | 21.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 98.098 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.349 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 125 MICRONS | | 36.092 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.292 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 97.578 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 20.122 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.143 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 250 MICRONS | | 9.026 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 96.59 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 97.199 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 2.111 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 500 MICRONS | | 0.733 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 94.416 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 97.958 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.488 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 77.081 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | GRAVEL | | 0.143 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | MEAN GRAIN SIZE | | 124.403 | UM | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | MEDIAN GRAIN SIZE | | 111.132 | UM | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | SAND | | 94.273 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003203 | SILT | | 4.174 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 8 | REG | 2 | 26003204 | TOTAL ORGANIC CARBON | | 0.187 | PERCENT | | | SED-D | 21.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003301 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | UJ | SED-D | 28.7 | MENZIE&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 14 | REG | 1 | 26003301 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | UJ | SED-D | 28.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| | | | | | | | | | | | | | | | | | 10 | UG/KG |

8/11/98



R0063237

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 1 | 26003301 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 3- AND 4-METHYLPHENOL | 106-44-5 | 40 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 14 | REG | 1 | 26003301 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | 4,4'-DDE | 72-55-9 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | ALPHA BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BENZIDINE | 92-87-5 | 70 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 14 | REG | 1 | 26003301 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BENZO(A)PYRENE | 50-32-8 | 13 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BENZO(B)FLUORANTHENE | 205-99-2 | 27 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BENZO(K)FLUORANTHENE | 207-08-9 | 13 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 60 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 14 | REG | 1 | 26003301 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 14 | REG | 1 | 26003301 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |



R0063238

## Subsurface Sediment Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 1 | 26003301 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 1 | 26003301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 14 | REG | 1 | 26003301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003301 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003301 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 25.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 1 | 26003302 | ARSENIC, TOTAL | 7440-38-2 | 4.6 | MG/KG | | | SED-D | 25.7 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.27 | MG/KG | | | SED-D | 25.7 | EPA 7090 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 1 | 26003302 | CADMIUM, TOTAL | 7440-43-9 | 0.07 | MG/KG | U | U | SED-D | 25.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 1 | 26003302 | CHROMIUM, TOTAL | 7440-47-3 | 19 | MG/KG | | | SED-D | 25.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 14 | REG | 1 | 26003302 | COPPER, TOTAL | 7440-50-8 | 17 | MG/KG | | | SED-D | 25.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 14 | REG | 1 | 26003302 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 25.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 1 | 26003302 | LEAD, TOTAL | 7439-92-1 | 9.4 | MG/KG | | | SED-D | 25.7 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 14 | REG | 1 | 26003302 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | U | U | SED-D | 25.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 1 | 26003302 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 25.7 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 14 | REG | 1 | 26003302 | NICKEL, TOTAL | 7440-02-0 | 18 | MG/KG | | | SED-D | 25.7 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 14 | REG | 1 | 26003302 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 25.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 1 | 26003302 | SILVER, TOTAL | 7440-22-4 | 1.2 | MG/KG | | | SED-D | 25.7 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 14 | REG | 1 | 26003302 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 25.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 1 | 26003302 | TRIBUTYLTIN | 688-73-3 | 6.7 | UG/KG | U | U | SED-D | 25.7 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 1 | 26003302 | ZINC, TOTAL | 7440-66-6 | 47 | MG/KG | | | SED-D | 25.7 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 1 | 26003303 | CLAY | | 15.918 | PERCENT | | | SED-D | 25.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 0.06 MICRONS | | 100 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 1.00 MICRONS | | 81.398 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.481 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



R0063239

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 125 MICRONS | | 18.074 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.356 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 80.673 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 4.988 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.212 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 250 MICRONS | | 1.417 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 89.682 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 71.377 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 353.56 MICRONS | | 0.956 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 500 MICRONS | | 0.642 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 88.507 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 89.822 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.522 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 48.221 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | GRAVEL | | 0.212 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | MEAN GRAIN SIZE | | 39.88 | UM | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | MEDIAN GRAIN SIZE | | 80.09 | UM | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | SAND | | 99.295 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003303 | SILT | | 30.176 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 1 | 26003304 | TOTAL ORGANIC CARBON | | 0.309 | PERCENT | | | SED-D | 25.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003401 | 1,2,4-TRICHLOROBENZENE | | 10 | UG/KG | U | U | SED-D | 23.1 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 14 | REG | 2 | 26003401 | 1,2-DICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 1,3-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 1,4-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 2,4,6-TRICHLOROPHENOL | 106-46-7 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 2,4-DICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | 2,4 DIMETHYLPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | 2,4-DINITROPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | 2,4-DINITROTOLUENE | 51-28-5 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 2,6-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 2-CHLORONAPHTHALENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 2-CHLOROPHENOL | 91-58-7 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 2-METHYL-4,6-DINITROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | 2-METHYLPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | 2-NITROPHENOL | 88-48-7 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | 3,3-DICHLOROBENZIDINE | 88-75-5 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 3- AND 4-METHYLPHENOL | 91-94-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 4,4'-DDD | 106-44-5 | 40 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 14 | REG | 2 | 26003401 | 4,4'-DDE | 72-54-8 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | 4,4'-DDT | 72-55-9 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | 4-BROMOPHENYLPHENYLETHER | 50-29-3 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | 4-CHLORO-3-METHYLPHENOL | 101-55-3 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | 4-CHLOROPHENYLPHENYLETHER | 59-50-7 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | 4-NITROPHENOL | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | ACENAPHTHENE | 100-02-7 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | ACENAPHTHYLENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | BENZIDINE | 92-87-5 | 70 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 14 | REG | 2 | 26003401 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |

8/11/95



R0063240

Subsurface Sediment Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 2 | 26003401 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 90 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 14 | REG | 2 | 26003401 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 14 | REG | 2 | 26003401 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 14 | REG | 2 | 26003401 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 14 | REG | 2 | 26003401 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | 2 | 26003401 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 14 | REG | 2 | 26003401 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003401 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 23.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 14 | REG | 2 | 26003402 | ARSENIC, TOTAL | 7440-38-2 | 4.6 | MG/KG | | | SED-D | 23.1 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 2 | 26003402 | BERYLLIUM, TOTAL | 7440-41-7 | 0.26 | MG/KG | | | SED-D | 23.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 14 | REG | 2 | 26003402 | CADMIUM, TOTAL | 7440-43-9 | 0.065 | MG/KG | | | SED-D | 23.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 14 | REG | 2 | 26003402 | CHROMIUM, TOTAL | 7440-47-3 | 17 | MG/KG | | | SED-D | 23.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 2 | 26003402 | COPPER, TOTAL | 7440-50-8 | 18 | MG/KG | | | SED-D | 23.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 14 | REG | 2 | 26003402 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 23.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 2 | 26003402 | LEAD, TOTAL | 7439-92-1 | 8.5 | MG/KG | | | SED-D | 23.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 14 | REG | 2 | 26003402 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | U | U | SED-D | 23.1 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 14 | REG | 2 | 26003402 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 23.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 2 | 26003402 | NICKEL, TOTAL | 7440-02-0 | 14 | MG/KG | | | SED-D | 23.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 14 | REG | 2 | 26003402 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 23.1 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 2 | 26003402 | SILVER, TOTAL | 7440-22-4 | 1 | MG/KG | | | SED-D | 23.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 2 | 26003402 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 23.1 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 14 | REG | 2 | 26003402 | TRIBUTYLTIN | 688-73-3 | 3.3 | UG/KG | | U | SED-D | 23.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 14 | REG | 2 | 26003402 | ZINC, TOTAL | 7440-66-6 | 48 | MG/KG | | | SED-D | 23.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 14 | REG | 2 | 26003403 | CLAY | | 17.813 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 99.277 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.168 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 125 MICRONS | | 15.7 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.104 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 83.979 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 8.998 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.022 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 250 MICRONS | | 1.301 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 92.497 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 44.56 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.509 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 500 MICRONS | | 0.248 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 29.72 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 74.907 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.218 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | CUMULATIVE PERCENT > 88.39 MICRONS | | 21.421 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | GRAVEL | | 0.022 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | MEAN GRAIN SIZE | | 18.274 | UM | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | MEDIAN GRAIN SIZE | | 25.95 | UM | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | SAND | | 29.669 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003403 | SILT | | 52.787 | PERCENT | | | SED-D | 23.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 14 | REG | 2 | 26003404 | TOTAL ORGANIC CARBON | | 0.25 | PERCENT | | | SED-D | 23.1 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 24 | REG | 1 | 26003501 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |



R0063242

Subsurface Sediment Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | REG | 1 | 26003501 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | 2 METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | 2 METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | 2 NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 3- AND 4-METHYLPHENOL | 108-44-5 | 50 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 24 | REG | 1 | 26003501 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | 4,4'-DDE | 72-55-9 | 17 | UG/KG | J | J | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 24 | REG | 1 | 26003501 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BETA BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 24 | REG | 1 | 26003501 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 24 | REG | 1 | 26003501 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | 1 | 26003501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 1 | 26003501 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 1 | 26003501 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |

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R0063243

Subsurface Sediment Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Vicinity | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | REG | | 26003501 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | | 26003501 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 33.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 24 | REG | | 26003501 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8082 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | | 26003501 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PCB-1254 | 11097-69-1 | 110 | UG/KG | U | U | SED-D | 33.4 | EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | | 26003501 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003501 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 24 | REG | | 26003501 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 33.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | | 26003502 | ARSENIC, TOTAL | 7440-38-2 | 6.9 | MG/KG | | | SED-D | 33.4 | EPA 6020 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 24 | REG | | 26003502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.6 | MG/KG | | | SED-D | 33.4 | EPA 7000 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 24 | REG | | 26003502 | CADMIUM, TOTAL | 7440-43-9 | 0.38 | MG/KG | | | SED-D | 33.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 24 | REG | | 26003502 | CHROMIUM, TOTAL | 7440-47-3 | 36 | MG/KG | | | SED-D | 33.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 24 | REG | | 26003502 | COPPER, TOTAL | 7440-50-8 | 45 | MG/KG | | | SED-D | 33.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 24 | REG | | 26003502 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 33.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 24 | REG | | 26003502 | LEAD, TOTAL | 7439-92-1 | 39 | MG/KG | | | SED-D | 33.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 24 | REG | | 26003502 | MERCURY, TOTAL | 7439-97-6 | 0.81 | MG/KG | | | SED-D | 33.4 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 24 | REG | | 26003502 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 33.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 24 | REG | | 26003502 | NICKEL, TOTAL | 7440-02-0 | 20 | MG/KG | | | SED-D | 33.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 24 | REG | | 26003502 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 33.4 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 24 | REG | | 26003502 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | SED-D | 33.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 24 | REG | | 26003502 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 33.4 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 24 | REG | | 26003502 | TRIBUTYLTIN | 688-73-3 | 2.9 | UG/KG | | | SED-D | 33.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 24 | REG | | 26003502 | ZINC, TOTAL | 7440-66-6 | 170 | MG/KG | | | SED-D | 33.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 24 | REG | | 26003503 | CLAY | | 21.38 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 1.95 MICRONS | | 91.881 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.358 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 125 MICRONS | | 13.397 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.199 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 60.894 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 176.78 MICRONS | | 7.804 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.15 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 250 MICRONS | | 5.36 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | | 26003503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 74.81 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |





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Subsurface Sediment Analytical Data

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | REG | 1 | 26003503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 41.661 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.673 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | CUMULATIVE PERCENT > 500 MICRONS | | 0.479 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 34.178 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 66.275 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.332 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | CUMULATIVE PERCENT > 88.39 MICRONS | | 24.498 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | GRAVEL | | 0.15 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | MEAN GRAIN SIZE | | 13.72 | UM | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | MEDIAN GRAIN SIZE | | 18.799 | UM | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | SAND | | 34.027 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003503 | SILT | | 40.442 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 1 | 26003504 | TOTAL ORGANIC CARBON | | 0.429 | PERCENT | | | SED-D | 33.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003601 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 17.9 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 24 | REG | 2 | 26003601 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 3- AND 4-METHYLPHENOL | 106-44-5 | 40 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 24 | REG | 2 | 26003601 | 4,4'-DDE | 72-55-9 | 0.8 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 2 | 26003601 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 2 | 26003601 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 2 | 26003601 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | 4-NITROPHENOL | 100-02-7 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 2 | 26003601 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 24 | REG | 2 | 26003601 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 24 | REG | 2 | 26003601 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | REG | 2 | 26003601 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 90 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 24 | REG | 2 | 26003601 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 24 | REG | 2 | 26003601 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | DELTA-BHC (HCH) | 319-86-8 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | DI-N-OCTYLPHTHALATE | 117-84-0 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | DIELDRIN | 60-57-1 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | ENDOSULFAN I | 959-98-8 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | ENDOSULFAN II | 33213-65-9 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | ENDOSULFAN SULFATE | 1031-07-8 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | ENDRIN | 72-20-8 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | ENDRIN ALDEHYDE | 7421-93-4 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | HEPTACHLOR | 76-44-8 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.6 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 24 | REG | 2 | 26003601 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 24 | REG | 2 | 26003601 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 24 | REG | 2 | 26003601 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003601 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 17.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 24 | REG | 2 | 26003602 | ARSENIC, TOTAL | 7440-38-2 | 1.1 | MG/KG | | J | SED-D | 17.9 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 24 | REG | 2 | 26003602 | BERYLLIUM, TOTAL | 7440-41-7 | 0.12 | MG/KG | | | SED-D | 17.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 24 | REG | 2 | 26003602 | CADMIUM, TOTAL | 7440-43-9 | 0.087 | MG/KG | | | SED-D | 17.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 24 | REG | 2 | 26003602 | CHROMIUM, TOTAL | 7440-47-3 | 10 | MG/KG | | | SED-D | 17.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |



R0063246

| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | REG | 2 | 26003602 | COPPER, TOTAL | 7440-50-8 | 7.3 | MG/KG | | | SED-D | 17.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 24 | REG | 2 | 26003602 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 17.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 24 | REG | 2 | 26003602 | LEAD, TOTAL | 7439-92-1 | 4 | MG/KG | U | U | SED-D | 17.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 24 | REG | 2 | 26003602 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 17.9 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 24 | REG | 2 | 26003602 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 17.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 24 | REG | 2 | 26003602 | NICKEL, TOTAL | 7440-02-0 | 8.5 | MG/KG | | | SED-D | 17.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 24 | REG | 2 | 26003602 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 17.9 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 24 | REG | 2 | 26003602 | SILVER, TOTAL | 7440-22-4 | 0.65 | MG/KG | | | SED-D | 17.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 24 | REG | 2 | 26003602 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | U | SED-D | 17.9 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 24 | REG | 2 | 26003602 | TRIBUTYLTIN | 688-73-3 | 4.4 | UG/KG | | | SED-D | 17.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 24 | REG | 2 | 26003602 | ZINC, TOTAL | 7440-66-6 | 30 | MG/KG | | | SED-D | 17.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 24 | REG | 2 | 26003603 | CLAY | | 6.139 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 1.95 MICRONS | | 94.27 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.278 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 125 MICRONS | | 47.876 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.191 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 88.385 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 35.824 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.087 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 250 MICRONS | | 20.069 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 93.662 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 82.307 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 353.55 MICRONS | | 4.35 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 500 MICRONS | | 0.641 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 73.334 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 90.736 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.372 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 81.753 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | GRAVEL | | 0.087 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | MEAN GRAIN SIZE | | 80.054 | UM | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | MEDIAN GRAIN SIZE | | 118.642 | UM | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | SAND | | 73.247 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003603 | SILT | | 20.829 | PERCENT | | | SED-D | 17.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 24 | REG | 2 | 26003604 | TOTAL ORGANIC CARBON | | 0.264 | PERCENT | | | SED-D | 17.9 | MENZELVACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 29 | REG | 1 | 26003701 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 30.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |



R0063247

| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 1 | 26003701 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 1 | 26003701 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | 4,4'-DDE | 72-55-9 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BENZIDINE | 92-87-5 | 70 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 29 | REG | 1 | 26003701 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BETA BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 29 | REG | 1 | 26003701 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 29 | REG | 1 | 26003701 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | DI-N BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 29 | REG | 1 | 26003701 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | | | | | | | | | | | | | | | | | 3 | UG/KG |



R0063248

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 1 | 26003701 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 29 | REG | 1 | 26003701 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003701 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 1 | 26003702 | ARSENIC, TOTAL | 7440-38-2 | 2.3 | MG/KG | | J | SED-D | 30.8 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 29 | REG | 1 | 26003702 | BERYLLIUM, TOTAL | 7440-41-7 | 0.29 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 29 | REG | 1 | 26003702 | CADMIUM, TOTAL | 7440-43-9 | 0.067 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 29 | REG | 1 | 26003702 | CHROMIUM, TOTAL | 7440-47-3 | 16 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 29 | REG | 1 | 26003702 | COPPER, TOTAL | 7440-50-8 | 16 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 29 | REG | 1 | 26003702 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 30.8 | QC-PPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 1 | 26003702 | LEAD, TOTAL | 7439-92-1 | 7.2 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 29 | REG | 1 | 26003702 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | | | SED-D | 30.8 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 29 | REG | 1 | 26003702 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 30.8 | QC-PPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 1 | 26003702 | NICKEL, TOTAL | 7440-02-0 | 18 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 29 | REG | 1 | 26003702 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | SED-D | 30.8 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 29 | REG | 1 | 26003702 | SILVER, TOTAL | 7440-22-4 | 1.2 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 29 | REG | 1 | 26003702 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | U | SED-D | 30.8 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 29 | REG | 1 | 26003702 | TRIBUTYLTIN | 688-73-3 | 6.4 | UG/KG | | | SED-D | 30.8 | QC-PPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 1 | 26003702 | ZINC, TOTAL | 7440-66-6 | 53 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 29 | REG | 1 | 26003703 | CLAY | | 3.209 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 97.19 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.652 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 125 MICRONS | | 47.27 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.239 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 94.268 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 27.184 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.049 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 250 MICRONS | | 13.603 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 88.791 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 88.273 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 353.55 MICRONS | | 8.477 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 500 MICRONS | | 2.938 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 89.260 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 86.729 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 1.429 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | CUMULATIVE PERCENT > 88.39 MICRONS | | 73.49 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



R0063249

E-J8C3

V01 T8

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 1 | 26003703 | GRAVEL | | 0.049 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | MEAN GRAIN SIZE | | 125.032 | UM | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | MEDIAN GRAIN SIZE | | 120.391 | UM | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | SAND | | 98.244 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003703 | SILT | | 10.498 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 1 | 26003704 | TOTAL ORGANIC CARBON | | 0.097 | PERCENT | | | SED-D | 30.8 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 29 | REG | 2 | 26003801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 29 | REG | 2 | 26003801 | 2 METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | 2 NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 29 | REG | 2 | 26003801 | 4,4'-DDE | 72-55-9 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | 4-NITROPHENOL | 100-02-7 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | BENZIDINE | 92-87-5 | 60 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 29 | REG | 2 | 26003801 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 90 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 29 | REG | 2 | 26003801 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 29 | REG | 2 | 26003801 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| | | | | | | | | | | | | | | | | | 20 | UG/KG |



R0063250

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 2 | 26003801 | DI-N-OCTYLPHTHALATE | 117-84-0 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 29 | REG | 2 | 26003801 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 29 | REG | 2 | 26003801 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | N NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | N NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 29 | REG | 2 | 26003801 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003801 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 19.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 29 | REG | 2 | 26003802 | ARSENIC, TOTAL | 7440-38-2 | 1.4 | MG/KG | | J | SED-D | 19.9 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 29 | REG | 2 | 26003802 | BERYLLIUM, TOTAL | 7440-41-7 | 0.28 | MG/KG | | | SED-D | 19.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 29 | REG | 2 | 26003802 | CADMIUM, TOTAL | 7440-43-9 | 0.14 | MG/KG | | | SED-D | 19.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 29 | REG | 2 | 26003802 | CHROMIUM, TOTAL | 7440-47-3 | 11 | MG/KG | | | SED-D | 19.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 29 | REG | 2 | 26003802 | COPPER, TOTAL | 7440-50-8 | 11 | MG/KG | | | SED-D | 19.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 29 | REG | 2 | 26003802 | DIBUTYLTIN | | 4.1 | UG/KG | | J | SED-D | 19.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 2 | 26003802 | LEAD, TOTAL | 7439-92-1 | 7.5 | MG/KG | | | SED-D | 19.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 29 | REG | 2 | 26003802 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 19.9 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 29 | REG | 2 | 26003802 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 19.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 2 | 26003802 | NICKEL, TOTAL | 7440-02-0 | 10 | MG/KG | | | SED-D | 19.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 29 | REG | 2 | 26003802 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 19.9 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |

8/11/05



R0063251

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | REG | 2 | 26003802 | SILVER, TOTAL | 7440-22-4 | 0.87 | MG/KG | | | SED-D | 19.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 29 | REG | 2 | 26003802 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | UJ | SED-D | 19.9 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 29 | REG | 2 | 26003802 | TRIBUTYLTIN | 688-73-3 | 8.9 | UG/KG | | UJ | SED-D | 19.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 29 | REG | 2 | 26003802 | ZINC, TOTAL | 7440-66-6 | 36 | MG/KG | | | SED-D | 19.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 29 | REG | 2 | 26003803 | CLAY | | 13.788 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 1.95 MICRONS | | 80.108 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 1000 MICRONS | | 3.277 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 125 MICRONS | | 52.906 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 1.998 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 15.63 MICRONS | | 74.531 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 38.49 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 2000 MICRONS | | 1.155 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 250 MICRONS | | 23.905 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 88.212 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 67.995 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 353.56 MICRONS | | 12.093 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 500 MICRONS | | 8.148 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 93.962 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 81.782 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 5.231 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 60.099 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | GRAVEL | | 1.156 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | MEAN GRAIN SIZE | | 41.951 | UM | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | MEDIAN GRAIN SIZE | | 184.199 | UM | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | SAND | | 92.867 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003803 | SILT | | 92.85 | PERCENT | | | SED-D | 19.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 29 | REG | 2 | 26003804 | TOTAL ORGANIC CARBON | | 0.068 | PERCENT | | | SED-D | 19.9 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VU | | |
| 43 | DUP | 3 | 26021001 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 50 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2,4-DICHLOROPHENOL | 120-83-2 | 50 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2,4-DIMETHYLPHENOL | 105-67-9 | 50 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2-CHLOROPHENOL | 95-57-8 | 50 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2-METHYLPHENOL | 95-48-7 | 50 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | 3- AND 4-METHYLPHENOL | 108-44-5 | 50 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 4,4'-DDD | 72-54-8 | 40 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | 4,4'-DDE | 72-55-9 | 460 | UG/KG | | | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | DUP | 3 | 26021001 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | J | J | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | DUP | 3 | 26021001 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 50 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | UJ | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | | | | | | | | | | | | EPA 8270 | | | | | 60 | UG/KG |
| | | | | | | | | | | | | | | | | | 30 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | DUP | 3 | 26021001 | 4-NITROPHENOL | 100-02-7 | 50 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | ANTHRACENE | 120-12-7 | 120 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | DUP | 3 | 26021001 | BENZO(A)ANTHRACENE | 56-55-3 | 220 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BENZO(A)PYRENE | 50-32-8 | 160 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BENZO(B)FLUORANTHENE | 205-99-2 | 230 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BENZO(GHI)PERYLENE | 191-24-2 | 95 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BENZO(K)FLUORANTHENE | 207-08-9 | 220 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 43 | DUP | 3 | 26021001 | BUTYLBENZYLPHTHALATE | 85-68-7 | 50 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 43 | DUP | 3 | 26021001 | CHRYSENE | 218-01-9 | 220 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | DI-N-BUTYLPHTHALATE | 84-74-2 | 80 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | DI-N-OCTYLPHTHALATE | 117-84-0 | 50 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | DIETHYLPHTHALATE | 84-66-2 | 50 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | FLUORANTHENE | 206-44-0 | 230 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | HEPTACHLOR EPOXIDE | 1024-57-0 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 97 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | DUP | 3 | 26021001 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 43 | DUP | 3 | 26021001 | METHYLNAPHTHALENES | | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | DUP | 3 | 26021001 | NITROBENZENE | 98-95-3 | 50 | UG/KG | U | U | SED-D | 61 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | DUP | 3 | 26021001 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 61 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |



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Subsurface Sediment Analytical Data

| Station ID | Sample Type | Sediment Depth Int | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection Code | Matrix | Station Type | Group | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 43 DUP | 3 | 26021001 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | | 01 EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 43 DUP | 3 | 26021001 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | | 01 EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 43 DUP | 3 | 26021001 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | | 01 EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 43 DUP | 3 | 26021001 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | | 01 EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 43 DUP | 3 | 26021001 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | | 01 EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 43 DUP | 3 | 26021001 | PCB-1260 | 11096-82-5 | 30 | UG/KG | U | U | SED-D | | 01 EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 43 DUP | 3 | 26021001 | PENTACHLOROPHENOL | 87-86-5 | 50 | UG/KG | U | U | SED-D | | 01 EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| | 43 DUP | 3 | 26021001 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | U | SED-D | | 01 EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 43 DUP | 3 | 26021001 | PHENOL | 108-95-2 | 50 | UG/KG | U | U | SED-D | | 01 EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| | 43 DUP | 3 | 26021001 | PYRENE | 129-00-0 | 330 | UG/KG | U | U | SED-D | | 01 EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| | 43 DUP | 3 | 26021001 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | | 01 EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | 43 DUP | 3 | 26021002 | ARSENIC, TOTAL | 7440-38-2 | 7.9 | MG/KG | | | SED-D | | 01 EPA 7060 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| | 43 DUP | 3 | 26021002 | BERYLLIUM, TOTAL | 7440-41-7 | 1 | MG/KG | | | SED-D | | 01 EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| | 43 DUP | 3 | 26021002 | CADMIUM, TOTAL | 7440-43-9 | 1.8 | MG/KG | | | SED-D | | 01 EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| | 43 DUP | 3 | 26021002 | CHROMIUM, TOTAL | 7440-47-3 | 84 | MG/KG | | | SED-D | | 01 EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| | 43 DUP | 3 | 26021002 | COPPER, TOTAL | 7440-50-8 | 100 | MG/KG | | | SED-D | | 01 EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| | 43 DUP | 3 | 26021007 | DIBUTYLTIN | | 3 | UG/KG | U | U | SED-D | | 01 GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| | 43 DUP | 3 | 26021002 | LEAD, TOTAL | 7439-92-1 | 110 | MG/KG | | | SED-D | | 01 EPA 6010 | VBCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| | 43 DUP | 3 | 26021002 | MERCURY, TOTAL | 7439-97-6 | 0.97 | MG/KG | | | SED-D | | 01 EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| | 43 DUP | 3 | 26021007 | MONOBUTYLTIN | | 3 | UG/KG | U | U | SED-D | | 01 GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| | 43 DUP | 3 | 26021002 | NICKEL, TOTAL | 7440-02-0 | 36 | MG/KG | | | SED-D | | 01 EPA 6010 | VBCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| | 43 DUP | 3 | 26021002 | SELENIUM, TOTAL | 7782-49-2 | 1.3 | MG/KG | | | SED-D | | 01 EPA 7740 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| | 43 DUP | 3 | 26021002 | SILVER, TOTAL | 7440-22-4 | 0.68 | MG/KG | | | SED-D | | 01 EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.68 | MG/KG |
| | 43 DUP | 3 | 26021002 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | | | SED-D | | 01 EPA 7841 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| | 43 DUP | 3 | 26021007 | TRIBUTYLTIN | 688-73-3 | 3 | UG/KG | U | U | SED-D | | 01 GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| | 43 DUP | 3 | 26021002 | ZINC, TOTAL | 7440-66-6 | 330 | MG/KG | | | SED-D | | 01 EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| | 43 DUP | 3 | 26021003 | CLAY | | 41.154 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 1.95 MICRONS | | 88.546 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 1000 MICRONS | | 35.93 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 125 MICRONS | | 43.481 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 33.53 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 47.295 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 178.79 MICRONS | | 42.9 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 2000 MICRONS | | 89.829 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 250 MICRONS | | 41.838 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 88.849 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 48.447 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 353.55 MICRONS | | 41.101 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 500 MICRONS | | 39.974 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 44.523 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 51.229 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 37.508 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 44.079 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | GRAVEL | | 29.929 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | MEAN GRAIN SIZE | | 68.647 | UM | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | MEDIAN GRAIN SIZE | | 9.084 | UM | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | SAND | | 14.884 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021003 | SILT | | 14.285 | PERCENT | | | SED-D | | 01 PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| | 43 DUP | 3 | 26021004 | TOTAL ORGANIC CARBON | | 1.813 | PERCENT | | | SED-D | | 01 PLUMB 1981/MODAMO | VBCORE | SED | SEDIMENT | VV | | |
| | 43 REG | 1 | 26020001 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | | 70 UG/KG | U | UJ | SED-D | 71.4 | 01 EPA 8270 | VBCORE | SED | SEDIMENT | VV | | 70 UG/KG |



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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 1 | 26020001 | 1,2-DICHLOROBENZENE | 95-50-1 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 1,3-DICHLOROBENZENE | 541-73-1 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 1,4-DICHLOROBENZENE | 106-46-7 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | 2,4-DICHLOROPHENOL | 120-83-2 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | 2,4-DIMETHYLPHENOL | 105-67-9 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | 2,4-DINITROPHENOL | 51-28-5 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 2,4-DINITROTOLUENE | 121-14-2 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 2,6-DINITROTOLUENE | 606-20-2 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 2-CHLORONAPHTHALENE | 91-58-7 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 2-CHLOROPHENOL | 95-57-8 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | 2-METHYLPHENOL | 95-48-7 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | 2-NITROPHENOL | 88-75-5 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 3- AND 4-METHYLPHENOL | 108-44-5 | 200 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 43 | REG | 1 | 26020001 | 4,4'-DDD | 72-54-8 | 35 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | 4,4'-DDE | 72-55-9 | 230 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | 4,4'-DDT | 50-29-3 | 2 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | 4-NITROPHENOL | 100-02-7 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | ACENAPHTHENE | 83-32-9 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | ACENAPHTHYLENE | 208-96-8 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | ALDRIN | 309-00-2 | 2 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | ALPHA-BHC (HCH) | 319-84-6 | 2 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | ANTHRACENE | 120-12-7 | 73 | UG/KG | J | J | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BENZIDINE | 92-87-5 | 300 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 43 | REG | 1 | 26020001 | BENZO(A)ANTHRACENE | 56-55-3 | 200 | UG/KG | J | J | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BENZO(A)PYRENE | 50-32-8 | 180 | UG/KG | J | J | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BENZO(B)FLUORANTHENE | 205-99-2 | 190 | UG/KG | J | J | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BENZO(GHI)PERYLENE | 191-24-2 | 150 | UG/KG | J | J | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BENZO(K)FLUORANTHENE | 207-08-9 | 200 | UG/KG | J | J | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BETA-BHC (HCH) | 319-85-7 | 2 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 500 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 500 | UG/KG |
| 43 | REG | 1 | 26020001 | BUTYLBENZYLPHTHALATE | 85-68-7 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | CHLORDANE | 57-74-9 | 7 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 7 | UG/KG |
| 43 | REG | 1 | 26020001 | CHRYSENE | 218-01-9 | 170 | UG/KG | J | J | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | DELTA-BHC (HCH) | 319-86-8 | 2 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | DI-N-BUTYLPHTHALATE | 84-74-2 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | DI-N-OCTYLPHTHALATE | 117-84-0 | 100 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 67 | UG/KG | J | J | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | DIELDRIN | 60-57-1 | 2 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | DIETHYLPHTHALATE | 84-66-2 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | DIMETHYLPHTHALATE | 131-11-3 | 70 | UG/KG | U | U | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | ENDOSULFAN I | 959-98-8 | 2 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | ENDOSULFAN II | 33213-65-9 | 2 | UG/KG | U | U | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |



R0063255

5-J8C3

V01 T8

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 1 | 26020001 | ENDOSULFAN SULFATE | 1031-07-8 | 2 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | ENDRIN | 72-20-8 | 2 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | ENDRIN ALDEHYDE | 7421-93-4 | 2 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | FLUORANTHENE | 206-44-0 | 160 | UG/KG | | | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | FLUORENE | 86-73-7 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | HEPTACHLOR | 76-44-8 | 2 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 2 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | HEXACHLOROBENZENE | 118-74-1 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | HEXACHLOROBUTADIENE | 87-68-3 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | HEXACHLOROETHANE | 67-72-1 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 140 | UG/KG | | | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | ISOPHORONE | 78-59-1 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | LINDANE (GAMMA-BHC) | 58-89-9 | 2 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 1 | 26020001 | METHOXYCHLOR | 72-43-5 | 7 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 7 | UG/KG |
| 43 | REG | 1 | 26020001 | METHYLNAPHTHALENES | | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | N-NITROSODIMETHYLAMINE | 62-75-9 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | N-NITROSODIPHENYLAMINE | 86-30-6 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | NAPHTHALENE | 91-20-3 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | NITROBENZENE | 98-95-3 | 100 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 1 | 26020001 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 1 | 26020001 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 1 | 26020001 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 1 | 26020001 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 1 | 26020001 | PCB-1260 | 11096-82-5 | 290 | UG/KG | | | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 1 | 26020001 | PENTACHLOROPHENOL | 87-86-5 | 160 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 1 | 26020001 | PHENANTHRENE | 85-01-8 | 70 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | PHENOL | 108-95-2 | 160 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020001 | PYRENE | 129-00-0 | 310 | UG/KG | | | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 1 | 26020001 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | UJ | SED-D | 71.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 1 | 26020002 | ARSENIC, TOTAL | 7440-38-2 | 9.1 | MG/KG | | | SED-D | 71.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 1 | 26020002 | BERYLLIUM, TOTAL | 7440-41-7 | 1 | MG/KG | | | SED-D | 71.4 | EPA 7090 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 1 | 26020002 | CADMIUM, TOTAL | 7440-43-9 | 1.4 | MG/KG | | | SED-D | 71.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 43 | REG | 1 | 26020002 | CHROMIUM, TOTAL | 7440-47-3 | 70 | MG/KG | | | SED-D | 71.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 43 | REG | 1 | 26020002 | COPPER, TOTAL | 7440-50-8 | 260 | MG/KG | | | SED-D | 71.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 1 | 26020002 | DIBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 71.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 43 | REG | 1 | 26020002 | LEAD, TOTAL | 7439-92-1 | 110 | MG/KG | | | SED-D | 71.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 1 | 26020002 | MERCURY, TOTAL | 7439-97-6 | 0.66 | MG/KG | | | SED-D | 71.4 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 43 | REG | 1 | 26020002 | MONOBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 71.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 43 | REG | 1 | 26020002 | NICKEL, TOTAL | 7440-02-0 | 38 | MG/KG | | | SED-D | 71.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 1 | 26020002 | SELENIUM, TOTAL | 7782-49-2 | 2 | MG/KG | U | UJ | SED-D | 71.4 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 43 | REG | 1 | 26020002 | SILVER, TOTAL | 7440-22-4 | 0.83 | MG/KG | | | SED-D | 71.4 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 1 | 26020002 | THALLIUM, TOTAL | 7440-28-0 | 2 | MG/KG | U | UJ | SED-D | 71.4 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 43 | REG | 1 | 26020002 | TRIBUTYLTIN | 688-73-3 | 3 | UG/KG | U | UJ | SED-D | 71.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 1 | 26020002 | ZINC, TOTAL | 7440-66-6 | 360 | MG/KG | | | SED-D | 71.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 1 | 26020003 | CLAY | | 40.561 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 0.00 MICRONS | | 100 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 1.95 MICRONS | | 59.231 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 1000 MICRONS | | 22.945 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 125 MICRONS | | 34.195 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 20.152 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 43.297 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 176.78 MICRONS | | 33.127 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 2000 MICRONS | | 17.133 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 250 MICRONS | | 32.034 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 89.439 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 87.599 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 353.56 MICRONS | | 30.497 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 500 MICRONS | | 28.625 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 38.333 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 49.627 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 26.036 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 35.286 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | GRAVEL | | 17.133 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | MEAN GRAIN SIZE | | 38.617 | UM | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | MEDIAN GRAIN SIZE | | 7.809 | UM | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | SAND | | 19.2 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020003 | SILT | | 63.108 | PERCENT | | | SED-D | 71.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 1 | 26020004 | TOTAL ORGANIC CARBON | | 2.187 | PERCENT | | | SED-D | 71.4 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 43 | REG | 2 | 26020201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 1,2-DICHLOROBENZENE | 95-50-1 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 1,3-DICHLOROBENZENE | 541-73-1 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 1,4-DICHLOROBENZENE | 106-46-7 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | 2,4-DICHLOROPHENOL | 120-83-2 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | 2,4-DINITROPHENOL | 51-28-5 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 2,4-DINITROTOLUENE | 121-14-2 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 2,6-DINITROTOLUENE | 606-20-2 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 2-CHLORONAPHTHALENE | 91-58-7 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 2-CHLOROPHENOL | 95-57-8 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | 2-METHYLPHENOL | 95-48-7 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | 2-NITROPHENOL | 88-75-5 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | 3,3-DICHLORODENZIDINE | 91-94-1 | 33 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 3- AND 4-METHYLPHENOL | 108-44-5 | 100 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 4,4'-DDD | 72-54-8 | 44 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 4,4'-DDE | 72-55-9 | 220 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 2 | 26020201 | 4,4'-DDT | 50-29-3 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | 4-NITROPHENOL | 100-02-7 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | ALDRIN | 309-00-2 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | ALPHA-BHC (HCH) | 319-84-6 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | ANTHRACENE | 120-12-7 | 330 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | BENZIDINE | 92-87-5 | 200 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| | | | | | | | | | | | | | | | | | 30 | UG/KG |
| | | | | | | | | | | | | | | | | | 200 | UG/KG |



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Subsurface Sediment Analytical Data

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 2 | 26020201 | BENZO(A)ANTHRACENE | 56-55-3 | 970 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BENZO(A)PYRENE | 50-32-8 | 770 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BENZO(B)FLUORANTHENE | 205-99-2 | 870 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BENZO(GHI)PERYLENE | 191-24-2 | 300 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BENZO(K)FLUORANTHENE | 207-08-9 | 640 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BETA-BHC (HCH) | 319-85-7 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 740 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 43 | REG | 2 | 26020201 | CHLORDANE | 57-74-9 | 7 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | CHRYSENE | 218-01-9 | 810 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 7 | UG/KG |
| 43 | REG | 2 | 26020201 | DELTA-BHC (HCH) | 319-86-8 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | DI-N-BUTYLPHTHALATE | 84-74-2 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | DI-N-OCTYLPHTHALATE | 117-84-0 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | DIELDRIN | 60-57-1 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | ENDOSULFAN I | 959-98-8 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | ENDOSULFAN II | 33213-65-9 | 37 | UG/KG | J | J | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | ENDOSULFAN SULFATE | 1031-07-8 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | ENDRIN | 72-20-8 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | ENDRIN ALDEHYDE | 7421-93-4 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | FLUORANTHENE | 206-44-0 | 360 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | HEPTACHLOR | 76-44-8 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 330 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | LINDANE (GAMMA-BHC) | 58-89-9 | 2 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 43 | REG | 2 | 26020201 | METHOXYCHLOR | 72-43-5 | 7 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 7 | UG/KG |
| 43 | REG | 2 | 26020201 | METHYLNAPHTHALENES | | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | NITROBENZENE | 98-95-3 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | PCB-1260 | 11096-82-5 | 260 | UG/KG | | | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | PENTACHLOROPHENOL | 87-86-5 | 70 | UG/KG | U | U | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |

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Subsurface Sediment Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 2 | 26020201 | PHENANTHRENE | 85-01-8 | 84 | UG/KG | | | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | PHENOL | 108-95-2 | 70 | UG/KG | U | UJ | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 2 | 26020201 | PYRENE | 129-00-0 | 1200 | UG/KG | | J | SED-D | 70.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020201 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | UJ | SED-D | 70.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 2 | 26020202 | ARSENIC, TOTAL | 7440-38-2 | 7 | MG/KG | | | SED-D | 70.2 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 2 | 26020202 | BERYLLIUM, TOTAL | 7440-41-7 | 1 | MG/KG | | | SED-D | 70.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 43 | REG | 2 | 26020202 | CADMIUM, TOTAL | 7440-43-9 | 2 | MG/KG | | J | SED-D | 70.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 43 | REG | 2 | 26020202 | CHROMIUM, TOTAL | 7440-47-3 | 67 | MG/KG | | | SED-D | 70.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 2 | 26020202 | COPPER, TOTAL | 7440-50-8 | 220 | MG/KG | | J | SED-D | 70.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 43 | REG | 2 | 26020202 | DIBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 70.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 2 | 26020202 | LEAD, TOTAL | 7439-92-1 | 140 | MG/KG | | J | SED-D | 70.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 43 | REG | 2 | 26020202 | MERCURY, TOTAL | 7439-97-6 | 1 | MG/KG | | J | SED-D | 70.2 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 43 | REG | 2 | 26020202 | MONOBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 70.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 2 | 26020202 | NICKEL, TOTAL | 7440-02-0 | 40 | MG/KG | | J | SED-D | 70.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 10 | MG/KG |
| 43 | REG | 2 | 26020202 | SELENIUM, TOTAL | 7782-49-2 | 2 | MG/KG | U | UJ | SED-D | 70.2 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 2 | 26020202 | SILVER, TOTAL | 7440-22-4 | 0.34 | MG/KG | | J | SED-D | 70.2 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 43 | REG | 2 | 26020202 | THALLIUM, TOTAL | 7440-28-0 | 2 | MG/KG | U | UJ | SED-D | 70.2 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 43 | REG | 2 | 26020202 | TRIBUTYLTIN | 688-73-3 | 3 | UG/KG | U | UJ | SED-D | 70.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 2 | 26020202 | ZINC, TOTAL | 7440-66-6 | 400 | MG/KG | | J | SED-D | 70.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 43 | REG | 2 | 26020203 | CLAY | | 38.134 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 79.866 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 1000 MICRONS | | 20.781 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 125 MICRONS | | 37.044 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 20.092 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 16.63 MICRONS | | 44.296 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 178.79 MICRONS | | 30.439 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 2000 MICRONS | | 24.413 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 250 MICRONS | | 28.392 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 63.668 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 42.694 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 353.55 MICRONS | | 34.648 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 500 MICRONS | | 32.818 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 41.082 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 49.181 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 31.481 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 39.484 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | GRAVEL | | 24.413 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | MEAN GRAIN SIZE | | 89.837 | UM | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | MEDIAN GRAIN SIZE | | 7.516 | UM | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | SAND | | 10.81 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020203 | SILT | | 65.649 | PERCENT | | | SED-D | 70.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 2 | 26020204 | TOTAL ORGANIC CARBON | | 2.238 | PERCENT | | | SED-D | 70.2 | MENZELAVACARO | VBCORE | SED | SEDIMENT | VV | | |
| 43 | REG | 3 | 26029901 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | UJ | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | UJ | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | UJ | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | UJ | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | 2,4,5-TRICHLOROPHENOL | 95-95-4 | 80 | UG/KG | U | UJ | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 43 | REG | 3 | 26029901 | 2,4-DICHLOROPHENOL | 120-83-2 | 80 | UG/KG | U | UJ | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 43 | REG | 3 | 26029901 | 2,4-DIMETHYLPHENOL | 105-67-9 | 80 | UG/KG | U | UJ | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 43 | REG | 3 | 26029901 | 2,4-DINITROPHENOL | 51-28-5 | 80 | UG/KG | U | UJ | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |

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Subsurface Sediment Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | | 26029901 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | 2-CHLOROPHENOL | 95-57-8 | 50 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | REG | | 26029901 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | REG | | 26029901 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | 3-AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | | 26029901 | 4,4'-DDD | 72-54-8 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | 4,4'-DDE | 72-55-9 | 180 | UG/KG | J | J | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 50 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | REG | | 26029901 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | 4-NITROPHENOL | 100-02-7 | 50 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | REG | | 26029901 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | ANTHRACENE | 120-12-7 | 170 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | | 26029901 | BENZO(A)ANTHRACENE | 56-55-3 | 240 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BENZO(A)PYRENE | 50-32-8 | 470 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BENZO(B)FLUORANTHENE | 205-99-2 | 340 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BENZO(GHI)PERYLENE | 191-24-2 | 180 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BENZO(K)FLUORANTHENE | 207-08-9 | 210 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 160 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 43 | REG | | 26029901 | BUTYLBENZYLPHTHALATE | 85-68-7 | 50 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 43 | REG | | 26029901 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 43 | REG | | 26029901 | CHRYSENE | 218-01-9 | 310 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | DI-N-BUTYLPHTHALATE | 84-74-2 | 60 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | | 26029901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 60 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | | 26029901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 60 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | FLUORANTHENE | 206-44-0 | 360 | UG/KG | J | J | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | | 26029901 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26029901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 3 | 26029901 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 140 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | METHOXYCHLOR | 72-43-5 | 6 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | 3 | 26029901 | METHYLNAPHTHALENES | | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 43 | REG | 3 | 26029901 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PCB-1016 | 12674-11-2 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 3 | 26029901 | PCB-1221 | 11104-28-2 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PCB-1232 | 11141-16-5 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PCB-1242 | 53469-21-9 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PCB-1248 | 12672-29-6 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PCB-1254 | 11097-69-1 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PCB-1260 | 11096-82-5 | 110 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PENTACHLOROPHENOL | 87-86-5 | 60 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PHENANTHRENE | 85-01-8 | 87 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | PHENOL | 108-95-2 | 60 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 3 | 26029901 | PYRENE | 129-00-0 | 650 | UG/KG | U | U | SED-D | 61.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029901 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | U | SED-D | 61.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 3 | 26029902 | ARSENIC, TOTAL | 7440-38-2 | 8.3 | MG/KG | | | SED-D | 61.6 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | 3 | 26029902 | BERYLLIUM, TOTAL | 7440-41-7 | 1 | MG/KG | | | SED-D | 61.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 43 | REG | 3 | 26029902 | CADMIUM, TOTAL | 7440-43-9 | 2.1 | MG/KG | | | SED-D | 61.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 43 | REG | 3 | 26029902 | CHROMIUM, TOTAL | 7440-47-3 | 87 | MG/KG | | | SED-D | 61.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | 3 | 26029902 | COPPER, TOTAL | 7440-50-8 | 190 | MG/KG | | | SED-D | 61.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 43 | REG | 3 | 26029902 | DIBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 61.6 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 3 | 26029902 | LEAD, TOTAL | 7439-92-1 | 100 | MG/KG | | | SED-D | 61.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 43 | REG | 3 | 26029902 | MERCURY, TOTAL | 7439-97-6 | 0.56 | MG/KG | | | SED-D | 61.6 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 43 | REG | 3 | 26029902 | MONOBUTYLTIN | | 3 | UG/KG | U | U | SED-D | 61.6 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 3 | 26029902 | NICKEL, TOTAL | 7440-02-0 | 31 | MG/KG | | | SED-D | 61.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 43 | REG | 3 | 26029902 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | U | SED-D | 61.6 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | 3 | 26029902 | SILVER, TOTAL | 7440-22-4 | 0.42 | MG/KG | | | SED-D | 61.6 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 43 | REG | 3 | 26029902 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 61.6 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | 3 | 26029902 | TRIBUTYLTIN | 688-73-3 | 3 | UG/KG | U | U | SED-D | 61.6 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 3 | 26029902 | ZINC, TOTAL | 7440-66-6 | 340 | MG/KG | | | SED-D | 61.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 43 | REG | 3 | 26029903 | CLAY | | 48.756 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 1.96 MICRONS | | 78.442 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 1000 MICRONS | | 24.666 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 125 MICRONS | | 33.565 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 23.085 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 38.124 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 32.68 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 2000 MICRONS | | 20.831 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 250 MICRONS | | 31.292 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 64.244 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 35.481 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 30.341 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 500 MICRONS | | 27.905 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 34.953 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 45.786 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 26.4 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 34.445 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | GRAVEL | | 20.831 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | MEAN GRAIN SIZE | | 78.342 | UM | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | MEDIAN GRAIN SIZE | | 6.531 | UM | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | SAND | | 14.122 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029903 | SILT | | 19.291 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 3 | 26029904 | TOTAL ORGANIC CARBON | | 1.391 | PERCENT | | | SED-D | 61.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 4 | 26020401 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | U | SED-D | 32 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 43 | REG | 4 | 26020401 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 2,4-DICHLOROPHENOL | 120-83-2 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | 2,4-DIMETHYLPHENOL | 105-67-9 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 2-CHLOROPHENOL | 95-57-8 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | 2-METHYLPHENOL | 95-48-7 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | 3- AND 4-METHYLPHENOL | 108-44-5 | 90 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 4,4'-DDE | 72-55-9 | 50 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 43 | REG | 4 | 26020401 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | 4-NITROPHENOL | 100-02-7 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | ANTHRACENE | 120-12-7 | 260 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | BENZO(A)ANTHRACENE | 56-55-3 | 990 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | BENZO(A)PYRENE | 50-32-8 | 370 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 4 | 26020401 | BENZO(B)FLUORANTHENE | 205-99-2 | 490 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | BENZO(GHI)PERYLENE | 191-24-2 | 180 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | BENZO(K)FLUORANTHENE | 207-08-9 | 340 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| | | | | | | | | | | | | | | | | | 30 | UG/KG |

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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 4 | 26020401 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 43 | REG | 4 | 26020401 | BUTYLBENZYLPHTHALATE | 85-68-7 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 4 | 26020401 | CHRYSENE | 218-01-9 | 940 | UG/KG | | | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | DI-N-BUTYLPHTHALATE | 84-74-2 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | DI-N-OCTYLPHTHALATE | 117-84-0 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | FLUORANTHENE | 206-44-0 | 720 | UG/KG | | | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 160 | UG/KG | | | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 4 | 26020401 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 4 | 26020401 | METHYLNAPHTHALENES | | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | NITROBENZENE | 98-95-3 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 4 | 26020401 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 4 | 26020401 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 4 | 26020401 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 4 | 26020401 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 4 | 26020401 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 4 | 26020401 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 4 | 26020401 | PENTACHLOROPHENOL | 87-86-5 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | PHENANTHRENE | 85-01-8 | 68 | UG/KG | | | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | PHENOL | 108-95-2 | 60 | UG/KG | U | U | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 43 | REG | 4 | 26020401 | PYRENE | 129-00-0 | 1000 | UG/KG | | | SED-D | 32 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 4 | 26020401 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 32 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 4 | 26020402 | ARSENIC, TOTAL | 7440-38-2 | 4.1 | MG/KG | | | SED-D | 32 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 43 | REG | 4 | 26020402 | BERYLLIUM, TOTAL | 7440-41-7 | 0.44 | MG/KG | | | SED-D | 32 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 43 | REG | 4 | 26020402 | CADMIUM, TOTAL | 7440-43-9 | 0.88 | MG/KG | | | SED-D | 32 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |

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Subsurface Sediment Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Parent Type | Parent Replicate | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | | 26020402 | CHROMIUM, TOTAL | 7440-47-3 | 29 | MG/KG | | | SED-D | 32 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 43 | REG | | 26020402 | COPPER, TOTAL | 7440-50-8 | 57 | MG/KG | | | SED-D | 32 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | | 26020402 | DIBUTYLTIN | | 1 | UG/KG | U | | SED-D | 32 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26020402 | LEAD, TOTAL | 7439-92-1 | 22 | MG/KG | | | SED-D | 32 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 43 | REG | | 26020402 | MERCURY, TOTAL | 7439-97-6 | 0.12 | MG/KG | | | SED-D | 32 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 43 | REG | | 26020402 | MONOBUTYLTIN | | 1 | UG/KG | U | | SED-D | 32 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26020402 | NICKEL, TOTAL | 7440-02-0 | 24 | MG/KG | | | SED-D | 32 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 43 | REG | | 26020402 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | | SED-D | 32 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 43 | REG | | 26020402 | SILVER, TOTAL | 7440-22-4 | 0.098 | MG/KG | | | SED-D | 32 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 43 | REG | | 26020402 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | | SED-D | 32 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 43 | REG | | 26020402 | TRIBUTYLTIN | | 1 | UG/KG | | | SED-D | 32 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | | 26020402 | ZINC, TOTAL | 7440-66-6 | 87 | MG/KG | | | SED-D | 32 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | | 26020403 | CLAY | | 10.400 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 91.666 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 1000 MICRONS | | 19.131 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 185 MICRONS | | 48.899 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 19.102 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 81.253 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 37.597 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 2000 MICRONS | | 17.234 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 250 MICRONS | | 31.826 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 80.696 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 70.400 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 353.56 MICRONS | | 23.00 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 500 MICRONS | | 21.472 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 71.139 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 60.364 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 19.979 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | CUMULATIVE PERCENT > 88.39 MICRONS | | 60.180 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | GRAVEL | | 17.294 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | MEAN GRAIN SIZE | | 179.230 | UM | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | MEDIAN GRAIN SIZE | | 113.000 | UM | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | SAND | | 53.920 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020403 | SILT | | 18.453 | PERCENT | | | SED-D | 32 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | | 26020404 | TOTAL ORGANIC CARBON | | 0.821 | PERCENT | | | SED-D | 32 | MENTBLAVADDARO | VBCORE | SED | SEDIMENT | VV | | |
| 5 | REG | | 26020501 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | | 26020501 | 1,2-DICHLOROBENZENE | 95-50-1 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | | 26020501 | 1,3-DICHLOROBENZENE | 541-73-1 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | | 26020501 | 1,4-DICHLOROBENZENE | 106-46-7 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | | 26020501 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | | 30 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | | 26020501 | 2,4-DICHLOROPHENOL | 120-83-2 | | 30 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 5 | REG | | 26020501 | 2,4-DIMETHYLPHENOL | 105-67-9 | | 30 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 5 | REG | | 26020501 | 2,4-DINITROPHENOL | 51-28-5 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 5 | REG | | 26020501 | 2,4-DINITROTOLUENE | 121-14-2 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | | 26020501 | 2,6-DINITROTOLUENE | 606-20-2 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | | 26020501 | 2-CHLORONAPHTHALENE | 91-58-7 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 5 | REG | | 26020501 | 2-CHLOROPHENOL | 95-57-8 | | 30 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | | 26020501 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | | 30 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 5 | REG | | 26020501 | 2-METHYLPHENOL | 95-48-7 | | 30 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 5 | REG | | 26020501 | 2-NITROPHENOL | 88-75-5 | | 10 UG/KG | U | | SED-D | 34.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |

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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 5 | 26020501 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 43 | REG | 5 | 26020501 | 4,4'-DDD | 72-54-8 | 3.5 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | 4,4'-DDE | 72-55-9 | 29 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 5 | 26020501 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 5 | 26020501 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | ALDRIN | 309-00-2 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | ANTHRACENE | 120-12-7 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BENZIDINE | 92-87-5 | 70 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 43 | REG | 5 | 26020501 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 43 | REG | 5 | 26020501 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 5 | 26020501 | CHLORDANE | 57-74-9 | 3 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 5 | 26020501 | CHRYSENE | 218-01-9 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 5 | 26020501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 30 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 5 | 26020501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | ENDRIN | 72-20-8 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | FLUORENE | 86-73-7 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 43 | REG | 5 | 26020501 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | ISOPHORONE | 78-59-1 | 10 | UG/KG | | U | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | U | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 5 | 26020501 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 43 | REG | 5 | 26020501 | METHYLNAPHTHALENES | | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 5 | 26020501 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 5 | 26020501 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | PHENOL | 108-95-2 | 30 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 43 | REG | 5 | 26020501 | PYRENE | 129-00-0 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020501 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | UJ | SED-D | 26.5 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 43 | REG | 5 | 26020502 | ARSENIC, TOTAL | 7440-38-2 | 8.2 | MG/KG | | J | SED-D | 26.5 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 43 | REG | 5 | 26020502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.84 | MG/KG | | J | SED-D | 26.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 43 | REG | 5 | 26020502 | CADMIUM, TOTAL | 7440-43-9 | 0.14 | MG/KG | | J | SED-D | 26.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 43 | REG | 5 | 26020502 | CHROMIUM, TOTAL | 7440-47-3 | 24 | MG/KG | | J | SED-D | 26.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 43 | REG | 5 | 26020502 | COPPER, TOTAL | 7440-50-8 | 25 | MG/KG | | J | SED-D | 26.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | 5 | 26020502 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 26.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | 5 | 26020502 | LEAD, TOTAL | 7439-92-1 | 14 | MG/KG | | J | SED-D | 26.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 43 | REG | 5 | 26020502 | MERCURY, TOTAL | 7439-97-6 | 0.088 | MG/KG | | J | SED-D | 26.5 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 43 | REG | 5 | 26020502 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 26.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | 5 | 26020502 | NICKEL, TOTAL | 7440-02-0 | 20 | MG/KG | | J | SED-D | 26.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 43 | REG | 5 | 26020502 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | | J | SED-D | 26.5 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 43 | REG | 5 | 26020502 | SILVER, TOTAL | 7440-22-4 | 0.04 | MG/KG | | J | SED-D | 26.5 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 43 | REG | 5 | 26020502 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | | J | SED-D | 26.5 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 43 | REG | 5 | 26020502 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | UJ | SED-D | 26.5 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 43 | REG | 5 | 26020502 | ZINC, TOTAL | 7440-66-6 | 71 | MG/KG | | J | SED-D | 26.5 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 43 | REG | 5 | 26020503 | CLAY | | 14.368 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 1.96 MICRONS | | 85.686 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 1000 MICRONS | | 2.37 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 125 MICRONS | | 17.929 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 2.045 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 64.198 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 176.78 MICRONS | | 11.788 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 2000 MICRONS | | 1.487 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 250 MICRONS | | 0.838 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 36.038 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 40.894 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 353.55 MICRONS | | 4.697 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 500 MICRONS | | 3.223 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 26.491 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 77.709 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 5.774 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



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## Subsurface Sediment Analytical Data

CTD-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | REG | 5 | 26020503 | CUMULATIVE PERCENT > 88.39 MICRONS | | 29.319 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | GRAVEL | | 1.487 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | MEAN GRAIN SIZE | | 25.075 | UM | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | MEDIAN GRAIN SIZE | | 29.61 | UM | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | SAND | | 38.963 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020503 | SILT | | 47.181 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 43 | REG | 5 | 26020504 | TOTAL ORGANIC CARBON | | 0.523 | PERCENT | | | SED-D | 26.5 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009701 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | U | SED-D | 38.1 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 46 | REG | 2 | 26009701 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 2,4-DICHLOROPHENOL | 120-83-2 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | 2,4-DIMETHYLPHENOL | 105-67-9 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 2-CHLOROPHENOL | 95-57-8 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | 2-METHYLPHENOL | 95-48-7 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 4,4'-DDD | 72-54-8 | 6.4 | UG/KG | | | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 4,4'-DDE | 72-55-9 | 41 | UG/KG | | | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | J | J | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 2 | 26009701 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 2 | 26009701 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 2 | 26009701 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | 4-NITROPHENOL | 100-02-7 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 2 | 26009701 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 38.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | ANTHRACENE | 120-12-7 | 84 | UG/KG | U | U | SED-D | 38.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 2 | 26009701 | ARSENIC, TOTAL | 7440-38-2 | 6.4 | MG/KG | | | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 2 | 26009701 | BENZIDINE | 92-87-5 | 200 | UG/KG | U | U | SED-D | 38.1 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | BENZO(A)ANTHRACENE | 56-55-3 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 46 | REG | 2 | 26009701 | BENZO(A)PYRENE | 50-32-8 | 78 | UG/KG | | | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 46 | REG | 2 | 26009701 | BENZO(B)FLUORANTHENE | 205-99-2 | 170 | UG/KG | | | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | BENZO(GHI)PERYLENE | 191-24-2 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | BENZO(K)FLUORANTHENE | 207-08-9 | 190 | UG/KG | | | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | BERYLLIUM, TOTAL | 7440-41-7 | 0.47 | MG/KG | | | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 38.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 46 | REG | 2 | 26009701 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 2 | 26009701 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 2 | 26009701 | BUTYLBENZYLPHTHALATE | 85-68-7 | 60 | UG/KG | U | U | SED-D | 38.1 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 46 | REG | 2 | 26009701 | CADMIUM, TOTAL | 7440-43-9 | 0.47 | MG/KG | | | SED-D | 38.1 | EPA 8010 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| | | | | | | | | | | | | | | | | | 0.08 | MG/KG |

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R0063267

C0809

VOA 178

| Station ID | Sample Type | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Method | Chemical Class | Matrix | Review Type | Lineage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 26009701 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | 26009701 | CHROMIUM, TOTAL | 7440-47-3 | 31 | MG/KG | | | SED-D | 36 \| EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 46 | REG | 26009701 | CHRYSENE | 218-01-9 | 110 | UG/KG | | | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | COPPER, TOTAL | 7440-50-8 | 84 | MG/KG | | | SED-D | 36 \| EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 46 | REG | 26009701 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | DI-N-BUTYLPHTHALATE | 84-74-2 | 60 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 26009701 | DIBENZO(A,H)ANTHRACENE | 117-84-0 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | DIBUTYLTIN | 55-70-3 | 2 | UG/KG | | | SED-D | 36 \| QC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 46 | REG | 26009701 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | FLUORANTHENE | 206-44-0 | 180 | UG/KG | | | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | FLUORENE | 86-73-7 | 20 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 26009701 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | HEXACHLOROBENZENE | 118-74-1 | 60 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 26009701 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 80 | UG/KG | | | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | LEAD, TOTAL | 7439-92-1 | 42 | MG/KG | | | SED-D | 36 \| EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 46 | REG | 26009701 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 26009701 | MERCURY, TOTAL | 7439-97-6 | 0.23 | MG/KG | | | SED-D | 36 \| EPA 7471 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 46 | REG | 26009701 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | UJ | SED-D | 36 \| EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | 26009701 | METHYLNAPHTHALENES | | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | MONOBUTYLTIN | | 2 | UG/KG | | | SED-D | 36 \| QC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 46 | REG | 26009701 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | NICKEL, TOTAL | 7440-02-0 | 85 | MG/KG | | | SED-D | 36 \| EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 46 | REG | 26009701 | NITROBENZENE | 98-95-3 | 60 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 26009701 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | UJ | SED-D | 36 \| EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 26009701 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | UJ | SED-D | 36 \| EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 26009701 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | UJ | SED-D | 36 \| EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 26009701 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 36 \| EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 26009701 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | UJ | SED-D | 36 \| EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 26009701 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 36 \| EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 26009701 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | UJ | SED-D | 36 \| EPA 8082 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 26009701 | PENTACHLOROPHENOL | 87-86-5 | 60 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 26009701 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | PHENOL | 108-95-2 | 60 | UG/KG | U | UJ | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 26009701 | PYRENE | 129-00-0 | 180 | UG/KG | | | SED-D | 36 \| EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 26009701 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | UJ | SED-D | 36 \| EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |

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| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 2 | 26009701 | SILVER, TOTAL | 7440-22-4 | 0.16 | MG/KG | U | J | SED-D | 38.1 | EPA 7760 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 46 | REG | 2 | 26009701 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | J | SED-D | 38.1 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 46 | REG | 2 | 26009701 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 38.1 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 2 | 26009701 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | UJ | SED-D | 38.1 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 46 | REG | 2 | 26009701 | ZINC, TOTAL | 7440-66-6 | 130 | MG/KG | | J | SED-D | 38.1 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 46 | REG | 2 | 26009703 | CLAY | | 18.685 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 86.407 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 1000 MICRONS | | 20.066 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 125 MICRONS | | 46.979 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 19.065 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 73.457 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 37.311 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 2000 MICRONS | | 18.193 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 250 MICRONS | | 29.152 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 81.316 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 69.71 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 353.55 MICRONS | | 25.63 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 500 MICRONS | | 22.139 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 88.6 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 78.731 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 21.096 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | CUMULATIVE PERCENT > 88.38 MICRONS | | 88.208 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | GRAVEL | | 18.193 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | MEAN GRAIN SIZE | | 107.833 | UM | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | MEDIAN GRAIN SIZE | | 113.871 | UM | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | SAND | | 47.406 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009703 | SILT | | 16.715 | PERCENT | | | SED-D | 38.1 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 2 | 26009704 | TOTAL ORGANIC CARBON | | 0.957 | PERCENT | | | SED-D | 38.1 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 46 | REG | 4 | 26009601 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 60 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | 2,4-DICHLOROPHENOL | 120-83-2 | 60 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | 2,4-DIMETHYLPHENOL | 105-67-9 | 60 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 2-CHLOROPHENOL | 95-57-8 | 60 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 60 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | 2-METHYLPHENOL | 95-48-7 | 60 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | 4,4'-DDD | 72-54-8 | 6.6 | UG/KG | | J | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | 4,4'-DDE | 72-55-9 | 41 | UG/KG | | J | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 4 | 26009601 | 4,4'-DDT | 50-29-3 | 6.8 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 4 | 26009601 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | 4 | 26009601 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 60 | UG/KG | U | UJ | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| | | | | | | | | | | | | | | | | | 60 | UG/KG |



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| Station ID | Sample Type | Station Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Codename | Matrix | Station Type | Image | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | | 26009601 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | 4-NITROPHENOL | 100-02-7 | 60 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | | 26009601 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | ANTHRACENE | 120-12-7 | 41 | UG/KG | J | J | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BENZIDINE | 92-87-5 | 200 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 46 | REG | | 26009601 | BENZO(A)ANTHRACENE | 56-55-3 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BENZO(A)PYRENE | 50-32-8 | 140 | UG/KG | J | J | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BENZO(B)FLUORANTHENE | 205-99-2 | 130 | UG/KG | J | J | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BENZO(GHI)PERYLENE | 191-24-2 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BENZO(K)FLUORANTHENE | 207-08-9 | 210 | UG/KG | J | J | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 46 | REG | | 26009601 | BUTYLBENZYLPHTHALATE | 85-68-7 | 60 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | | 26009601 | CHLORDANE | 57-74-9 | 3 | UG/KG | J | J | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | | 26009601 | CHRYSENE | 218-01-9 | 60 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | DI-N-BUTYLPHTHALATE | 84-74-2 | 60 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | | 26009601 | DI-N-OCTYLPHTHALATE | 117-84-0 | 60 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | | 26009601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | FLUORANTHENE | 206-44-0 | 60 | UG/KG | J | J | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 46 | REG | | 26009601 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | | 26009601 | METHYLNAPHTHALENES | 821-64-7 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | N-NITROSODI-N-PROPYLAMINE | 62-75-9 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | N-NITROSODIMETHYLAMINE | 86-30-6 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | N-NITROSODIPHENYLAMINE | 91-30-3 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | | 26009601 | NITROBENZENE | 98-95-3 | 60 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 4 | 26009601 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 4 | 26009601 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 4 | 26009601 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 4 | 26009601 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 4 | 26009601 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 4 | 26009601 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 4 | 26009601 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 4 | 26009601 | PENTACHLOROPHENOL | 87-86-5 | 60 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | PHENOL | 108-95-2 | 60 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 46 | REG | 4 | 26009601 | PYRENE | 129-00-0 | 120 | UG/KG | U | U | SED-D | 34.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 4 | 26009601 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 34.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 46 | REG | 4 | 26009602 | ARSENIC, TOTAL | 7440-38-2 | 3.9 | MG/KG | | J | SED-D | 34.2 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 46 | REG | 4 | 26009602 | BERYLLIUM, TOTAL | 7440-41-7 | 0.46 | MG/KG | | J | SED-D | 34.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 46 | REG | 4 | 26009602 | CADMIUM, TOTAL | 7440-43-9 | 0.46 | MG/KG | | J | SED-D | 34.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 46 | REG | 4 | 26009602 | CHROMIUM, TOTAL | 7440-47-3 | 29 | MG/KG | | J | SED-D | 34.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 46 | REG | 4 | 26009602 | COPPER, TOTAL | 7440-50-8 | 53 | MG/KG | | J | SED-D | 34.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 46 | REG | 4 | 26009602 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 34.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 46 | REG | 4 | 26009602 | LEAD, TOTAL | 7439-92-1 | 33 | MG/KG | | J | SED-D | 34.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 4 | 26009602 | MERCURY, TOTAL | 7439-97-6 | 0.27 | MG/KG | | J | SED-D | 34.2 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 46 | REG | 4 | 26009602 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 34.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 46 | REG | 4 | 26009602 | NICKEL, TOTAL | 7440-02-0 | 31 | MG/KG | | J | SED-D | 34.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 46 | REG | 4 | 26009602 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | SED-D | 34.2 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 46 | REG | 4 | 26009602 | SILVER, TOTAL | 7440-22-4 | 0.05 | MG/KG | U | U | SED-D | 34.2 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 46 | REG | 4 | 26009602 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | SED-D | 34.2 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 46 | REG | 4 | 26009602 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | U | SED-D | 34.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 46 | REG | 4 | 26009602 | ZINC, TOTAL | 7440-66-6 | 120 | MG/KG | | J | SED-D | 34.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 46 | REG | 4 | 26009603 | CLAY | | 14.366 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 1.96 MICRONS | | 85.481 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 1000 MICRONS | | 10.981 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 125 MICRONS | | 48.478 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 9.636 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 77.647 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 34.178 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 2000 MICRONS | | 8.868 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 250 MICRONS | | 32.644 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 66.718 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 72.026 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 353.56 MICRONS | | 18.885 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 500 MICRONS | | 13.831 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 67.981 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 60.401 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 12.083 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 80.709 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | GRAVEL | | 8.869 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | MEAN GRAIN SIZE | | 44.091 | UM | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | MEDIAN GRAIN SIZE | | 110.259 | UM | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | SAND | | 89.672 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009603 | SILT | | 10.164 | PERCENT | | | SED-D | 34.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 4 | 26009604 | TOTAL ORGANIC CARBON | | 0.817 | PERCENT | | | SED-D | 34.2 | MENZEL/VACCARO | VBCORE | SED | SEDIMENT | VV | | |



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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 5 | 26009501 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 1,3-DICHLOROBENZENE | 541-73-1 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 1,4-DICHLOROBENZENE | 106-46-7 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 50 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | 2,4-DICHLOROPHENOL | 120-83-2 | 50 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | 2,4-DIMETHYLPHENOL | 105-67-9 | 50 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | 2,4 DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 2-CHLOROPHENOL | 95-57-8 | 50 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | 2-METHYLPHENOL | 95-48-7 | 50 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 46 | REG | 5 | 26009501 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | J | J | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | 4,4'-DDE | 72-55-9 | 0.8 | UG/KG | J | J | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | J | J | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 80 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 46 | REG | 5 | 26009501 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | 4-NITROPHENOL | 100-02-7 | 80 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 46 | REG | 5 | 26009501 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | ALDRIN | 309-00-2 | 0.7 | UG/KG | J | J | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | J | J | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | ANTHRACENE | 120-12-7 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BENZO(A)ANTHRACENE | 56-55-3 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 46 | REG | 5 | 26009501 | BENZO(A)PYRENE | 50-32-8 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BENZO(B)FLUORANTHENE | 205-99-2 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BENZO(GHI)PERYLENE | 191-24-2 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BENZO(K)FLUORANTHENE | 207-08-9 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | J | J | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | BUTYLBENZYLPHTHALATE | 85-68-7 | 80 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 46 | REG | 5 | 26009501 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | CHRYSENE | 218-01-9 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | 5 | 26009501 | DELTA-BHC (HCH) | 319-86-8 | 7 | UG/KG | J | J | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | DI-n-BUTYLPHTHALATE | 84-74-2 | 80 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 80 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | J | J | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 24.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | J | J | SED-D | 24.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |

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Subsurface Sediment Analytical Data

| Station ID | Sample Type | Bottom Depth | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Replicate Number | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 5 | 26009501 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | FLUORANTHENE | 206-44-0 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | FLUORENE | 86-73-7 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | METHYLNAPHTHALENES | | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 46 | REG | 5 | 26009501 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 46 | REG | 5 | 26009501 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | NITROBENZENE | 98-95-3 | 60 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 5 | 26009501 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 5 | 26009501 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 5 | 26009501 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 5 | 26009501 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8080 | VIBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 5 | 26009501 | PENTACHLOROPHENOL | 87-86-5 | 50 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | PHENOL | 108-95-2 | 50 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 46 | REG | 5 | 26009501 | PYRENE | 129-00-0 | 30 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009501 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | 3 | SED-D | 24.3 | EPA 8270 | VIBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 46 | REG | 5 | 26009502 | ARSENIC, TOTAL | 7440-38-2 | 2 | MG/KG | | 3 | SED-D | 24.3 | EPA 7060 | VIBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 46 | REG | 5 | 26009502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.4 | MG/KG | | 3 | SED-D | 24.3 | EPA 6010 | VIBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 46 | REG | 5 | 26009502 | CADMIUM, TOTAL | 7440-43-9 | 0.13 | MG/KG | | 3 | SED-D | 24.3 | EPA 6010 | VIBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 46 | REG | 5 | 26009502 | CHROMIUM, TOTAL | 7440-47-3 | 17 | MG/KG | | 3 | SED-D | 24.3 | EPA 6010 | VIBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 46 | REG | 5 | 26009502 | COPPER, TOTAL | 7440-50-8 | 17 | MG/KG | | 3 | SED-D | 24.3 | EPA 6010 | VIBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 46 | REG | 5 | 26009502 | DIBUTYLTIN | | 1 | UG/KG | U | 3 | SED-D | 24.3 | QC-PFD | VIBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 5 | 26009502 | LEAD, TOTAL | 7439-92-1 | 8.2 | MG/KG | | 3 | SED-D | 24.3 | EPA 6010 | VIBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 46 | REG | 5 | 26009502 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | | 3 | SED-D | 24.3 | EPA 7470 | VIBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 46 | REG | 5 | 26009502 | MONOBUTYLTIN | | 1 | UG/KG | U | 3 | SED-D | 24.3 | QC-PFD | VIBCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 46 | REG | 5 | 26009502 | NICKEL, TOTAL | 7440-02-0 | 18 | MG/KG | | 3 | SED-D | 24.3 | EPA 6010 | VIBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 5 | 26009502 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | | 3 | SED-D | 24.3 | EPA 6010 | VIBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 5 | 26009502 | SILVER, TOTAL | 7440-22-4 | 0.04 | MG/KG | | 3 | SED-D | 24.3 | EPA 7760 | VIBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 46 | REG | 5 | 26009502 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | | 3 | SED-D | 24.3 | EPA 7841 | VIBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 46 | REG | 5 | 26009502 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | 3 | SED-D | 24.3 | QC-PFD | VIBCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 46 | REG | 5 | 26009503 | ZINC, TOTAL | 7440-66-6 | 50 | MG/KG | | 3 | SED-D | 24.3 | EPA 6010 | VIBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 46 | REG | 5 | 26009503 | CLAY | | 7.002 | PERCENT | | 3 | SED-D | 24.3 | PLUMB 1981 | VIBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 46 | REG | 5 | 26009503 | CUMULATIVE PERCENT > 4.0 MILLIMETERS | | 100 | PERCENT | | 3 | SED-D | 24.3 | PLUMB 1981 | VIBCORE | SED | SEDIMENT | VV | 1 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Matrix Type | Vintage | Detection Limit | Reporting Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 1.68 MICRONS | | 94.625 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 1000 MICRONS | | 1.543 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 125 MICRONS | | 20.432 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 1414.21 MICRONS | | 1.30 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 15.63 MICRONS | | 69.975 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 176.78 MICRONS | | 6.549 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 2000 MICRONS | | 1.305 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 250 MICRONS | | 5.982 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 3.91 MICRONS | | 88.977 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 31.25 MICRONS | | 80.460 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 353.55 MICRONS | | 5.484 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 500 MICRONS | | 1.908 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 62.5 MICRONS | | 90.128 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 707.11 MICRONS | | 90.399 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 CUMULATIVE PERCENT > 88.38 MICRONS | | 1.713 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 GRAVEL | | 49.893 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 MEAN GRAIN SIZE | | 1.208 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 MEDIAN GRAIN SIZE | | 85.905 | UM | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 SAND | | 87.80 | UM | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009501 SILT | | 48.08 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 46 | REG | 5 | 28009504 TOTAL ORGANIC CARBON | | 84.680 | PERCENT | | | SED-D | 24.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 28020061 1,2,4-TRICHLOROBENZENE | 120-82-1 | 0.5 | UG/KG | U | | SED-D | 81.3 | MERCELLVACDARD | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 1,2-DICHLOROBENZENE | 95-50-1 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 1,3-DICHLOROBENZENE | 541-73-1 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 1,4-DICHLOROBENZENE | 106-46-7 | 400 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 2,4-DINITROTOLUENE | 121-14-2 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 2,6-DINITROTOLUENE | 606-20-2 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 2-CHLORONAPHTHALENE | 91-58-7 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 3,3-DICHLOROBENZIDINE | 91-94-1 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | | SED-D | 81.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VU | 1 | UG/KG |
| 51 | REG | 1 | 28020061 4,4'-DDE | 72-55-9 | 250 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | | SED-D | 81.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VU | 1 | UG/KG |
| 51 | REG | 1 | 28020061 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 ACENAPHTHENE | 83-32-9 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 ACENAPHTHYLENE | 208-96-8 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 ALDRIN | 309-00-2 | 1 | UG/KG | U | | SED-D | 81.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VU | 1 | UG/KG |
| 51 | REG | 1 | 28020061 ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | | SED-D | 81.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VU | 1 | UG/KG |
| 51 | REG | 1 | 28020061 ANTHRACENE | 120-12-7 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BENZENE | 71-43-2 | 250 | UG/KG | U | | SED-D | 81.3 | EPA 8260 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BENZO(A)ANTHRACENE | 56-55-3 | 250 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BENZO(B)FLUORANTHENE | 205-99-2 | 250 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BENZO(GHI)PERYLENE | 191-24-2 | 250 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BENZO(K)FLUORANTHENE | 207-08-9 | 250 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | | SED-D | 81.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VU | 1 | UG/KG |
| 51 | REG | 1 | 28020061 BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 50 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 400 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 BUTYLBENZYLPHTHALATE | 85-68-7 | 100 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 CHLORDANE | 57-74-9 | 5 | UG/KG | U | | SED-D | 81.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VU | 5 | UG/KG |
| 51 | REG | 1 | 28020061 CHRYSENE | 218-01-9 | 250 | UG/KG | U | | SED-D | 81.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VU | 50 | UG/KG |
| 51 | REG | 1 | 28020061 DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | | SED-D | 81.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VU | 1 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 1 | 26020601 | DI-N-BUTYLPHTHALATE | 84-74-2 | 100 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 51 | REG | 1 | 26020601 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | DIETHYLPHTHALATE | 84-66-2 | 50 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | DIMETHYLPHTHALATE | 131-11-3 | 50 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | ENDRIN | 72-20-8 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | FLUORANTHENE | 206-44-0 | 1300 | UG/KG | | | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | FLUORENE | 86-73-7 | 90 | UG/KG | J | J | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | HEXACHLOROBENZENE | 118-74-1 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | HEXACHLOROBUTADIENE | 87-68-3 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | HEXACHLOROETHANE | 67-72-1 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | ISOPHORONE | 78-59-1 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 1 | 26020601 | METHYLNAPHTHALENES | | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 51 | REG | 1 | 26020601 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | N-NITROSODIMETHYLAMINE | 62-75-9 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | N-NITROSODIPHENYLAMINE | 86-30-6 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | NAPHTHALENE | 91-20-3 | 80 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | NITROBENZENE | 98-95-3 | 100 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | PCB-1016 | 12674-11-2 | 35 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 51 | REG | 1 | 26020601 | PCB-1221 | 11104-28-2 | 35 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 1 | 26020601 | PCB-1232 | 11141-16-5 | 35 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 1 | 26020601 | PCB-1242 | 53469-21-9 | 35 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 1 | 26020601 | PCB-1248 | 12672-29-6 | 35 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 1 | 26020601 | PCB-1254 | 11097-69-1 | 35 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 1 | 26020601 | PCB-1260 | 11096-82-5 | 35 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 1 | 26020601 | PHENANTHRENE | 85-01-8 | 840 | UG/KG | | | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | PYRENE | 129-00-0 | 3100 | UG/KG | | | SED-D | 61.3 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 1 | 26020601 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | UJ | SED-D | 61.3 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 1 | 26020602 | ARSENIC, TOTAL | 7440-38-2 | 6.2 | MG/KG | | J | SED-D | 61.3 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 1 | 26020602 | BERYLLIUM, TOTAL | 7440-41-7 | 1 | MG/KG | | J | SED-D | 61.3 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 51 | REG | 1 | 26020602 | CADMIUM, TOTAL | 7440-43-9 | 1 | MG/KG | | J | SED-D | 61.3 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 51 | REG | 1 | 26020602 | CHROMIUM, TOTAL | 7440-47-3 | 84 | MG/KG | | J | SED-D | 61.3 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 1 | 26020602 | COPPER, TOTAL | 7440-50-8 | 160 | MG/KG | | J | SED-D | 61.3 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 51 | REG | 1 | 26020602 | DIBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 61.3 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 51 | REG | 1 | 26020602 | LEAD, TOTAL | 7439-92-1 | 36 | MG/KG | | J | SED-D | 61.3 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 51 | REG | 1 | 26020602 | MERCURY, TOTAL | 7439-97-6 | 0.21 | MG/KG | | J | SED-D | 61.3 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 51 | REG | 1 | 26020602 | MONOBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 61.3 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 51 | REG | 1 | 26020602 | NICKEL, TOTAL | 7440-02-0 | 31 | MG/KG | | J | SED-D | 61.3 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 51 | REG | 1 | 26020602 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | UJ | SED-D | 61.3 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 1 | 26020602 | SILVER, TOTAL | 7440-22-4 | 0.41 | MG/KG | | J | SED-D | 61.3 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 51 | REG | 1 | 26020602 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 61.3 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 1 | 26020602 | TRIBUTYLTIN | 688-73-3 | 3 | UG/KG | U | UJ | SED-D | 61.3 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 51 | REG | 1 | 26020602 | ZINC, TOTAL | 7440-66-6 | 260 | MG/KG | | J | SED-D | 61.3 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 1 | 26020603 | CLAY | | 34.588 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 1.95 MICRONS | | 72.485 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 1000 MICRONS | | 18.171 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 125 MICRONS | | 31.569 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 13.719 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 15.63 MICRONS | | 44.193 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 176.78 MICRONS | | 30.274 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 2000 MICRONS | | 10.796 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 250 MICRONS | | 29.034 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 3.91 MICRONS | | 65.412 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 31.25 MICRONS | | 37.665 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 353.56 MICRONS | | 27.083 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 500 MICRONS | | 24.81 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 62.5 MICRONS | | 38.216 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 7.81 MICRONS | | 53.997 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 707.11 MICRONS | | 21.658 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | CUMULATIVE PERCENT > 88.39 MICRONS | | 33.252 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | GRAVEL | | 10.796 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | MEAN GRAIN SIZE | | 31.371 | UM | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | MEDIAN GRAIN SIZE | | 10.359 | UM | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | SAND | | 64.421 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020603 | SILT | | 30.196 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 1 | 26020604 | TOTAL ORGANIC CARBON | | 8.198 | PERCENT | | | SED-D | 61.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 2 | 26020701 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 50 | UG/KG | U | UJ | SED-D | 61.9 | MENZIE&VAGGARO | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020701 | 1,2-DICHLOROBENZENE | 95-50-1 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | 1,3-DICHLOROBENZENE | 541-73-1 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | 1,4-DICHLOROBENZENE | 106-46-7 | 210 | UG/KG | | | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | 2,4-DINITROTOLUENE | 121-14-2 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | 2,6-DINITROTOLUENE | 606-20-2 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | 2-CHLORONAPHTHALENE | 91-58-7 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | 4,4'-DDE | 72-55-9 | 230 | UG/KG | | | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 2 | 26020701 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | ACENAPHTHENE | 83-32-9 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | ACENAPHTHYLENE | 208-96-8 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | ALDRIN | 309-00-2 | 1 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | ANTHRACENE | 120-12-7 | 170 | UG/KG | | | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | BENZIDINE | 92-87-5 | 300 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | BENZO(A)ANTHRACENE | 56-55-3 | 260 | UG/KG | | | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 51 | REG | 2 | 26020701 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 50 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 880 | UG/KG | | | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | BUTYLBENZYLPHTHALATE | 85-68-7 | 100 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 2 | 26020701 | CHLORDANE | 57-74-9 | 8 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 8 | UG/KG |



R0063276

Subsurface Sediment Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 2 | 26020701 | CHRYSENE | 218-01-9 | 2900 | UG/KG | | | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | DI-N-BUTYLPHTHALATE | 84-74-2 | 100 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 51 | REG | 2 | 26020701 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | DIETHYLPHTHALATE | 84-66-2 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | DIMETHYLPHTHALATE | 131-11-3 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | FLUORANTHENE | 206-44-0 | 1700 | UG/KG | | | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | FLUORENE | 86-73-7 | 310 | UG/KG | | | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | HEXACHLOROBENZENE | 118-74-1 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | HEXACHLOROBUTADIENE | 87-68-3 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | HEXACHLOROETHANE | 67-72-1 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | ISOPHORONE | 78-59-1 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 2 | 26020701 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 51 | REG | 2 | 26020701 | METHYLNAPHTHALENES | | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | N-NITROSODIMETHYLAMINE | 62-75-9 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | N-NITROSODIPHENYLAMINE | 86-30-6 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | NAPHTHALENE | 91-20-3 | 80 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | NITROBENZENE | 98-95-3 | 100 | UG/KG | U | U | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 51 | REG | 2 | 26020701 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 2 | 26020701 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 2 | 26020701 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 2 | 26020701 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 2 | 26020701 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 2 | 26020701 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 2 | 26020701 | PHENANTHRENE | 85-01-8 | 830 | UG/KG | | | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | PYRENE | 129-00-0 | 1000 | UG/KG | | | SED-D | 61.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 51 | REG | 2 | 26020701 | TOXAPHENE | 8001-35-2 | 30 | UG/KG | U | UJ | SED-D | 61.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 2 | 26020702 | ARSENIC, TOTAL | 7440-38-2 | 5.2 | MG/KG | | | SED-D | 61.9 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 2 | 26020702 | BERYLLIUM, TOTAL | 7440-41-7 | 1 | MG/KG | | J | SED-D | 61.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.3 | MG/KG |
| 51 | REG | 2 | 26020702 | CADMIUM, TOTAL | 7440-43-9 | 1 | MG/KG | | J | SED-D | 61.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 51 | REG | 2 | 26020702 | CHROMIUM, TOTAL | 7440-47-3 | 58 | MG/KG | | | SED-D | 61.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 2 | 26020702 | COPPER, TOTAL | 7440-50-8 | 160 | MG/KG | | | SED-D | 61.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 51 | REG | 2 | 26020702 | DIBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 61.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 51 | REG | 2 | 26020702 | LEAD, TOTAL | 7439-92-1 | 69 | MG/KG | | | SED-D | 61.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 51 | REG | 2 | 26020702 | MERCURY, TOTAL | 7439-97-6 | 0.34 | MG/KG | | | SED-D | 61.9 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 51 | REG | 2 | 26020702 | MONOBUTYLTIN | | 3 | UG/KG | U | UJ | SED-D | 61.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 51 | REG | 2 | 26020702 | NICKEL, TOTAL | 7440-02-0 | 37 | MG/KG | | | SED-D | 61.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 8 | MG/KG |
| 51 | REG | 2 | 26020702 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | U | UJ | SED-D | 61.9 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 2 | 26020702 | SILVER, TOTAL | 7440-22-4 | 0.08 | MG/KG | U | UJ | SED-D | 61.9 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 51 | REG | 2 | 26020702 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 61.9 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |



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CTO-0028

Subsurface Sediment Analytical Data

| Station ID | Sample Type | Bottom Depth Ref | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Number | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 2 | 26020702 | TRIBUTYLTIN | 688-73-3 | 3 | UG/KG | U | 2 | SED-D | 61.9 | QC-FPD | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 51 | REG | 2 | 26020702 | ZINC, TOTAL | 7440-66-6 | 420 | MG/KG | | 2 | SED-D | 61.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 3 | MG/KG |
| 51 | REG | 2 | 26020703 | CLAY | | 43.488 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 1.95 MICRONS | | 84.525 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 1000 MICRONS | | 7.005 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 125 MICRONS | | 11.23 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.856 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 15.63 MICRONS | | 27.225 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 176.78 MICRONS | | 10.482 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.523 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 250 MICRONS | | 8.861 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 3.91 MICRONS | | 56.538 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 31.25 MICRONS | | 20.83 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 353.55 MICRONS | | 9.404 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 500 MICRONS | | 0.833 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 62.5 MICRONS | | 10.788 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 7.81 MICRONS | | 44.809 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.875 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | CUMULATIVE PERCENT > 88.39 MICRONS | | 13.826 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | GRAVEL | | 5.823 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | MEAN GRAIN SIZE | | 8.874 | UM | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | MEDIAN GRAIN SIZE | | 5.748 | UM | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | SAND | | 10.846 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020703 | SILT | | 40.784 | PERCENT | | 2 | SED-D | 61.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 2 | 26020704 | TOTAL ORGANIC CARBON | | 1.818 | PERCENT | | 2 | SED-D | 61.9 | MENZELAVOGAKO | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 3 | 26020801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 11000 | UG/KG | | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 1,2-DICHLOROBENZENE | 95-50-1 | 8000 | UG/KG | | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 1,3-DICHLOROBENZENE | 541-73-1 | 19000 | UG/KG | | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | 1,4-DICHLOROBENZENE | 106-46-7 | 80000 | UG/KG | | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 2,4-DICHLOROPHENOL | 120-83-2 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 2,4-DIMETHYLPHENOL | 105-67-9 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 2,4-DINITROPHENOL | 51-28-5 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 2,4-DINITROTOLUENE | 121-14-2 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 2,6-DINITROTOLUENE | 606-20-2 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 2-CHLORONAPHTHALENE | 91-58-7 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 2-CHLOROPHENOL | 95-57-8 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 2-METHYLPHENOL | 95-48-7 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 2-NITROPHENOL | 88-75-5 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 3- AND 4-METHYLPHENOL | 108-44-5 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | 4,4'-DDE | 72-55-9 | 1100 | UG/KG | | 2 | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 3 | 26020801 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | 4-NITROPHENOL | 100-02-7 | 400 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | ACENAPHTHENE | 83-32-9 | 800 | UG/KG | U | 2 | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |

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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 3 | 26020801 | ACENAPHTHYLENE | 208-96-8 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | ANTHRACENE | 120-12-7 | 6800 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BENZIDINE | 92-87-5 | 1000 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1000 | UG/KG |
| 51 | REG | 3 | 26020801 | BENZO(A)ANTHRACENE | 56-55-3 | 10000 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BENZO(A)PYRENE | 50-32-8 | 5200 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BENZO(B)FLUORANTHENE | 205-99-2 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BENZO(GHI)PERYLENE | 191-24-2 | 2900 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BENZO(K)FLUORANTHENE | 207-08-9 | 14000 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 1000 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | BUTYLBENZYLPHTHALATE | 85-68-7 | 400 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1000 | UG/KG |
| 51 | REG | 3 | 26020801 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | CHRYSENE | 218-01-9 | 8800 | UG/KG | | | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 51 | REG | 3 | 26020801 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | DI-N-BUTYLPHTHALATE | 84-74-2 | 400 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | DI-N-OCTYLPHTHALATE | 117-84-0 | 400 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 800 | UG/KG |
| 51 | REG | 3 | 26020801 | DIETHYLPHTHALATE | 84-66-2 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | DIMETHYLPHTHALATE | 131-11-3 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | FLUORANTHENE | 206-44-0 | 3400 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | FLUORENE | 86-73-7 | 1400 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | HEXACHLOROBENZENE | 118-74-1 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | HEXACHLOROBUTADIENE | 87-68-3 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | HEXACHLOROETHANE | 67-72-1 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 2200 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | ISOPHORONE | 78-59-1 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 3 | 26020801 | METHYLNAPHTHALENES | | 17000 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 51 | REG | 3 | 26020801 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | N-NITROSODIMETHYLAMINE | 62-75-9 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | N-NITROSODIPHENYLAMINE | 86-30-6 | 200 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | NAPHTHALENE | 91-20-3 | 4600 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | NITROBENZENE | 98-95-3 | 400 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 3 | 26020801 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 3 | 26020801 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 3 | 26020801 | PCB-1248 | 12672-29-6 | 6900 | UG/KG | | J | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 3 | 26020801 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 3 | 26020801 | PENTACHLOROPHENOL | 87-86-5 | 400 | UG/KG | U | U | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | PHENANTHRENE | 85-01-8 | 9200 | UG/KG | | | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | PHENOL | 108-95-2 | 400 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 400 | UG/KG |
| 51 | REG | 3 | 26020801 | PYRENE | 129-00-0 | 12000 | UG/KG | | J | SED-D | 49.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 3 | 26020801 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | UJ | SED-D | 49.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 3 | 26020802 | ARSENIC, TOTAL | 7440-38-2 | 5.4 | MG/KG | | | SED-D | 49.9 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 3 | 26020802 | BERYLLIUM, TOTAL | 7440-41-7 | 0.8 | MG/KG | | | SED-D | 49.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 51 | REG | 3 | 26020802 | CADMIUM, TOTAL | 7440-43-9 | 2.8 | MG/KG | | | SED-D | 49.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 51 | REG | 3 | 26020802 | CHROMIUM, TOTAL | 7440-47-3 | 62 | MG/KG | | | SED-D | 49.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 3 | 26020802 | COPPER, TOTAL | 7440-50-8 | 200 | MG/KG | | J | SED-D | 49.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 3 | 26020802 | DIBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 49.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 3 | 26020802 | LEAD, TOTAL | 7439-92-1 | 140 | MG/KG | | J | SED-D | 49.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 51 | REG | 3 | 26020802 | MERCURY, TOTAL | 7439-97-6 | 0.7 | MG/KG | | J | SED-D | 49.9 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 51 | REG | 3 | 26020802 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 49.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 3 | 26020802 | NICKEL, TOTAL | 7440-02-0 | 32 | MG/KG | | | SED-D | 49.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 51 | REG | 3 | 26020802 | SELENIUM, TOTAL | 7782-49-2 | 1.2 | MG/KG | | J | SED-D | 49.9 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 3 | 26020802 | SILVER, TOTAL | 7440-22-4 | 0.12 | MG/KG | | J | SED-D | 49.9 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 51 | REG | 3 | 26020802 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 49.9 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 3 | 26020802 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | UJ | SED-D | 49.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 3 | 26020802 | ZINC, TOTAL | 7440-66-6 | 420 | MG/KG | | J | SED-D | 49.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 3 | 26020803 | CLAY | | 42.952 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 1.95 MICRONS | | 88.438 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 1000 MICRONS | | 23.097 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 125 MICRONS | | 39.652 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 22.13 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 15.63 MICRONS | | 36.837 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 176.78 MICRONS | | 26.137 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 2000 MICRONS | | 20.931 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 250 MICRONS | | 25.563 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 3.91 MICRONS | | 57.448 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 31.25 MICRONS | | 30.669 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 353.55 MICRONS | | 24.898 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 500 MICRONS | | 24.434 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 62.5 MICRONS | | 28.32 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 7.81 MICRONS | | 44.763 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 707.11 MICRONS | | 23.826 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | CUMULATIVE PERCENT > 88.39 MICRONS | | 27.231 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | GRAVEL | | 20.931 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | MEAN GRAIN SIZE | | 65.782 | UM | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | MEDIAN GRAIN SIZE | | 5.868 | UM | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | SAND | | 7.369 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020803 | SILT | | 29.128 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 3 | 26020804 | TOTAL ORGANIC CARBON | | 2.389 | PERCENT | | | SED-D | 49.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020801 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 40 | UG/KG | U | UJ | SED-D | 40 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 4 | 26020801 | 1,3-DICHLOROBENZENE | 95-50-1 | 220 | UG/KG | | | SED-D | 40 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020801 | 1,3-DICHLOROBENZENE | 541-73-1 | 780 | UG/KG | | | SED-D | 40 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |



R0063280

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 4 | 26020901 | 1,4-DICHLOROBENZENE | 106-46-7 | 2000 | UG/KG | | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | 2,4-DICHLOROPHENOL | 120-83-2 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | 2,4-DIMETHYLPHENOL | 105-67-9 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | 2,4-DINITROPHENOL | 51-28-5 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 2,4-DINITROTOLUENE | 121-14-2 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 2,6-DINITROTOLUENE | 606-20-2 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 2-CHLORONAPHTHALENE | 91-58-7 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 2-CHLOROPHENOL | 95-57-8 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | 2-METHYLPHENOL | 95-48-7 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | 2-NITROPHENOL | 88-75-5 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 3- AND 4-METHYLPHENOL | 106-44-5 | 100 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 4,4'-DDD | 72-54-8 | 19 | UG/KG | | J | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 51 | REG | 4 | 26020901 | 4,4'-DDE | 72-55-9 | 50 | UG/KG | | J | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | 4,4'-DDT | 50-29-3 | 0.9 | UG/KG | U | J | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | 4-NITROPHENOL | 100-02-7 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | ACENAPHTHENE | 83-32-9 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | ACENAPHTHYLENE | 208-96-8 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | ALDRIN | 309-00-2 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | ALPHA-BHC (HCH) | 319-84-6 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | ANTHRACENE | 120-12-7 | 6100 | UG/KG | | J | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | BENZIDINE | 92-87-5 | 200 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BENZO(A)ANTHRACENE | 56-55-3 | 3700 | UG/KG | | J | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 4 | 26020901 | BENZO(A)PYRENE | 50-32-8 | 5000 | UG/KG | | J | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BENZO(B)FLUORANTHENE | 205-99-2 | 1500 | UG/KG | | J | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BENZO(GHI)PERYLENE | 191-24-2 | 700 | UG/KG | | J | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BENZO(K)FLUORANTHENE | 207-08-9 | 2000 | UG/KG | | J | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BETA-BHC (HCH) | 319-85-7 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 300 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | BUTYLBENZYLPHTHALATE | 85-68-7 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 300 | UG/KG |
| 51 | REG | 4 | 26020901 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | CHRYSENE | 218-01-9 | 4400 | UG/KG | | J | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 51 | REG | 4 | 26020901 | DELTA-BHC (HCH) | 319-86-8 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | DI-N-BUTYLPHTHALATE | 84-74-2 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 70 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | DIELDRIN | 60-57-1 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | DIETHYLPHTHALATE | 84-66-2 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | DIMETHYLPHTHALATE | 131-11-3 | 40 | UG/KG | U | U | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | ENDOSULFAN I | 959-98-8 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | ENDOSULFAN II | 33213-65-9 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | ENDOSULFAN SULFATE | 1031-07-8 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | ENDRIN | 72-20-8 | 0.9 | UG/KG | U | U | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 4 | 26020901 | ENDRIN ALDEHYDE | 7421-93-4 | 0.9 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | FLUORANTHENE | 206-44-0 | 13000 | UG/KG | | | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | FLUORENE | 86-73-7 | 240 | UG/KG | | | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | HEPTACHLOR | 76-44-8 | 0.9 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.9 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | HEXACHLOROBENZENE | 118-74-1 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | HEXACHLOROBUTADIENE | 87-68-3 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | HEXACHLOROETHANE | 67-72-1 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 740 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | ISOPHORONE | 78-59-1 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.9 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.9 | UG/KG |
| 51 | REG | 4 | 26020901 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 51 | REG | 4 | 26020901 | METHYLNAPHTHALENES | | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | NITROBENZENE | 98-95-3 | 70 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020901 | PENTACHLOROPHENOL | 87-86-5 | 70 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | PHENANTHRENE | 85-01-8 | 4600 | UG/KG | | | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | PHENOL | 108-95-2 | 70 | UG/KG | U | R | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 51 | REG | 4 | 26020901 | PYRENE | 129-00-0 | 9300 | UG/KG | | | SED-D | 46 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 51 | REG | 4 | 26020901 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | R | SED-D | 46 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 51 | REG | 4 | 26020902 | ARSENIC, TOTAL | 7440-38-2 | 5.8 | MG/KG | | | SED-D | 46 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 51 | REG | 4 | 26020902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.93 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 51 | REG | 4 | 26020902 | CADMIUM, TOTAL | 7440-43-9 | 2.2 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 51 | REG | 4 | 26020902 | CHROMIUM, TOTAL | 7440-47-3 | 59 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 51 | REG | 4 | 26020902 | COPPER, TOTAL | 7440-50-8 | 200 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 4 | 26020902 | DIBUTYLTIN | | 2 | UG/KG | U | R | SED-D | 46 | GC-PPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 4 | 26020902 | LEAD, TOTAL | 7439-92-1 | 170 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 51 | REG | 4 | 26020902 | MERCURY, TOTAL | 7439-97-6 | 1.8 | MG/KG | | | SED-D | 46 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 51 | REG | 4 | 26020902 | MONOBUTYLTIN | | 2 | UG/KG | U | R | SED-D | 46 | GC-PPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 4 | 26020902 | NICKEL, TOTAL | 7440-02-0 | 31 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 51 | REG | 4 | 26020902 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | R | SED-D | 46 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 51 | REG | 4 | 26020902 | SILVER, TOTAL | 7440-22-4 | 0.2 | MG/KG | U | R | SED-D | 46 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.09 | MG/KG |
| 51 | REG | 4 | 26020902 | THALLIUM, TOTAL | 7440-28-0 | 0.9 | MG/KG | U | R | SED-D | 46 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.9 | MG/KG |
| 51 | REG | 4 | 26020902 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | U | R | SED-D | 46 | GC-PPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 51 | REG | 4 | 26020902 | ZINC, TOTAL | 7440-66-6 | 540 | MG/KG | | | SED-D | 46 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 51 | REG | 4 | 26020903 | CLAY | | 57.131 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 0.06 MICRONS | | 100 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 98.589 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.119 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 125 MICRONS | | 18.618 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



R0063282

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 7.484 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 20.665 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 11.571 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 2000 MICRONS | | 6.574 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 250 MICRONS | | 10.783 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 42.869 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 16.274 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 10.35 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 500 MICRONS | | 8.412 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 13.346 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 28.961 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 8.823 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | CUMULATIVE PERCENT > 88.39 MICRONS | | 12.63 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | GRAVEL | | 6.574 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | MEAN GRAIN SIZE | | 4.091 | UM | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | MEDIAN GRAIN SIZE | | 2.721 | UM | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | SAND | | 6.772 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020903 | SILT | | 86.634 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 4 | 26020904 | TOTAL ORGANIC CARBON | | 2.221 | PERCENT | | | SED-D | 46 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021301 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 30 | UG/KG | U | U | SED-D | 30.8 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 51 | REG | 5 | 26021301 | 1,2-DICHLOROBENZENE | 95-50-1 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 1,3-DICHLOROBENZENE | 541-73-1 | 200 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 1,4-DICHLOROBENZENE | 106-46-7 | 480 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 2,4-DICHLOROPHENOL | 120-83-2 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | 2,4-DINITROPHENOL | 51-28-5 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | 2,4-DINITROTOLUENE | 121-14-2 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 2,6-DINITROTOLUENE | 606-20-2 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 2-CHLORONAPHTHALENE | 91-58-7 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 2-CHLOROPHENOL | 95-57-8 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | 2-METHYLPHENOL | 95-48-7 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | 2-NITROPHENOL | 88-75-5 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 3- AND 4-METHYLPHENOL | 108-44-5 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 4,4'-DDD | 72-54-8 | 0.7 | UG/KG | U | J | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 90 | UG/KG |
| 51 | REG | 5 | 26021301 | 4,4'-DDE | 72-55-9 | 4.2 | UG/KG | | | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | 4,4'-DDT | 50-29-3 | 0.7 | UG/KG | U | J | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | 4-NITROPHENOL | 100-02-7 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | ALDRIN | 309-00-2 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | ALPHA-BHC (HCH) | 319-84-6 | 0.7 | UG/KG | U | U | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | ANTHRACENE | 120-12-7 | 270 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | BENZIDINE | 92-87-5 | 100 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | BENZO(A)ANTHRACENE | 56-55-3 | 1100 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 51 | REG | 5 | 26021301 | BENZO(A)PYRENE | 50-32-8 | 610 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 5 | 26021301 | BENZO(B)FLUORANTHENE | 205-99-2 | 590 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | BENZO(GHI)PERYLENE | 191-24-2 | 270 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | BENZO(K)FLUORANTHENE | 207-08-9 | 520 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | BETA-BHC (HCH) | 319-85-7 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 200 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 200 | UG/KG |
| 51 | REG | 5 | 26021301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 51 | REG | 5 | 26021301 | CHRYSENE | 218-01-9 | 940 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | DELTA-BHC (HCH) | 319-86-8 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 60 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 110 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | DIELDRIN | 60-57-1 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | DIETHYLPHTHALATE | 84-66-2 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | DIMETHYLPHTHALATE | 131-11-3 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | ENDOSULFAN I | 959-98-8 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | ENDOSULFAN II | 33213-65-9 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | ENDOSULFAN SULFATE | 1031-07-8 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | ENDRIN | 72-20-8 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | ENDRIN ALDEHYDE | 7421-93-4 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | FLUORANTHENE | 206-44-0 | 810 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | HEPTACHLOR | 76-44-8 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | HEXACHLOROBENZENE | 118-74-1 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | HEXACHLOROBUTADIENE | 87-68-3 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 30 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | HEXACHLOROETHANE | 67-72-1 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 580 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | ISOPHORONE | 78-59-1 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.7 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.7 | UG/KG |
| 51 | REG | 5 | 26021301 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 51 | REG | 5 | 26021301 | METHYLNAPHTHALENES | | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 30 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | NAPHTHALENE | 91-20-3 | 30 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | NITROBENZENE | 98-95-3 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 5 | 26021301 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 5 | 26021301 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 5 | 26021301 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 5 | 26021301 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 5 | 26021301 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 5 | 26021301 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 5 | 26021301 | PENTACHLOROPHENOL | 87-86-5 | 60 | UG/KG | U | U | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 51 | REG | 5 | 26021301 | PHENANTHRENE | 85-01-8 | 160 | UG/KG | | | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | PHENOL | 108-95-2 | 60 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | REG | 5 | 26021301 | PYRENE | 129-00-0 | 1700 | UG/KG | | J | SED-D | 30.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 51 | REG | 5 | 26021301 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | UJ | SED-D | 30.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 51 | REG | 5 | 26021302 | ARSENIC, TOTAL | 7440-38-2 | 4.2 | MG/KG | | | SED-D | 30.8 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 51 | REG | 5 | 26021302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.58 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 51 | REG | 5 | 26021302 | CADMIUM, TOTAL | 7440-43-9 | 0.43 | MG/KG | | J | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.07 | MG/KG |
| 51 | REG | 5 | 26021302 | CHROMIUM, TOTAL | 7440-47-3 | 27 | MG/KG | | | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 51 | REG | 5 | 26021302 | COPPER, TOTAL | 7440-50-8 | 84 | MG/KG | | J | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 5 | 26021302 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 30.8 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 5 | 26021302 | LEAD, TOTAL | 7439-92-1 | 20 | MG/KG | | J | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 51 | REG | 5 | 26021302 | MERCURY, TOTAL | 7439-97-6 | 0.07 | MG/KG | | J | SED-D | 30.8 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.01 | MG/KG |
| 51 | REG | 5 | 26021302 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | SED-D | 30.8 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 5 | 26021302 | NICKEL, TOTAL | 7440-02-0 | 22 | MG/KG | | J | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 51 | REG | 5 | 26021302 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | UJ | SED-D | 30.8 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 51 | REG | 5 | 26021302 | SILVER, TOTAL | 7440-22-4 | 0.1 | MG/KG | | J | SED-D | 30.8 | EPA 7761 | VBCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 51 | REG | 5 | 26021302 | THALLIUM, TOTAL | 7440-28-0 | 0.7 | MG/KG | U | UJ | SED-D | 30.8 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.7 | MG/KG |
| 51 | REG | 5 | 26021302 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | UJ | SED-D | 30.8 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 51 | REG | 5 | 26021302 | ZINC, TOTAL | 7440-66-6 | 88 | MG/KG | | J | SED-D | 30.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 51 | REG | 5 | 26021303 | CLAY | | 16.936 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 1.95 MICRONS | | 87.136 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.343 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 125 MICRONS | | 16.243 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.143 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 65.110 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 176.78 MICRONS | | 11.242 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.086 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 250 MICRONS | | 7.017 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 83.485 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 31.26 MICRONS | | 58.121 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 2.981 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 500 MICRONS | | 1.149 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 37.886 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 79.973 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.589 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 25.638 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | GRAVEL | | 0.088 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | MEAN GRAIN SIZE | | 81.186 | UM | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | MEDIAN GRAIN SIZE | | 34.579 | UM | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | SAND | | 37.889 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021303 | SILT | | 46.899 | PERCENT | | | SED-D | 30.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 51 | REG | 5 | 26021304 | TOTAL ORGANIC CARBON | | 0.979 | PERCENT | | | SED-D | 30.8 | MENZELAVAGNANO | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004901 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2,4,5-TRICHLOROPHENOL | 95-95-4 | 50 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2,4-DICHLOROPHENOL | 120-83-2 | 50 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2,4-DIMETHYLPHENOL | 105-67-9 | 50 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 87.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.1 | REG | 1 | 26004901 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2-CHLOROPHENOL | 95-57-8 | 50 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 50 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2-METHYLPHENOL | 95-48-7 | 50 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 3- AND 4-METHYLPHENOL | 108-44-5 | 70 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 70 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 4,4'-DDE | 72-55-9 | 30 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 50 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | 4-NITROPHENOL | 100-02-7 | 50 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BENZO(A)PYRENE | 50-32-8 | 47 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BENZO(B)FLUORANTHENE | 205-99-2 | 47 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BENZO(GHI)PERYLENE | 191-24-2 | 47 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BENZO(K)FLUORANTHENE | 207-08-9 | 47 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 900 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | CHLORDANE | 57-74-9 | 5 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | DI-N-OCTYLPHTHALATE | 117-84-0 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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C3-683

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| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.1 | REG | 1 | 26004901 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 23 | UG/KG | | | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | METHOXYCHLOR | 72-43-5 | 5 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 5 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | NITROBENZENE | 98-95-3 | 50 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PENTACHLOROPHENOL | 87-86-5 | 80 | UG/KG | U | U | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PHENOL | 108-95-2 | 50 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | PYRENE | 129-00-0 | 30 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004901 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 57.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40010.1 | REG | 1 | 26004902 | ARSENIC, TOTAL | 7440-38-2 | 13 | MG/KG | | | SED-D | 57.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004902 | BERYLLIUM, TOTAL | 7440-41-7 | 0.7 | MG/KG | | | SED-D | 57.2 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 1 | 26004902 | CADMIUM, TOTAL | 7440-43-9 | 1.8 | MG/KG | | | SED-D | 57.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | CHROMIUM, TOTAL | 7440-47-3 | 65 | MG/KG | | | SED-D | 57.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | COPPER, TOTAL | 7440-50-8 | 66 | MG/KG | | | SED-D | 57.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 57.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | LEAD, TOTAL | 7439-92-1 | 37 | MG/KG | | | SED-D | 57.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | MERCURY, TOTAL | 7439-97-6 | 0.77 | MG/KG | | | SED-D | 57.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010.1 | REG | 1 | 26004902 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 57.2 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | NICKEL, TOTAL | 7440-02-0 | 60 | MG/KG | | | SED-D | 57.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.05 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | SELENIUM, TOTAL | 7782-49-2 | 2.8 | MG/KG | | J | SED-D | 57.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010.1 | REG | 1 | 26004902 | SILVER, TOTAL | 7440-22-4 | 2.8 | MG/KG | | | SED-D | 57.2 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 7 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | U | SED-D | 57.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | TRIBUTYLTIN | 688-73-3 | 5.1 | UG/KG | | | SED-D | 57.2 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REG | 1 | 26004902 | ZINC, TOTAL | 7440-66-6 | 200 | MG/KG | | | SED-D | 57.2 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REG | 1 | 26004903 | CLAY | | 58.266 | PERCENT | | | SED-D | 57.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 1.95 MICRONS | | 53.584 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.019 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 125 MICRONS | | 0.199 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.019 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 15.63 MICRONS | | 0.157 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 176.78 MICRONS | | 0.118 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 250 MICRONS | | 0.081 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 3.91 MICRONS | | 41.712 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 31.25 MICRONS | | 1.818 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 353.55 MICRONS | | 0.099 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



R0063287

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.1 | REG | 1 | 26004983 | CUMULATIVE PERCENT > 500 MICRONS | | 0.05 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 62.5 MICRONS | | 0.809 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 7.81 MICRONS | | 21.791 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.025 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | CUMULATIVE PERCENT > 69.39 MICRONS | | 0.342 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | GRAVEL | | 0 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | MEAN GRAIN SIZE | | 1.824 | UM | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | MEDIAN GRAIN SIZE | | 2.409 | UM | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | SAND | | 0.809 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004903 | SILT | | 41.103 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 1 | 26004904 | TOTAL ORGANIC CARBON | | 3.631 | PERCENT | | | SED-D | 57.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010.1 | REG | 2 | 26005001 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | U | SED-D | 47.9 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 40010.1 | REG | 2 | 26005001 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2,4-DICHLOROPHENOL | 120-83-2 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2,4-DIMETHYLPHENOL | 105-67-9 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2-CHLOROPHENOL | 95-57-8 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2-METHYLPHENOL | 95-48-7 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 3- AND 4-METHYLPHENOL | 108-44-5 | 80 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 4,4'-DDE | 72-55-9 | 13 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 4,4'-DDT | 50-29-3 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 4 BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | 4-NITROPHENOL | 100-02-7 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ALDRIN | 309-00-2 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ALPHA-BHC (HCH) | 319-84-6 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BENZO(A)PYRENE | 50-32-8 | 120 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BENZO(B)FLUORANTHENE | 205-99-2 | 120 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BENZO(GHI)PERYLENE | 191-24-2 | 77 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BENZO(K)FLUORANTHENE | 207-08-9 | 120 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BETA-BHC (HCH) | 319-85-7 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | BUTYLBENZYLPHTHALATE | 85-68-7 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |

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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010.1 | REG | 2 | 26005001 | CHLORDANE | 57-74-9 | 4 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | CHRYSENE | 218-01-9 | 19 | UG/KG | | | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | DELTA-BHC (HCH) | 319-86-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | DI-N-BUTYLPHTHALATE | 84-74-2 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | DI-N-OCTYLPHTHALATE | 117-84-0 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 19 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | DIELDRIN | 60-57-1 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ENDOSULFAN I | 959-98-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ENDOSULFAN II | 33213-65-9 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ENDOSULFAN SULFATE | 1031-07-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ENDRIN | 72-20-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ENDRIN ALDEHYDE | 7421-93-4 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | HEPTACHLOR | 76-44-8 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 68 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | LINDANE (GAMMA-BHC) | 58-89-9 | 1 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | METHOXYCHLOR | 72-43-5 | 4 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 4 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | NITROBENZENE | 98-95-3 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PENTACHLOROPHENOL | 87-86-5 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PHENOL | 108-95-2 | 40 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005001 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 47.9 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40010.1 | REG | 2 | 26005002 | ARSENIC, TOTAL | 7440-38-2 | 9.8 | MG/KG | | | SED-D | 47.9 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005002 | BERYLLIUM, TOTAL | 7440-41-7 | 0.77 | MG/KG | | | SED-D | 47.9 | EPA 7090 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40010.1 | REG | 2 | 26005002 | CADMIUM, TOTAL | 7440-43-9 | 0.61 | MG/KG | | | SED-D | 47.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REG | 2 | 26005002 | CHROMIUM, TOTAL | 7440-47-3 | 46 | MG/KG | | | SED-D | 47.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40010.1 | REG | 2 | 26005002 | COPPER, TOTAL | 7440-50-8 | 66 | MG/KG | | | SED-D | 47.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40010.1 | REG | 2 | 26005002 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 47.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010.1 | REG | 2 | 26005002 | LEAD, TOTAL | 7439-92-1 | 65 | MG/KG | | | SED-D | 47.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| | | | | | | | | | | | 47.9 | EPA 6010 | | | | | 2 | UG/KG |
| | | | | | | | | | | | | | | | | | 6 | MG/KG |

8/1 L/96



R0063289

E-6C3

VOL 178

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40010 1 | REG | 2 | 26005002 | MERCURY, TOTAL | 7439-97-6 | 0.88 | MG/KG | | | SED-D | 47.9 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.04 | MG/KG |
| 40010 1 | REG | 2 | 26005002 | MONOBUTYLTIN | | 2 | UG/KG | U | UJ | SED-D | 47.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 1 | REG | 2 | 26005002 | NICKEL, TOTAL | 7440-02-0 | 40 | MG/KG | | | SED-D | 47.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 6 | MG/KG |
| 40010 1 | REG | 2 | 26005002 | SELENIUM, TOTAL | 7782-49-2 | 1.5 | MG/KG | | J | SED-D | 47.9 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 2 | 26005002 | SILVER, TOTAL | 7440-22-4 | 2.5 | MG/KG | | | SED-D | 47.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 2 | 26005002 | THALLIUM, TOTAL | 7440-28-0 | 1 | MG/KG | U | UJ | SED-D | 47.9 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40010 1 | REG | 2 | 26005002 | TRIBUTYLTIN | 688-73-3 | 7.1 | UG/KG | | UJ | SED-D | 47.9 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40010 1 | REG | 2 | 26005002 | ZINC, TOTAL | 7440-66-6 | 170 | MG/KG | | | SED-D | 47.9 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40010 1 | REG | 2 | 26005003 | CLAY | | 35.261 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 1.95 MICRONS | | 72.447 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.063 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 125 MICRONS | | 5.841 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.014 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 15.63 MICRONS | | 37.029 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 176.78 MICRONS | | 1.836 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 250 MICRONS | | 0.609 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 3.91 MICRONS | | 64.739 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 31.25 MICRONS | | 24 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 353.09 MICRONS | | 0.384 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 500 MICRONS | | 0.19 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 62.5 MICRONS | | 10.880 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 7.81 MICRONS | | 53.949 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.109 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | CUMULATIVE PERCENT > 88.39 MICRONS | | 12.482 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | GRAVEL | | 0 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | MEAN GRAIN SIZE | | 7.648 | UM | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | MEDIAN GRAIN SIZE | | 9.098 | UM | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | SAND | | 16.869 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005003 | SILT | | 48.58 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40010 1 | REG | 2 | 26005004 | TOTAL ORGANIC CARBON | | 1.405 | PERCENT | | | SED-D | 47.9 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 1 | 26005101 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 20 | UG/KG | U | UJ | SED-D | 38.4 | MENZIESVASSARO | VBCORE | SED | SEDIMENT | VV | | |
| 40018 3 | REG | 1 | 26005101 | 1,2-DICHLOROBENZENE | 95-50-1 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 1,3-DICHLOROBENZENE | 541-73-1 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 1,4-DICHLOROBENZENE | 106-46-7 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 30 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2,4-DICHLOROPHENOL | 120-83-2 | 30 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2,4-DIMETHYLPHENOL | 105-67-9 | 30 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2,4-DINITROPHENOL | 51-28-5 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2,4-DINITROTOLUENE | 121-14-2 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2,6-DINITROTOLUENE | 606-20-2 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2-CHLORONAPHTHALENE | 91-58-7 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2-CHLOROPHENOL | 95-57-8 | 30 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 30 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2-METHYLPHENOL | 95-48-7 | 30 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 2-NITROPHENOL | 88-75-5 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 20 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 3- AND 4-METHYLPHENOL | 108-44-5 | 50 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 4,4'-DDE | 72-55-9 | 0.2 | UG/KG | U | UJ | SED-D | 38.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |

6/11/98



R0063290

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 1 | 26005101 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 30 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | 4-NITROPHENOL | 100-02-7 | 30 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BETA-BHC (HCH) | 319-85-7 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 100 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | BUTYLBENZYLPHTHALATE | 85-68-7 | 30 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 100 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | CHLORDANE | 57-74-9 | 3 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | DELTA-BHC (HCH) | 319-86-8 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | DI-N-BUTYLPHTHALATE | 84-74-2 | 30 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | DI-N-OCTYLPHTHALATE | 117-84-0 | 60 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | DIELDRIN | 60-57-1 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | DIETHYLPHTHALATE | 84-66-2 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | DIMETHYLPHTHALATE | 131-11-3 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ENDOSULFAN I | 959-98-8 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ENDOSULFAN II | 33213-65-9 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ENDOSULFAN SULFATE | 1031-07-8 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ENDRIN | 72-20-8 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ENDRIN ALDEHYDE | 7421-93-4 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | HEPTACHLOR | 76-44-8 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | HEXACHLOROBENZENE | 118-74-1 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | HEXACHLOROBUTADIENE | 87-68-3 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | HEXACHLOROETHANE | 67-72-1 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | ISOPHORONE | 78-59-1 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.8 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | METHOXYCHLOR | 72-43-5 | 3 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 3 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | METHYLNAPHTHALENES | | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 1 | 26005101 | N-NITROSODIMETHYLAMINE | 62-75-9 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.3 | REG | 1 | 26005101 | N-NITROSODIPHENYLAMINE | 86-30-6 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | NITROBENZENE | 98-95-3 | 30 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PCB-1016 | 12674-11-2 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PCB-1221 | 11104-28-2 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PCB-1232 | 11141-16-5 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PCB-1242 | 53469-21-9 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PCB-1248 | 12672-29-6 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PCB-1254 | 11097-69-1 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PCB-1260 | 11096-82-5 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PENTACHLOROPHENOL | 87-86-5 | 30 | UG/KG | U | U | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PHENOL | 108-95-2 | 30 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005101 | TOXAPHENE | 8001-35-2 | 20 | UG/KG | U | U | SED-D | 35.4 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 30 | UG/KG |
| 40018.3 | REG | 1 | 26005102 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | | | SED-D | 35.4 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005102 | BERYLLIUM, TOTAL | 7440-41-7 | 0.48 | MG/KG | | | SED-D | 35.4 | EPA 7080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 1 | 26005102 | CADMIUM, TOTAL | 7440-43-9 | 0.37 | MG/KG | | | SED-D | 35.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | CHROMIUM, TOTAL | 7440-47-3 | 34 | MG/KG | | | SED-D | 35.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.2 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | | | SED-D | 35.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.08 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | DIBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 35.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.5 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | LEAD, TOTAL | 7439-92-1 | 45 | MG/KG | | | SED-D | 35.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | MERCURY, TOTAL | 7439-97-6 | 0.18 | MG/KG | | | SED-D | 35.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.3 | REG | 1 | 26005102 | MONOBUTYLTIN | | 2 | UG/KG | U | U | SED-D | 35.4 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | NICKEL, TOTAL | 7440-02-0 | 25 | MG/KG | | | SED-D | 35.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.03 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 35.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.3 | REG | 1 | 26005102 | SILVER, TOTAL | 7440-22-4 | 1.9 | MG/KG | | | SED-D | 35.4 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 5 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 35.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | TRIBUTYLTIN | 688-73-3 | 5.1 | UG/KG | | | SED-D | 35.4 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 40018.3 | REG | 1 | 26005102 | ZINC, TOTAL | 7440-66-6 | 98 | MG/KG | | | SED-D | 35.4 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.8 | MG/KG |
| 40018.3 | REG | 1 | 26005103 | CLAY | | 23.185 | PERCENT | | | SED-D | 35.4 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | 2 | MG/KG |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 1.95 MICRONS | | 61.794 | PERCENT | | | SED-D | 39.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.831 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 125 MICRONS | | 11.872 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.742 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 15.63 MICRONS | | 61.132 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 176.78 MICRONS | | 6.018 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.000 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 250 MICRONS | | 3.881 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 3.91 MICRONS | | 76.936 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 31.25 MICRONS | | 62.372 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 353.55 MICRONS | | 2.29 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 500 MICRONS | | 1.164 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 62.5 MICRONS | | 49.591 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 7.81 MICRONS | | 69.883 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.949 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | CUMULATIVE PERCENT > 88.39 MICRONS | | 57.699 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | GRAVEL | | 0.000 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | MEAN GRAIN SIZE | | 13.48 | UM | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | MEDIAN GRAIN SIZE | | 37.444 | UM | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.3 | REG | 1 | 26005103 | SAND | | 42.592 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005103 | SILT | | 33.554 | PERCENT | | | SED-D | 35.4 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018.3 | REG | 1 | 26005104 | TOTAL ORGANIC CARBON | | 0.891 | PERCENT | | | SED-D | 35.4 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 40018.3 | REG | 2 | 26005201 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 4,4'-DDD | 72-54-8 | 6.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 6.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 4,4'-DDE | 72-55-9 | 7.2 | UG/KG | | | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 6.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 4,4'-DDT | 50-29-3 | 6.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 6.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | 4-NITROPHENOL | 100-02-7 | 50 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 50 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ALDRIN | 309-00-2 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ALPHA-BHC (HCH) | 319-84-6 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BENZIDINE | 92-87-5 | 60 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BETA-BHC (HCH) | 319-85-7 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 60 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | DELTA-BHC (HCH) | 319-86-8 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | DI-N-OCTYLPHTHALATE | 117-84-0 | 84 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | DIELDRIN | 60-57-1 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.3 | REG | 2 | 26005201 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ENDOSULFAN I | 959-98-8 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ENDOSULFAN II | 33213-65-9 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ENDOSULFAN SULFATE | 1031-07-8 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ENDRIN | 72-20-8 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ENDRIN ALDEHYDE | 7421-93-4 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | HEPTACHLOR | 76-44-8 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.6 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | N NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PENTACHLOROPHENOL | 87-86-5 | 50 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018.3 | REG | 2 | 26005201 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 17.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005202 | ANTIMONY, TOTAL | 7440-36-0 | 0.6 | MG/KG | U | U | SED-D | 17.6 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018.3 | REG | 2 | 26005202 | ARSENIC, TOTAL | 7440-38-2 | 2.2 | MG/KG | | | SED-D | 17.6 | EPA 7041 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | BERYLLIUM, TOTAL | 7440-41-7 | 0.24 | MG/KG | | | SED-D | 17.6 | EPA 7090 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | CADMIUM, TOTAL | 7440-43-9 | 0.53 | MG/KG | | | SED-D | 17.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | CHROMIUM, TOTAL | 7440-47-3 | 16 | MG/KG | | | SED-D | 17.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | COPPER, TOTAL | 7440-50-8 | 11 | MG/KG | | | SED-D | 17.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 17.6 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | LEAD, TOTAL | 7439-92-1 | 8.1 | MG/KG | | | SED-D | 17.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 2 | 26005202 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 17.6 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 17.6 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | NICKEL, TOTAL | 7440-02-0 | 12 | MG/KG | | | SED-D | 17.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018.3 | REG | 2 | 26005202 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 17.6 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | SILVER, TOTAL | 7440-22-4 | 0.85 | MG/KG | | | SED-D | 17.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018.3 | REG | 2 | 26005202 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | U | SED-D | 17.6 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |



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Subsurface Sediment Analytical Data

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| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 2 | 26005202 | TRIBUTYLTIN | 688-73-3 | 3.2 | UG/KG | | U | SED-D | 17.6 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 2 | 26005202 | ZINC, TOTAL | 7440-66-6 | 38 | MG/KG | | | SED-D | 17.6 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 2 | 26005203 | CLAY | | 12.048 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 1.95 MICRONS | | 88.578 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.522 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 125 MICRONS | | 29.081 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.318 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 15.63 MICRONS | | 78.172 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 176.78 MICRONS | | 17.242 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.207 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 250 MICRONS | | 9.674 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 3.91 MICRONS | | 87.952 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 31.25 MICRONS | | 85.646 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 353.56 MICRONS | | 3.88 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 500 MICRONS | | 1.594 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 62.5 MICRONS | | 49.808 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 7.81 MICRONS | | 83.065 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.622 | PERCENT | | | SED-D | 17.3 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | CUMULATIVE PERCENT > 88.39 MICRONS | | 39.5 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | GRAVEL | | 0.207 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | MEAN GRAIN SIZE | | 35.79 | UM | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | MEDIAN GRAIN SIZE | | 61.445 | UM | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | SAND | | 49.399 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005203 | SILT | | 39.346 | PERCENT | | | SED-D | 17.6 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 2 | 26005204 | TOTAL ORGANIC CARBON | | 0.167 | PERCENT | | | SED-D | 17.6 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 40018 3 | REG | 3 | 26005301 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 3- AND 4-METHYLPHENOL | 108-44-6 | 40 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 4,4'-DDD | 72-54-8 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 4,4'-DDE | 72-55-9 | 0.1 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 4,4'-DDT | 50-29-3 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | 4-NITROPHENOL | 100-02-7 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |

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Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 3 | 26005301 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ALDRIN | 309-00-2 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ALPHA-BHC (HCH) | 319-84-6 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BENZIDINE | 92-87-5 | 60 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BETA-BHC (HCH) | 319-85-7 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 60 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 60 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | DELTA-BHC (HCH) | 319-86-8 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | J | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | DI-N-OCTYLPHTHALATE | 117-84-0 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | DIELDRIN | 60-57-1 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ENDOSULFAN I | 959-98-8 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ENDOSULFAN II | 33213-65-9 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ENDOSULFAN SULFATE | 1031-07-8 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ENDRIN | 72-20-8 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ENDRIN ALDEHYDE | 7421-93-4 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | HEPTACHLOR | 76-44-8 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.6 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |

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R0063296

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 3 | 26005301 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005301 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 16.2 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 3 | 26005302 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | U | SED-D | 16.2 | EPA 7041 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | ARSENIC, TOTAL | 7440-38-2 | 3.3 | MG/KG | | | SED-D | 16.2 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | BERYLLIUM, TOTAL | 7440-41-7 | 0.8 | MG/KG | | | SED-D | 16.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | CADMIUM, TOTAL | 7440-43-9 | 0.33 | MG/KG | | | SED-D | 16.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | CHROMIUM, TOTAL | 7440-47-3 | 30 | MG/KG | | | SED-D | 16.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | COPPER, TOTAL | 7440-50-8 | 25 | MG/KG | | | SED-D | 16.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | LEAD, TOTAL | 7439-92-1 | 11 | MG/KG | | | SED-D | 16.2 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | MERCURY, TOTAL | 7439-97-6 | 0.038 | MG/KG | | | SED-D | 16.2 | QC-FPD | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 16.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 3 | 26005302 | NICKEL, TOTAL | 7440-02-0 | 24 | MG/KG | | | SED-D | 16.2 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | U | SED-D | 16.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | SILVER, TOTAL | 7440-22-4 | 1.8 | MG/KG | | | SED-D | 16.2 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | U | SED-D | 16.2 | QC-FPD | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 3 | 26005302 | TRIBUTYLTIN | 688-73-3 | 2 | UG/KG | | | SED-D | 16.2 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 3 | 26005302 | ZINC, TOTAL | 7440-66-6 | 68 | MG/KG | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 3 | 26005303 | CLAY | | 19.694 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 1.96 MICRONS | | 85.101 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.291 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 125 MICRONS | | 84.784 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0.18 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 15.63 MICRONS | | 69.936 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 176.77 MICRONS | | 14.972 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 2000 MICRONS | | 0.156 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 250 MICRONS | | 7.279 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 3.91 MICRONS | | 80.996 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 31.25 MICRONS | | 58.034 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 353.55 MICRONS | | 4.246 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 500 MICRONS | | 1.189 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 62.5 MICRONS | | 44.052 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 7.81 MICRONS | | 76.891 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.55 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | CUMULATIVE PERCENT > 88.39 MICRONS | | 38.264 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | GRAVEL | | 0.155 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | MEAN GRAIN SIZE | | 30.024 | UM | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | MEDIAN GRAIN SIZE | | 46.539 | UM | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | SAND | | 43.997 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005303 | SILT | | 38.944 | PERCENT | | | SED-D | 16.2 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 3 | 26005304 | TOTAL ORGANIC CARBON | | 0.085 | PERCENT | | | SED-D | 16.2 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 40018 3 | REG | 4 | 26005401 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 16.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 16.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 16.6 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |



R0063297

-2603

VOL 18

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Validator Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018.3 | REG | 4 | 26005401 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2,4-DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 40 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 4,4'-DDD | 72-54-8 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 4,4'-DDE | 72-55-9 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 4,4'-DDT | 50-29-3 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 4-CHLORO-3 METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | 4-NITROPHENOL | 100-02-7 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ALDRIN | 309-00-2 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ALPHA BHC (HCH) | 319-84-6 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BENZIDINE | 92-87-5 | 60 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 60 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BETA-BHC (HCH) | 319-85-7 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 60 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 80 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | DELTA-BHC (HCH) | 319-86-8 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 2 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | DI-N-OCTYLPHTHALATE | 117-84-0 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | DIELDRIN | 60-57-1 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 20 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ENDOSULFAN I | 959-98-8 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ENDOSULFAN II | 33213-65-9 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | W | 10 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ENDOSULFAN SULFATE | 1031-07-8 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| 40018.3 | REG | 4 | 26005401 | ENDRIN | 72-20-8 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | W | 0.6 | UG/KG |
| | | | | | | | | | | | | | | | | | 0.6 | UG/KG |

8/11/98



R0063298

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 4 | 26005401 | ENDRIN ALDEHYDE | 7421-93-4 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | HEPTACHLOR | 76-44-8 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.6 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 4 | 26005101 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005401 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 16.8 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 4 | 26005402 | ANTIMONY, TOTAL | 7440-36-0 | 0.6 | MG/KG | U | U | SED-D | 16.8 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005402 | ARSENIC, TOTAL | 7440-38-2 | 4.8 | MG/KG | U | U | SED-D | 16.8 | EPA 7041 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 4 | 26005402 | BERYLLIUM, TOTAL | 7440-41-7 | 0.48 | MG/KG | U | U | SED-D | 16.8 | EPA 7080 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | CADMIUM, TOTAL | 7440-43-9 | 0.11 | MG/KG | U | U | SED-D | 16.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | CHROMIUM, TOTAL | 7440-47-3 | 30 | MG/KG | U | U | SED-D | 16.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | COPPER, TOTAL | 7440-50-8 | 22 | MG/KG | U | U | SED-D | 16.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | DIBUTYLTIN | | 1 | UG/KG | J | J | SED-D | 16.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | LEAD, TOTAL | 7439-92-1 | 9.6 | MG/KG | U | U | SED-D | 16.8 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 16.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 4 | 26005402 | MONOBUTYLTIN | | 1 | UG/KG | J | J | SED-D | 16.8 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | NICKEL, TOTAL | 7440-02-0 | 22 | MG/KG | U | U | SED-D | 16.8 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | U | SED-D | 16.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 4 | 26005402 | SILVER, TOTAL | 7440-22-4 | 1.7 | MG/KG | U | U | SED-D | 16.8 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | U | SED-D | 16.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | U | SED-D | 16.8 | EPA 7041 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 4 | 26005402 | ZINC, TOTAL | 7440-66-6 | 40 | MG/KG | U | U | SED-D | 16.8 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 4 | 26005403 | CLAY | | 19.311 | PERCENT | | | SED-D | 16.8 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 0.00 MICRONS | | 100 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 1.95 MICRONS | | 80.577 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.013 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |



R0063299

E7263

VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 125 MICRONS | | 15.198 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 15.63 MICRONS | | 65.127 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 176.78 MICRONS | | 6.901 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 250 MICRONS | | 2.584 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 3.91 MICRONS | | 80.689 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 31.25 MICRONS | | 51.108 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.319 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 500 MICRONS | | 0.238 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 62.5 MICRONS | | 34.903 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 7.81 MICRONS | | 76.059 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.073 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | CUMULATIVE PERCENT > 88.39 MICRONS | | 26.455 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | GRAVEL | | 0 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | MEAN GRAIN SIZE | | 17.258 | UM | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | MEDIAN GRAIN SIZE | | 32.767 | UM | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | SAND | | 34.903 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005403 | SILT | | 45.788 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 4 | 26005404 | TOTAL ORGANIC CARBON | | 0.098 | PERCENT | | | SED-D | 16.8 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005501 | 1,2,4-TRICHLOROBENZENE | 120-82-1 | 10 | UG/KG | U | U | SED-D | 16.7 | MENZEL&VACCARO | VBCORE | SED | SEDIMENT | VV | | |
| 40018 3 | REG | 5 | 26005501 | 1,2-DICHLOROBENZENE | 95-50-1 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 1,3-DICHLOROBENZENE | 541-73-1 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 1,4-DICHLOROBENZENE | 106-46-7 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2,4,6-TRICHLOROPHENOL | 88-06-2 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2,4 DICHLOROPHENOL | 120-83-2 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2,4-DIMETHYLPHENOL | 105-67-9 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2,4-DINITROPHENOL | 51-28-5 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2,4-DINITROTOLUENE | 121-14-2 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2,6-DINITROTOLUENE | 606-20-2 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2-CHLORONAPHTHALENE | 91-58-7 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2-CHLOROPHENOL | 95-57-8 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2-METHYL-4,6-DINITROPHENOL | 534-52-1 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2-METHYLPHENOL | 95-48-7 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 2-NITROPHENOL | 88-75-5 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 3,3-DICHLOROBENZIDINE | 91-94-1 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 3- AND 4-METHYLPHENOL | 108-44-5 | 40 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 40 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 4,4'-DDE | 72-55-9 | 11 | UG/KG | | | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 4,4'-DDT | 50-29-3 | 0.8 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 4-BROMOPHENYLPHENYLETHER | 101-55-3 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 4-CHLORO-3-METHYLPHENOL | 59-50-7 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 4-CHLOROPHENYLPHENYLETHER | 7005-72-3 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | 4-NITROPHENOL | 100-02-7 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ALDRIN | 309-00-2 | 0.8 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ALPHA-BHC (HCH) | 319-84-6 | 0.8 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 0.8 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BENZIDINE | 92-87-5 | 80 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| | | | | | | | | | | | | | | | | | 10 | UG/KG |



R0063300

C0267

V01 178

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 5 | 26005501 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BETA-BHC (HCH) | 319-85-7 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BIS(2-CHLOROETHOXY)METHANE | 111-91-1 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BIS(2-CHLOROETHYL)ETHER | 111-44-4 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BIS(2-CHLOROISOPROPYL)ETHER | 39638-32-9 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BIS(2-ETHYLHEXYL)PHTHALATE | 117-81-7 | 80 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 80 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | BUTYLBENZYLPHTHALATE | 85-68-7 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | CHLORDANE | 57-74-9 | 2 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | DELTA-BHC (HCH) | 319-86-8 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | DI-N-BUTYLPHTHALATE | 84-74-2 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | DI-N-OCTYLPHTHALATE | 117-84-0 | 84 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | DIELDRIN | 60-57-1 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | DIETHYLPHTHALATE | 84-66-2 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | DIMETHYLPHTHALATE | 131-11-3 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ENDOSULFAN I | 959-98-8 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ENDOSULFAN II | 33213-65-9 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ENDOSULFAN SULFATE | 1031-07-8 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ENDRIN | 72-20-8 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ENDRIN ALDEHYDE | 7421-93-4 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | HEPTACHLOR | 76-44-8 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | HEXACHLOROBENZENE | 118-74-1 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | HEXACHLOROBUTADIENE | 87-68-3 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | HEXACHLOROCYCLOPENTADIENE | 77-47-4 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | HEXACHLOROETHANE | 67-72-1 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | ISOPHORONE | 78-59-1 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | LINDANE (GAMMA-BHC) | 58-89-9 | 0.6 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 0.6 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | METHOXYCHLOR | 72-43-5 | 2 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 2 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | METHYLNAPHTHALENES | | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | N-NITROSODI-N-PROPYLAMINE | 621-64-7 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | N-NITROSODIMETHYLAMINE | 62-75-9 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | N-NITROSODIPHENYLAMINE | 86-30-6 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | NAPHTHALENE | 91-20-3 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | NITROBENZENE | 98-95-3 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PCB-1016 | 12674-11-2 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PCB-1221 | 11104-28-2 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PCB-1232 | 11141-16-5 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PCB-1242 | 53469-21-9 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PCB-1248 | 12672-29-6 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PCB-1254 | 11097-69-1 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PCB-1260 | 11096-82-5 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PENTACHLOROPHENOL | 87-86-5 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |



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VOA 18

Subsurface Sediment Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (cm) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40018 3 | REG | 5 | 26005501 | PHENOL | 108-95-2 | 20 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 20 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8270 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005501 | TOXAPHENE | 8001-35-2 | 10 | UG/KG | U | U | SED-D | 16.7 | EPA 8080 | VBCORE | SED | SEDIMENT | VV | 10 | UG/KG |
| 40018 3 | REG | 5 | 26005502 | ANTIMONY, TOTAL | 7440-36-0 | 0.6 | MG/KG | U | U | SED-D | 16.7 | EPA 7041 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | ARSENIC, TOTAL | 7440-38-2 | 3.7 | MG/KG | | | SED-D | 16.7 | EPA 7060 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | BERYLLIUM, TOTAL | 7440-41-7 | 0.6 | MG/KG | | | SED-D | 16.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.1 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | CADMIUM, TOTAL | 7440-43-9 | 0.11 | MG/KG | | | SED-D | 16.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.06 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | CHROMIUM, TOTAL | 7440-47-3 | 29 | MG/KG | | | SED-D | 16.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | COPPER, TOTAL | 7440-50-8 | 32 | MG/KG | | | SED-D | 16.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | DIBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 16.7 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 5 | 26005502 | LEAD, TOTAL | 7439-92-1 | 0.6 | MG/KG | | | SED-D | 16.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | SED-D | 16.7 | EPA 7470 | VBCORE | SED | SEDIMENT | VV | 0.02 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | MONOBUTYLTIN | | 1 | UG/KG | U | U | SED-D | 16.7 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 5 | 26005502 | NICKEL, TOTAL | 7440-02-0 | 20 | MG/KG | | | SED-D | 16.7 | EPA 6010 | VBCOPE | SED | SEDIMENT | VV | 4 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | SED-D | 16.7 | EPA 7740 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | SILVER, TOTAL | 7440-22-4 | 1.7 | MG/KG | | | SED-D | 16.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | THALLIUM, TOTAL | 7440-28-0 | 0.6 | MG/KG | U | U | SED-D | 16.7 | EPA 7841 | VBCORE | SED | SEDIMENT | VV | 0.6 | MG/KG |
| 40018 3 | REG | 5 | 26005502 | TRIBUTYLTIN | 688-73-3 | 2.4 | UG/KG | | | SED-D | 16.7 | GC-FPD | VBCORE | SED | SEDIMENT | VV | 1 | UG/KG |
| 40018 3 | REG | 5 | 26005502 | ZINC, TOTAL | 7440-66-6 | 68 | MG/KG | | | SED-D | 16.7 | EPA 6010 | VBCORE | SED | SEDIMENT | VV | 1 | MG/KG |
| 40018 3 | REG | 5 | 26005503 | CLAY | | 10.667 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 0.98 MICRONS | | 100 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 1.96 MICRONS | | 89.457 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 1000 MICRONS | | 0.022 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 125 MICRONS | | 22.371 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 1414.21 MICRONS | | 0 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 15.63 MICRONS | | 88.321 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 176.78 MICRONS | | 11.084 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 2000 MICRONS | | 0 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 250 MICRONS | | 3.921 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 3.91 MICRONS | | 81.313 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 31.25 MICRONS | | 54.698 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 353.55 MICRONS | | 1.104 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 500 MICRONS | | 0.336 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 62.5 MICRONS | | 43.346 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 7.81 MICRONS | | 75.637 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 707.11 MICRONS | | 0.127 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | CUMULATIVE PERCENT > 88.39 MICRONS | | 56.575 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | GRAVEL | | 0 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | MEAN GRAIN SIZE | | 10.808 | UM | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | MEDIAN GRAIN SIZE | | 41.631 | UM | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | SAND | | 43.346 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005503 | SILT | | 37.998 | PERCENT | | | SED-D | 16.7 | PLUMB 1981 | VBCORE | SED | SEDIMENT | VU | | |
| 40018 3 | REG | 5 | 26005504 | TOTAL ORGANIC CARBON | | 0.017 | PERCENT | | | SED-D | 16.7 | MODIFIED WALKLEY-BLACK | VBCORE | SED | SEDIMENT | VV | | |

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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | REG | | 26030601 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | 4,4'-DDE | 72-55-9 | 35 | UG/KG | | | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26030601 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26030601 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7041 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26030601 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7060 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26030601 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.1 | MG/KG |
| A1 | REG | | 26030601 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26030601 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26030601 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26030601 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| A1 | REG | | 26030601 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| A1 | REG | | 26030601 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26030601 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF1 | | EPA 7421 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26030601 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | LIPIDS | | 1730 | MG/KG | | | FF1 | | EPA 8071 | TRAWL | FF1 | MFAUNA | VV | 50 | MG/KG |
| A1 | REG | | 26030601 | MERCURY, TOTAL | 7439-97-6 | 0.05 | MG/KG | U | U | FF1 | | EPA 7470 | TRAWL | FF1 | MFAUNA | VV | 0.01 | MG/KG |
| A1 | REG | | 26030601 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26030601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26030601 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 3 | MG/KG |
| A1 | REG | | 26030601 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26030601 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26030601 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26030601 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26030601 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26030601 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26030601 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26030601 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | FF1 | | EPA 7740 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26030601 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FF1 | | EPA 7760 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26030601 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7841 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26030601 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26030601 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| A1 | REG | | 26030601 | ZINC, TOTAL | 7440-66-6 | 6 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| A1 | REG | | 26030601 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | 4,4'-DDE | 72-55-9 | 20 | UG/KG | | | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26030601 | ACENAPHTHENE | 83-32-9 | 50 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 50 | UG/KG |
| A1 | REG | | 26030601 | ACENAPHTHYLENE | 208-96-8 | 50 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 50 | UG/KG |

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R0063303

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26030801 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7041 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26030801 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7060 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26030801 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.1 | MG/KG |
| R1 | REG | | 26030801 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26030801 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26030801 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26030801 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26030801 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26030801 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | FLUORENE | 86-73-7 | 50 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 50 | UG/KG |
| R1 | REG | | 26030801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF1 | | EPA 7421 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26030801 | LIPIDS | | 1900 | MG/KG | | | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26030801 | MERCURY, TOTAL | 7439-97-6 | 0.01 | MG/KG | U | U | FF1 | | EPA 7071 | TRAWL | FF1 | MFAUNA | VV | 50 | MG/KG |
| R1 | REG | | 26030801 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF1 | | EPA 7470 | TRAWL | FF1 | MFAUNA | VV | 0.01 | MG/KG |
| R1 | REG | | 26030801 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26030801 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 3 | MG/KG |
| R1 | REG | | 26030801 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FF1 | | EPA 7760 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26030801 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7841 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26030801 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26030801 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26030801 | ZINC, TOTAL | 7440-66-6 | 6 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031201 | 4,4'-DDD | 72-54-8 | 25 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26031201 | 4,4'-DDE | 72-55-9 | 1700 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031201 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031201 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF2 | | EPA 7041 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031201 | ARSENIC, TOTAL | 7440-38-2 | 1.8 | MG/KG | | | FF2 | | EPA 7060 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| | | | | | | | | | | | | | | | | | 0.5 | MG/KG |

8/11/05



R0063304

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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26031201 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.1 | MG/KG |
| R1 | REG | | 26031201 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031201 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031201 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031201 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26031201 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031201 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031201 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF2 | | EPA 7421 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | LIPIDS | | 73000 | MG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031201 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | U | U | FF2 | | EPA 8071 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031201 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF2 | | EPA 7470 | TRAWL | FF2 | MFAUNA | VV | 50 | MG/KG |
| R1 | REG | | 26031201 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.01 | MG/KG |
| R1 | REG | | 26031201 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031201 | NICKEL, TOTAL | 7440-02-0 | 2 | MG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031201 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 40 | UG/KG |
| R1 | REG | | 26031201 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 2 | MG/KG |
| R1 | REG | | 26031201 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031201 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031201 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031201 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031201 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031201 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031201 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031201 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF2 | | EPA 7740 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031201 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF2 | | EPA 7841 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031201 | TRIBUTYLTIN | 688-73-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031201 | ZINC, TOTAL | 7440-66-6 | 8 | MG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031301 | 4,4'-DDD | 72-54-8 | 13 | UG/KG | U | U | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26031301 | 4,4'-DDE | 72-55-9 | 660 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031301 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031301 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ANTHRACENE | 120-12-7 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF2 | | EPA 7041 | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031301 | ARSENIC, TOTAL | 7440-38-2 | 0.9 | MG/KG | | | FF2 | | EPA 7060 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031301 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031301 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |

8/11/98



R0063305

C09269

VOL 18

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26031301 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031301 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031301 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031301 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26031301 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031301 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | FLUORANTHENE | 206-44-0 | 30 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031301 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF2 | | EPA 7421 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031301 | LIPIDS | | 69100 | MG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031301 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | | | FF2 | | EPA 7071 | TRAWL | FF2 | MFAUNA | VV | 50 | MG/KG |
| R1 | REG | | 26031301 | METHOXYCHLOR | 72-43-5 | 90 | UG/KG | U | U | FF2 | | EPA 7470 | TRAWL | FF2 | MFAUNA | VV | 0.01 | MG/KG |
| R1 | REG | | 26031301 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031301 | NAPHTHALENE | 91-20-3 | 60 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031301 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 60 | UG/KG |
| R1 | REG | | 26031301 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 3 | MG/KG |
| R1 | REG | | 26031301 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031301 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031301 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031301 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031301 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031301 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031301 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031301 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031301 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF2 | | EPA 7740 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031301 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF2 | | EPA 7841 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031301 | TRIBUTYLTIN | 688-73-3 | 10 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031301 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031401 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26031401 | 4,4'-DDE | 72-55-9 | 820 | UG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031401 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031401 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ANTHRACENE | 120-12-7 | 30 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031401 | ARSENIC, TOTAL | 7440-38-2 | 1.2 | MG/KG | | | FF2 | | EPA 7841 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031401 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF2 | | EPA 7580 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031401 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 0.1 | MG/KG |
| R1 | REG | | 26031401 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| | | | | | | | | | | | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |

8/11/95



R0063306

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26031401 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031401 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26031401 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031401 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | FLUORANTHENE | 206-44-0 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031401 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF2 | | EPA 7421 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031401 | LIPIDS | | 63000 | MG/KG | | | FF2 | | EPA 9071 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26031401 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | J | J | FF2 | | EPA 7470 | TRAWL | FF2 | MFAUNA | VV | 50 | MG/KG |
| R1 | REG | | 26031401 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.01 | MG/KG |
| R1 | REG | | 26031401 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26031401 | NAPHTHALENE | 91-20-3 | 69 | UG/KG | J | J | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26031401 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | J | J | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 60 | UG/KG |
| R1 | REG | | 26031401 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 3 | MG/KG |
| R1 | REG | | 26031401 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031401 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031401 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031401 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031401 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031401 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031401 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031401 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF2 | | EPA 7740 | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| R1 | REG | | 26031401 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF2 | | EPA 7841 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031401 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26031401 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | J | J | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26031401 | ZINC, TOTAL | 7440-66-6 | 8 | MG/KG | J | J | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032401 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26032401 | 4,4'-DDE | 72-55-9 | 57 | UG/KG | J | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 8 | UG/KG |
| R1 | REG | | 26032401 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032401 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032401 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032401 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032401 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 8 | UG/KG |
| R1 | REG | | 26032401 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032401 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032401 | ARSENIC, TOTAL | 7440-38-2 | 0.7 | MG/KG | J | J | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032401 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032401 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| R1 | REG | | 26032401 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032401 | CHLORDANE | 57-74-9 | 50 | UG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032401 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032401 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| | | | | | | | | | | | | | | | | | 1 | MG/KG |

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R006330B



| Station ID | Sample Type | Bottom Depth | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Result Notation | Method | Collection | Matrix | Station Type | Lineage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26032401 | DELTA-BHC (HCH) | 319-86-8 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | DIBUTYLTIN | | 1 | UGKG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UGKG |
| R1 | REG | | 26032401 | DIELDRIN | 60-57-1 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | ENDOSULFAN I | 959-98-8 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | ENDOSULFAN II | 33213-65-9 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | ENDRIN | 72-20-8 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | FLUORANTHENE | 206-44-0 | 10 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | FLUORENE | 86-73-7 | 10 | UGKG | | | FW1 | | GCMS | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | HEPTACHLOR | 76-44-8 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | LEAD, TOTAL | 7439-92-1 | 0.5 | MGKG | | | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MGKG |
| R1 | REG | | 26032401 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032401 | LIPIDS | | 7600 | MGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 50 | MGKG |
| R1 | REG | | 26032401 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MGKG | | | FW1 | | EPA 8071 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MGKG |
| R1 | REG | | 26032401 | METHOXYCHLOR | 72-43-5 | 20 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UGKG |
| R1 | REG | | 26032401 | MONOBUTYLTIN | | 1 | UGKG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UGKG |
| R1 | REG | | 26032401 | NAPHTHALENE | 91-20-3 | 20 | UGKG | | | FW1 | | GCMS | TRAWL | FW1 | MFAUNA | VV | 20 | UGKG |
| R1 | REG | | 26032401 | NICKEL, TOTAL | 7440-02-0 | 3 | MGKG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MGKG |
| R1 | REG | | 26032401 | PCB 1016 | 12674-11-2 | 100 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | PCB-1221 | 11104-28-2 | 100 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | PCB-1232 | 11141-16-5 | 100 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | PCB-1242 | 53469-21-9 | 100 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | PCB-1248 | 12672-29-6 | 100 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | PCB-1254 | 11097-69-1 | 100 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | PCB-1260 | 11096-82-5 | 100 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | PHENANTHRENE | 85-01-8 | 10 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032401 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MGKG | | | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MGKG |
| R1 | REG | | 26032401 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MGKG | | | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MGKG |
| R1 | REG | | 26032401 | TOXAPHENE | 8001-35-2 | 100 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | TRIBUTYLTIN | 688-73-3 | 3.9 | UGKG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 100 | UGKG |
| R1 | REG | | 26032401 | ZINC, TOTAL | 7440-66-6 | 10 | MGKG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | UGKG |
| R1 | REG | | 26032501 | 4,4'-DDD | 72-54-8 | 8 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032501 | 4,4'-DDE | 72-55-9 | 8 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032501 | 4,4'-DDT | 50-29-3 | 8 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032501 | ACENAPHTHENE | 83-32-9 | 10 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032501 | ACENAPHTHYLENE | 208-96-8 | 10 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032501 | ALDRIN | 309-00-2 | 5 | UGKG | | | FW1 | | GCMS | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032501 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032501 | ANTHRACENE | 120-12-7 | 10 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032501 | ANTIMONY, TOTAL | 7440-36-0 | 0.6 | MGKG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MGKG |
| R1 | REG | | 26032501 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MGKG | | | FW1 | | EPA 7061 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MGKG |
| R1 | REG | | 26032501 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032501 | BENZO(A)PYRENE | 50-32-8 | 10 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032501 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UGKG | | | FW1 | | GCMS | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032501 | BENZO(G,H,I)PERYLENE | 191-24-2 | 10 | UGKG | | | FW1 | | GCMS | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032501 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UGKG | | | FW1 | | GCMS | TRAWL | FW1 | MFAUNA | VV | 10 | UGKG |
| R1 | REG | | 26032501 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MGKG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MGKG |
| R1 | REG | | 26032501 | BETA-BHC (HCH) | 319-85-7 | 5 | UGKG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UGKG |
| R1 | REG | | 26032501 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MGKG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MGKG |

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R006330B

R006330

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Lineage | Detection Limit | Detection Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26032501 | CHLORDANE | 57-74-9 | 20 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032501 | CHROMIUM, TOTAL | 7440-47-3 | 0.8 | MG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032501 | CHRYSENE | 218-01-9 | 10 | UG/KG | | | FW1 | | EPA 8310 | TRAWL | FW1 | MF AUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032501 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 1 | MG/KG |
| R1 | REG | | 26032501 | DELTA-BHC (PCH) | 319-86-8 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032501 | DIBUTYLTIN | | | | | | | | | | | | | | |
| R1 | REG | | 26032501 | DIELDRIN | 60-57-1 | 1 | UG/KG | | | FW1 | | OC-FPD | TRAWL | FW1 | MF AUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032501 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032501 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032501 | ENDOSULFAN SULFATE | 1031-07-8 | 10 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032501 | ENDRIN | 72-20-8 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032501 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032501 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032501 | FLUORENE | 86-73-7 | 10 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032501 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032501 | LEAD, TOTAL | 7439-92-1 | 0.8 | MG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032501 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032501 | MERCURY, TOTAL | 7439-97-6 | 4400 | MG/KG | | | FW1 | | EPA 7471 | TRAWL | FW1 | MF AUNA | VV | 0.8 | MG/KG |
| R1 | REG | | 26032501 | METHOXYCHLOR | 72-43-5 | 0.02 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 0.8 | MG/KG |
| R1 | REG | | 26032501 | MONOBUTYLTIN | | 20 | UG/KG | | | FW1 | | EPA 7473 | TRAWL | FW1 | MF AUNA | VV | 50 | MG/KG |
| R1 | REG | | 26032501 | NAPHTHALENE | 91-20-3 | 1 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032501 | NICKEL, TOTAL | 7440-02-0 | 20 | UG/KG | | | FW1 | | OC-FPD | TRAWL | FW1 | MF AUNA | VV | 0.01 | MG/KG |
| R1 | REG | | 26032501 | PCB-1016 | 12674-11-2 | 3 | MG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032501 | PCB-1221 | 11104-28-2 | 100 | UG/KG | | | FW1 | | EPA 8310 | TRAWL | FW1 | MF AUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032501 | PCB-1232 | 11141-16-5 | 100 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032501 | PCB-1242 | 53469-21-9 | 100 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 3 | MG/KG |
| R1 | REG | | 26032501 | PCB-1248 | 12672-29-6 | 100 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032501 | PCB-1254 | 11097-69-1 | 100 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032501 | PCB-1260 | 11096-82-5 | 100 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032501 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 10 | UG/KG |
| R1 | REG | | 26032501 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032501 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | | | FW1 | | EPA 7841 | TRAWL | FW1 | MF AUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032501 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032501 | TRIBUTYLTIN | 688-73-3 | 1.2 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032501 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | | | FW1 | | OC-FPD | TRAWL | FW1 | MF AUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032601 | 4,4'-DDD | 72-54-8 | 6 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032601 | 4,4'-DDE | 72-55-9 | 41 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | ALDRIN | 309-00-2 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ALPHA-BHC (PCH) | 319-84-6 | 5 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ANTHRACENE | 120-12-7 | 20 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MF AUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032601 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | | | FW1 | | EPA 7061 | TRAWL | FW1 | MF AUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032601 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | | | FW1 | | EPA 7060 | TRAWL | FW1 | MF AUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | | | FW1 | | OC/MS | TRAWL | FW1 | MF AUNA | VV | 20 | UG/KG |



EE60 VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Basis | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26032601 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| R1 | REG | | 26032601 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032601 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032601 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26032601 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | DIBUTYLTIN | | 1 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032601 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032601 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26032601 | LIPIDS | | 4900 | MG/KG | | | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| R1 | REG | | 26032601 | MERCURY, TOTAL | 7439-97-6 | 0.01 | MG/KG | U | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| R1 | REG | | 26032601 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032601 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 40 | UG/KG |
| R1 | REG | | 26032601 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| R1 | REG | | 26032601 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032601 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032601 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032601 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032601 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032601 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032601 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032601 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26032601 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032601 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26032601 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26032601 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26032601 | ZINC, TOTAL | 7440-66-6 | 7 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26035701 | 4,4'-DDD | 72-54-8 | 12 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035701 | 4,4'-DDE | 72-55-9 | 220 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035701 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035701 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035701 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035701 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |



R0063310

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | REG | | 26035701 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035701 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035701 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| A1 | REG | | 26035701 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035701 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26035701 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035701 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | COPPER, TOTAL | 7440-50-8 | 3 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| A1 | REG | | 26035701 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | DIBUTYLTIN | | 1 | UG/KG | U | U | FW1 | | QC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| A1 | REG | | 26035701 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | ENDOSULFAN II | 33213-65-9 | 9.4 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | LIPIDS | | 9360 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035701 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | FW1 | | EPA 8071 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035701 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| A1 | REG | | 26035701 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| A1 | REG | | 26035701 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26035701 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26035701 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| A1 | REG | | 26035701 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035701 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035701 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035701 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035701 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035701 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035701 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035701 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035701 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035701 | TRIBUTYLTIN | 688-73-3 | 2.7 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035701 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | U | U | FW1 | | QC-FPD | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035701 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| | | | | | | | | | | | | | | | | | 3 | MG/KG |
| | | | | | | | | | | | | | | | | | 5 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26035801 | 4,4'-DDE | 72-55-9 | 180 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26035801 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26035801 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| R1 | REG | | 26035801 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26035801 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26035801 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26035801 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | COPPER, TOTAL | 7440-50-8 | 12 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26035801 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | DIBUTYLTIN | | 4 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26035801 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | FLUORENE | 86-73-7 | 10 | UG/KB | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26035801 | LIPIDS | | 11900 | MG/KG | | | FW1 | | EPA 8071 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26035801 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| R1 | REG | | 26035801 | METHOXYCHLOR | 72-43-5 | 50 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| R1 | REG | | 26035801 | NAPHTHALENE | 91-20-3 | 50 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26035801 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26035801 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| R1 | REG | | 26035801 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035801 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035801 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035801 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035801 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035801 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035801 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035801 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |



R0063312

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## Fish Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | REG | | 26035801 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | R3 | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035801 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| A1 | REG | | 26035801 | TRIBUTYLTIN | 688-73-3 | 12 | UG/KG | U | R3 | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| A1 | REG | | 26035801 | ZINC, TOTAL | 7440-66-6 | 20 | MG/KG | U | R3 | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| A1 | REG | | 26035901 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | 4,4'-DDE | 72-55-9 | 150 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | ALDRIN | 309-00-2 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | R3 | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | R3 | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035901 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035901 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | R3 | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| A1 | REG | | 26035901 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | R3 | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035901 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26035901 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | R3 | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035901 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | R3 | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| A1 | REG | | 26035901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | DIBUTYLTIN | | 4 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | R3 | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| A1 | REG | | 26035901 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | ENDRIN | 72-20-8 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | FLUORENE | 86-73-7 | 10 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| A1 | REG | | 26035901 | LIPIDS | | 9560 | MG/KG | | | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| A1 | REG | | 26035901 | MERCURY, TOTAL | 7439-97-6 | 0.01 | MG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| A1 | REG | | 26035901 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | R3 | FW1 | | EPA 8071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| A1 | REG | | 26035901 | MONOBUTYLTIN | | 1 | UG/KG | U | R3 | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| A1 | REG | | 26035901 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26035901 | NICKEL, TOTAL | 7440-02-0 | 5 | MG/KG | U | R3 | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| A1 | REG | | 26035901 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | R3 | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| A1 | REG | | 26035901 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | R3 | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| A1 | REG | | 26035901 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | R3 | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| | | | | | | | | | | | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |



R0063313

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Visage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26035901 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035901 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035901 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035901 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035901 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26035901 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | R | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26035901 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | R | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26035901 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26035901 | TRIBUTYLTIN | 688-73-3 | 13 | UG/KG | J | R | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26035901 | ZINC, TOTAL | 7440-66-6 | 10 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| R1 | REG | | 26037501 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | 4,4'-DDE | 72-55-9 | 8.3 | UG/KG | | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | ALDRIN | 309-00-2 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | R | FF1 | | EPA 7041 | TRAWL | FAU | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26037501 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | | R | FF1 | | EPA 7060 | TRAWL | FAU | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26037501 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | R | FF1 | | EPA 6010 | TRAWL | FAU | MFAUNA | VV | 0.1 | MG/KG |
| R1 | REG | | 26037501 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | R | FF1 | | EPA 6010 | TRAWL | FAU | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26037501 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26037501 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | R | FF1 | | EPA 6010 | TRAWL | FAU | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26037501 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | U | R | FF1 | | EPA 6010 | TRAWL | FAU | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26037501 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | DIBUTYLTIN | | 1 | UG/KG | U | R | FF1 | | GC-FPD | TRAWL | FAU | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26037501 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | ENDRIN | 72-20-8 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | FLUORENE | 86-73-7 | 10 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | R | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | R | FF1 | | EPA 7481 | TRAWL | FAU | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26037501 | LIPIDS | | 1300 | MG/KG | | R | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 5 | UG/KG |
| R1 | REG | | 26037501 | MERCURY, TOTAL | 7439-97-6 | 0.08 | MG/KG | | R | FF1 | | EPA 7471 | TRAWL | FAU | MFAUNA | VV | 50 | MG/KG |
| R1 | REG | | 26037501 | METHOXYCHLOR | 72-43-5 | 50 | UG/KG | U | R | FF1 | | EPA 7470 | TRAWL | FAU | MFAUNA | VV | 0.01 | MG/KG |
| | | | | | | | | | | | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 20 | UG/KG |



R0063314

C0938

VOL 18

## Fish Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | REG | | 26037501 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FAU | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26037501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 20 | UG/KG |
| R1 | REG | | 26037501 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | UJ | FF1 | | EPA 6010 | TRAWL | FAU | MFAUNA | VV | 3 | MG/KG |
| R1 | REG | | 26037501 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26037501 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26037501 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26037501 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26037501 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26037501 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26037501 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26037501 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FAU | MFAUNA | VV | 10 | UG/KG |
| R1 | REG | | 26037501 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7740 | TRAWL | FAU | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26037501 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7841 | TRAWL | FAU | MFAUNA | VV | 0.5 | MG/KG |
| R1 | REG | | 26037501 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FAU | MFAUNA | VV | 100 | UG/KG |
| R1 | REG | | 26037501 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FAU | MFAUNA | VV | 1 | UG/KG |
| R1 | REG | | 26037501 | ZINC, TOTAL | 7440-66-6 | 9 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FAU | MFAUNA | VV | 1 | MG/KG |
| R1 | REG | | 26040701 | BENZO(A)PYRENE, EQUIV | | 7.98 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040701 | NAPHTHALENE, EQUIV | | 122 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040701 | PHENANTHRENE, EQUIV | | 94.6 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040701 | PYRENE, EQUIV | | 60.4 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040801 | BENZO(A)PYRENE, EQUIV | | 5.63 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040801 | NAPHTHALENE, EQUIV | | 60.1 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040801 | PHENANTHRENE, EQUIV | | 58.3 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040801 | PYRENE, EQUIV | | 35.9 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040901 | BENZO(A)PYRENE, EQUIV | | 16.7 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040901 | NAPHTHALENE, EQUIV | | 208 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040901 | PHENANTHRENE, EQUIV | | 166 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R1 | REG | | 26040901 | PYRENE, EQUIV | | 118 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| R2 | REG | | 26030901 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | 4,4'-DDE | 72-55-9 | 75 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26030901 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26030901 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26030901 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26030901 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26030901 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26030901 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26030901 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26030901 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26030901 | COPPER, TOTAL | 7440-50-8 | 32 | MG/KG | J | J | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26030901 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | DIBUTYLTIN | | 1.4 | UG/KG | J | J | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26030901 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26030901 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |



R0063315

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Stable | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26030901 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26030901 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26030901 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26030901 | LEAD, TOTAL | 7439-92-1 | 1.1 | MG/KG | | | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26030901 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26030901 | LIPIDS | | 12900 | MG/KG | | | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| R2 | REG | | 26030901 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | | | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26030901 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26030901 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26030901 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26030901 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26030901 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26030901 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26030901 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26030901 | TRIBUTYLTIN | 688-73-3 | 3.3 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26030901 | ZINC, TOTAL | 7440-66-6 | 26 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031001 | 4,4'-DDD | 72-54-8 | 6.1 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | 4,4'-DDE | 72-55-9 | 110 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031001 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | FW1 | | EPA 7080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031001 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26031001 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031001 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031001 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031001 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |



R0063316

C0963

OCT 18

## Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26031001 | DIBUTYLTIN | | 1.8 | UG/KG | | J | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031001 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ENDRIN | 72-20-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | FLUORENE | 86-73-7 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031001 | LIPIDS | | 9460 | MG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031001 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | | J | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| R2 | REG | | 26031001 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26031001 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031001 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031001 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26031001 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031001 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031001 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031001 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031001 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031001 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031001 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031001 | PYRENE | 129-00-0 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031001 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031001 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031001 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031001 | TRIBUTYLTIN | 688-73-3 | 1.3 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031001 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | J | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031101 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031101 | 4,4'-DDE | 72-55-9 | 33 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031101 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | UJ | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031101 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26031101 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |



R0063317

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Basis | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26031101 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031101 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031101 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031101 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | COPPER, TOTAL | 7440-50-8 | 57 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031101 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031101 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ENDRIN | 72-20-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | LEAD, TOTAL | 7439-92-1 | 2 | MG/KG | | | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031101 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031101 | LIPIDS | | 2460 | MG/KG | | | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| R2 | REG | | 26031101 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | J | J | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26031101 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031101 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031101 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26031101 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031101 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031101 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031101 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031101 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031101 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031101 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031101 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031101 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031101 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031101 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031101 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031101 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | UJ | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031101 | ZINC, TOTAL | 7440-66-6 | 48 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031501 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | 4,4'-DDE | 72-55-9 | 39 | UG/KG | | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031501 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031501 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031501 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031501 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | | | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |



0.5

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V01 T8

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26031501 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26031501 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031501 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031501 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031501 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031501 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | DIBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031501 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031501 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | LIPIDS | | 6320 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031501 | MERCURY, TOTAL | 7439-97-6 | 0.07 | MG/KG | U | U | FW2 | | EPA 8071 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031501 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| R2 | REG | | 26031501 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26031501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031501 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031501 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031501 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26031501 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031501 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031501 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031501 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031501 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031501 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031501 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031501 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031501 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031501 | TRIBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031501 | ZINC, TOTAL | 7440-66-6 | 10 | MG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031601 | 4,4'-DDD | 72-54-8 | 47 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031601 | 4,4'-DDE | 72-55-9 | 910 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031601 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031601 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031601 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 7080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031601 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26031601 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |

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R0063319

5 6 5 3

0 1 7 8

0 1 0

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26031601 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031601 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031601 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031601 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | DIBUTYLTIN | DIBUT | 1 | UG/KG | U | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031601 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ENDRIN | 72-20-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031601 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031601 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031601 | LIPIDS | | 46000 | MG/KG | | J | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| R2 | REG | | 26031601 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | | J | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26031601 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031601 | MONOBUTYLTIN | MONOBUT | 1 | UG/KG | U | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031601 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26031601 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031601 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031601 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031601 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031601 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031601 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031601 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031601 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | | UJ | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 0.6 | MG/KG |
| R2 | REG | | 26031601 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.6 | MG/KG |
| R2 | REG | | 26031601 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031601 | TRIBUTYLTIN | 688-73-3 | 1.3 | UG/KG | | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031601 | ZINC, TOTAL | 7440-66-6 | 9 | MG/KG | | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031701 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | 4,4'-DDE | 72-55-9 | 230 | UG/KG | | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031701 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031701 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031701 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | | | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031701 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26031701 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031701 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031701 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031701 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26031701 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |



R0063320

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Visage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26031701 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26031701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031701 | LIPIDS | | 15100 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26031701 | MERCURY, TOTAL | 7439-97-6 | 0.05 | MG/KG | U | U | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| R2 | REG | | 26031701 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26031701 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031701 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26031701 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26031701 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26031701 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031701 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031701 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031701 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031701 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031701 | PCB 1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031701 | SELENIUM, TOTAL | 7782-49-2 | 0.7 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031701 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031701 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26031701 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26031701 | ZINC, TOTAL | 7440-66-6 | 9 | MG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26036001 | 4,4'-DDD | 72-54-8 | 40 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26036001 | 4,4'-DDE | 72-55-9 | 490 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036001 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036001 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036001 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036001 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036001 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036001 | ARSENIC, TOTAL | 7440-38-2 | 1.3 | MG/KG | U | U | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036001 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036001 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26036001 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | CHLORDANE | 57-74-9 | 50 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036001 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26036001 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036001 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26036001 | DIBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26036001 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | ENDOSULFAN II | 33213-65-9 | 30 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |

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R0063321

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V O L 1 8

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26036001 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036001 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036001 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036001 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036001 | LIPIDS | | 67800 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| R2 | REG | | 26036001 | MERCURY, TOTAL | 7439-97-6 | 0.07 | MG/KG | | | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26036001 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26036001 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26036001 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26036001 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036001 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036001 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036001 | TRIBUTYLTIN | 688-73-3 | 6.1 | UG/KG | | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036001 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26036101 | 4,4'-DDD | 72-54-8 | 18 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26036101 | 4,4'-DDE | 72-55-9 | 480 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | 4,4'-DDT | 50-29-3 | 8 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036101 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036101 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036101 | ALPHA-BHC (HCH) | 319-84-6 | 8 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | ANTIMONY, TOTAL | 7440-36-0 | 0.9 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036101 | ARSENIC, TOTAL | 7440-38-2 | 0.6 | MG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036101 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 7080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036101 | BETA-BHC (HCH) | 319-85-7 | 8 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26036101 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | CHLORDANE | 57-74-9 | 80 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036101 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26036101 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036101 | DELTA-BHC (HCH) | 319-86-8 | 8 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26036101 | DIBUTYLTIN | | 1 | UG/KG | | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036101 | DIELDRIN | 60-57-1 | 8 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26036101 | ENDOSULFAN I | 959-98-8 | 8 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | ENDOSULFAN II | 33213-65-9 | 8.3 | UG/KG | | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | ENDOSULFAN SULFATE | 1031-07-8 | 8 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | ENDRIN | 72-20-8 | 8 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036101 | ENDRIN ALDEHYDE | 7421-93-4 | 8 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036101 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |



R0063322

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AOI 18

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Media | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26036101 | FLUORENE | 86-73-7 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036101 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036101 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036101 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036101 | LIPIDS | | 49000 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| R2 | REG | | 26036101 | MERCURY, TOTAL | 7439-97-6 | 0.05 | MG/KG | U | UJ | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26036101 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26036101 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26036101 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26036101 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036101 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036101 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036101 | TRIBUTYLTIN | 688-73-3 | 1.8 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036101 | ZINC, TOTAL | 7440-66-6 | 15 | MG/KG | U | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | 4,4'-DDD | 72-54-8 | 8.1 | UG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26036201 | 4,4'-DDE | 72-55-9 | 240 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| R2 | REG | | 26036201 | 4,4'-DDT | 50-29-3 | 8 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| R2 | REG | | 26036201 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | ARSENIC, TOTAL | 7440-38-2 | 0.6 | MG/KG | U | UJ | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | UJ | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| R2 | REG | | 26036201 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| R2 | REG | | 26036201 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| R2 | REG | | 26036201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| R2 | REG | | 26036201 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |

8/11/98



R0063323

C0967-

VOA 78

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Media | Station Type | Lineage | Collection Limits | Detection Limits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R2 | REG | | 26036201 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | ENDRIN | 72-20-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | FLUORENE | 86-73-7 | 10 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | | FW2 | | QC/MS | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | | FW2 | | EPA 7421 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| R2 | REG | | 26036201 | LIPIDS | | 25600 | MG/KG | | | FW2 | | EPA 8071 | TRAWL | FW2 | MF AUNA | VV | 50 | MG/KG |
| R2 | REG | | 26036201 | MERCURY, TOTAL | 7439-97-6 | 0.07 | MG/KG | | | FW2 | | EPA 7470 | TRAWL | FW2 | MF AUNA | VV | 0.01 | MG/KG |
| R2 | REG | | 26036201 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 20 | UG/KG |
| R2 | REG | | 26036201 | NAPHTHALENE | 91-20-3 | 3 | MG/KG | | | FW2 | | QC/MS | TRAWL | FW2 | MF AUNA | VV | 3 | MG/KG |
| R2 | REG | | 26036201 | NICKEL, TOTAL | 7440-02-0 | 100 | UG/KG | U | | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | PYRENE | 129-00-0 | 10 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 10 | UG/KG |
| R2 | REG | | 26036201 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | | FW2 | | EPA 7740 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | SILVER, TOTAL | 7440-22-4 | 0.8 | MG/KG | U | | FW2 | | EPA 7760 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | U | | FW2 | | EPA 7841 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| R2 | REG | | 26036201 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | | FW2 | | QC/FPD | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| R2 | REG | | 26036201 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | 1 | MG/KG |
| R2 | REG | | 26041001 | BENZO(A)PYRENE, EQUIV | | 2.7 | MG/KG | | | FW2 | | KRAHN 1998 MOD | TRAWL | FW2 | MF AUNA | VV | | |
| R2 | REG | | 26041001 | NAPHTHALENE, EQUIV | | 74.9 | MG/KG | | | FW2 | | KRAHN 1998 MOD | TRAWL | FW2 | MF AUNA | VV | | |
| R2 | REG | | 26041001 | PHENANTHRENE, EQUIV | | 88.9 | MG/KG | | | FW2 | | KRAHN 1998 MOD | TRAWL | FW2 | MF AUNA | VV | | |
| R2 | REG | | 26041001 | PYRENE, EQUIV | | 28.5 | MG/KG | | | FW2 | | KRAHN 1998 MOD | TRAWL | FW2 | MF AUNA | VV | | |
| R2 | REG | | 26041101 | BENZO(A)PYRENE, EQUIV | | 1.84 | MG/L | | | FB1 | | KRAHN 1998 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| R2 | REG | | 26041101 | NAPHTHALENE, EQUIV | | 72.4 | MG/L | | | FB1 | | KRAHN 1998 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| R2 | REG | | 26041101 | PHENANTHRENE, EQUIV | | 45.8 | MG/L | | | FB1 | | KRAHN 1998 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| R2 | REG | | 26041101 | PYRENE, EQUIV | | 13.2 | MG/L | | | FB1 | | KRAHN 1998 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| R2 | REG | | 26041201 | BENZO(A)PYRENE, EQUIV | | 14.7 | MG/L | | | FB1 | | KRAHN 1998 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| R2 | REG | | 26041201 | NAPHTHALENE, EQUIV | | 312 | MG/L | | | FB1 | | KRAHN 1998 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| R2 | REG | | 26041201 | PHENANTHRENE, EQUIV | | 250 | MG/L | | | FB1 | | KRAHN 1998 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| R2 | REG | | 26041201 | PYRENE, EQUIV | | 110 | MG/L | | | FB1 | | KRAHN 1998 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| 11 | REG | | 26030001 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | FF1 | MF AUNA | VV | 5 | UG/KG |
| 11 | REG | | 26030001 | 4,4'-DDE | 72-55-9 | 200 | UG/KG | | | FF1 | | EPA 8080 | TRAWL | FF1 | MF AUNA | VV | 10 | UG/KG |
| 11 | REG | | 26030001 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | FF1 | MF AUNA | VV | 5 | UG/KG |
| 11 | REG | | 26030001 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | FF1 | MF AUNA | VV | 10 | UG/KG |
| 11 | REG | | 26030001 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | | FF1 | | QC/MS | TRAWL | FF1 | MF AUNA | VV | 10 | UG/KG |
| 11 | REG | | 26030001 | ALDRIN | 309-00-2 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | FF1 | MF AUNA | VV | 5 | UG/KG |
| 11 | REG | | 26030001 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | FF1 | MF AUNA | VV | 5 | UG/KG |
| 11 | REG | | 26030001 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | | FF1 | | QC/MS | TRAWL | FF1 | MF AUNA | VV | 10 | UG/KG |
| 11 | REG | | 26030001 | ANTHRACENE, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | | FF1 | | EPA 7041 | TRAWL | FF1 | MF AUNA | VV | 0.8 | MG/KG |

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Solitons | Method | Collection | Starts | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | REG | | 26030001 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | | U | FF1 | | EPA 7060 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030001 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.1 | MG/KG |
| T1 | REG | | 26030001 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030001 | CHLORDANE | 57-74-9 | 20 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030001 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030001 | CHRYSENE | 218-01-9 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26030001 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | DIBUTYLTIN | | 1 | UG/KG | | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26030001 | DIELDRIN | 60-57-1 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | ENDRIN | 72-20-8 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | FLUORENE | 86-73-7 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | | U | FF1 | | EPA 7421 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030001 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030001 | LIPIDS | | 967 | MG/KG | | | FF1 | | EPA 9071 | TRAWL | FF1 | MFAUNA | VV | 90 | MG/KG |
| T1 | REG | | 26030001 | MERCURY, TOTAL | 7439-97-6 | 0.17 | MG/KG | | U | FF1 | | EPA 7470 | TRAWL | FF1 | MFAUNA | VV | 0.01 | MG/KG |
| T1 | REG | | 26030001 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030001 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030001 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 3 | MG/KG |
| T1 | REG | | 26030001 | PCB 1016 | 12674-11-2 | 100 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030001 | PCB-1221 | 11104-28-2 | 100 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030001 | PCB-1232 | 11141-16-5 | 100 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030001 | PCB-1242 | 53469-21-9 | 100 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030001 | PCB-1248 | 12672-29-6 | 100 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030001 | PCB-1254 | 11097-69-1 | 100 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030001 | PCB-1260 | 11096-82-5 | 100 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030001 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | PYRENE | 129-00-0 | 10 | UG/KG | | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26030001 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | | U | FF1 | | EPA 7740 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030001 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | | U | FF1 | | EPA 7760 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030001 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | | U | FF1 | | EPA 7841 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030001 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030001 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26030001 | ZINC, TOTAL | 7440-66-6 | 6 | MG/KG | | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26030201 | 4,4'-DDD | 72-54-8 | 9 | UG/KG | | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | 4,4'-DDE | 72-55-9 | 31 | UG/KG | | | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |



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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Basis | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | REG | | 26030201 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7041 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030201 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7060 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030201 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.1 | MG/KG |
| T1 | REG | | 26030201 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030201 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030201 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26030201 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | DIBUTYLTIN | | 1.4 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26030201 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | LIPIDS | | 1430 | MG/KG | | | FF1 | | EPA 7421 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030201 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030201 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF1 | | EPA 7471 | TRAWL | FF1 | MFAUNA | VV | 80 | MG/KG |
| T1 | REG | | 26030201 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | FF1 | | EPA 7470 | TRAWL | FF1 | MFAUNA | VV | 0.01 | MG/KG |
| T1 | REG | | 26030201 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030201 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 3 | MG/KG |
| T1 | REG | | 26030201 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030201 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030201 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030201 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030201 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030201 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030201 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7740 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |



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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | REG | | 26030201 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FF1 | | EPA 7760 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030201 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7841 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030201 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030201 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | | J | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26030201 | ZINC, TOTAL | 7440-66-6 | 5 | MG/KG | | J | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26030301 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | 4,4'-DDE | 72-55-9 | 52 | UG/KG | | J | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | ANTHRACENE | 120-12-7 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7041 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030301 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7060 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030301 | BENZO(A)ANTHRACENE | 56-55-3 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | BENZO(A)PYRENE | 50-32-8 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | BENZO(B)FLUORANTHENE | 205-99-2 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | BENZO(GHI)PERYLENE | 191-24-2 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | BENZO(K)FLUORANTHENE | 207-08-9 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.1 | MG/KG |
| T1 | REG | | 26030301 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030301 | CHLORDANE | 57-74-9 | 50 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 50 | UG/KG |
| T1 | REG | | 26030301 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030301 | CHRYSENE | 218-01-9 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | J | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26030301 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | DIBUTYLTIN | | 1 | UG/KG | | J | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26030301 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | FLUORANTHENE | 206-44-0 | 30 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 30 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF1 | | EPA 7421 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030301 | LIPIDS | | 2980 | MG/KG | | J | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030301 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | | J | FF1 | | EPA 7071 | TRAWL | FF1 | MFAUNA | VV | 80 | MG/KG |
| T1 | REG | | 26030301 | METHOXYCHLOR | 72-43-5 | 30 | UG/KG | U | U | FF1 | | EPA 7470 | TRAWL | FF1 | MFAUNA | VV | 0.01 | MG/KG |
| T1 | REG | | 26030301 | NAPHTHALENE | 91-20-3 | 60 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030301 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | J | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 60 | UG/KG |
| T1 | REG | | 26030301 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 3 | MG/KG |
| T1 | REG | | 26030301 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030301 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |

8/11/98



R0063327

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | REG | | 26030301 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030301 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030301 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030301 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030301 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | PYRENE | 129-00-0 | 30 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 30 | UG/KG |
| T1 | REG | | 26030301 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7740 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030301 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FF1 | | EPA 7760 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030301 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7841 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030301 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26030301 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26030301 | ZINC, TOTAL | 7440-66-6 | 6 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26030501 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | 4,4'-DDE | 72-55-9 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | ACENAPHTHENE | 83-32-9 | 40 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | ACENAPHTHYLENE | 208-96-8 | 40 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | ALDRIN | 309-00-2 | 8 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | ANTHRACENE | 120-12-7 | 40 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | U | U | FF1 | | EPA 7041 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030501 | BENZO(A)ANTHRACENE | 56-55-3 | 40 | UG/KG | U | U | FF1 | | EPA 7060 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030501 | BENZO(A)PYRENE | 50-32-8 | 40 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | BENZO(B)FLUORANTHENE | 205-99-2 | 40 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | BENZO(GHI)PERYLENE | 191-24-2 | 40 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | BENZO(K)FLUORANTHENE | 207-08-9 | 40 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.1 | MG/KG |
| T1 | REG | | 26030501 | CADMIUM, TOTAL | 7440-43-9 | 0.8 | MG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030501 | CHROMIUM, TOTAL | 7440-47-3 | 0.8 | MG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26030501 | CHRYSENE | 218-01-9 | 40 | UG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.8 | MG/KG |
| T1 | REG | | 26030501 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26030501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 40 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26030501 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | ENDOSULFAN SULFATE | 1031-07-8 | 8 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | FLUORANTHENE | 206-44-0 | 40 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | FLUORENE | 86-73-7 | 40 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 40 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26030501 | LEAD, TOTAL | 7439-92-1 | 0.8 | MG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26030501 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF1 | | EPA 7421 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26030501 | LIPIDS | | 719 | MG/KG | | | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | EPA 9071 | TRAWL | FF1 | MFAUNA | VV | 50 | MG/KG |



R0063328

R006332



| Station ID | Sample Type | Station Depth | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Validator Qualifier | Result Type | Result Fraction | Method | Collection | Matrix | Station Type | Sample | Detection Limit | Detection Limit Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26030501 | REG | | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 20 | UG/KG |
| 26030501 | REG | | NAPHTHALENE | 91-20-3 | 80 | UG/KG | U | | FF1 | | GC/MS | TRAWL | MF AUNA | VV | | 80 | UG/KG |
| 26030501 | REG | | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | MF AUNA | VV | | 3 | MG/KG |
| 26030501 | REG | | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | PHENANTHRENE | 85-01-8 | 40 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | PYRENE | 129-00-0 | 40 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | | FF1 | | EPA 7740 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26030501 | REG | | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | | FF1 | | EPA 7760 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26030501 | REG | | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | | FF1 | | EPA 7841 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26030501 | REG | | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26030501 | REG | | TRIBUTYLTIN | 688-73-3 | 1 | MG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26030501 | REG | | ZINC, TOTAL | 7440-66-6 | 9 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26032101 | REG | | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | | FF1 | | GC-PID | TRAWL | MF AUNA | VV | | 1 | MG/KG |
| 26032101 | REG | | 4,4'-DDE | 72-55-9 | 60 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ALDRIN | 309-00-2 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | | FF1 | | EPA 7041 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26032101 | REG | | ARSENIC, TOTAL | 7440-38-2 | 0.7 | MG/KG | | | FF1 | | EPA 7060 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26032101 | REG | | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | | FF1 | | EPA 7091 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26032101 | REG | | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | | FF1 | | EPA 6010 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26032101 | REG | | CHLORDANE | 57-74-9 | 20 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 20 | UG/KG |
| 26032101 | REG | | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26032101 | REG | | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26032101 | REG | | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | DIBUTYLTIN | | 1.7 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 1 | MG/KG |
| 26032101 | REG | | DIELDRIN | 60-57-1 | 5 | UG/KG | U | | FF1 | | GC-PID | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 1 | UG/KG |
| 26032101 | REG | | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ENDRIN | 72-20-8 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | FLUORENE | 86-73-7 | 9 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | HEPTACHLOR | 76-44-8 | 10 | UG/KG | U | | FF1 | | GC/MS | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | MF AUNA | VV | | 0.5 | MG/KG |
| 26032101 | REG | | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | LIPIDS | | 5700 | MG/KG | | | FF1 | | EPA 7471 | TRAWL | MF AUNA | VV | | 100 | UG/KG |
| 26032101 | REG | | MERCURY, TOTAL | 7439-97-6 | 0.01 | MG/KG | | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 10 | UG/KG |
| 26032101 | REG | | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | | FF1 | | EPA 8080 | TRAWL | MF AUNA | VV | | 5 | UG/KG |
| 26032101 | REG | | MONOBUTYLTIN | | 1 | UG/KG | U | | FF1 | | GC-PID | TRAWL | MF AUNA | VV | | 1 | UG/KG |



E5603

VOL 18

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | REG | | 26032101 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032101 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T1 | REG | | 26032101 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032101 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032101 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032101 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032101 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032101 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032101 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032101 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032101 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032101 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032101 | TRIBUTYLTIN | 688-73-3 | 3.4 | UG/KG | | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26032101 | ZINC, TOTAL | 7440-66-6 | 9 | MG/KG | | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26032201 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | 4,4'-DDE | 72-55-9 | 25 | UG/KG | | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26032201 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26032201 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032201 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032201 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T1 | REG | | 26032201 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032201 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032201 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032201 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26032201 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | DIBUTYLTIN | | 1.4 | UG/KG | | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26032201 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T1 | REG | | 26032201 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032201 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032201 | LIPIDS | | 5120 | MG/KG | | | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T1 | REG | | 26032201 | MERCURY, TOTAL | 7439-97-6 | 0.01 | MG/KG | | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T1 | REG | | 26032201 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032201 | MONOBUTYLTIN | | 1 | UG/KG | | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26032201 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032201 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T1 | REG | | 26032201 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032201 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032201 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |



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VO1 18

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | REG | | 26032201 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032201 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032201 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032201 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032201 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032201 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032201 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032201 | TRIBUTYLTIN | 688-73-3 | 2.9 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26032201 | ZINC, TOTAL | 7440-66-6 | 18 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26032301 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | 4,4'-DDE | 72-55-9 | 15 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032301 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032301 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032301 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 7080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032301 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T1 | REG | | 26032301 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032301 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032301 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032301 | DELTA BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26032301 | DIBUTYLTIN | | 1.9 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26032301 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032301 | LIPIDS | | 3440 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T1 | REG | | 26032301 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | FW1 | | EPA 7071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T1 | REG | | 26032301 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T1 | REG | | 26032301 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T1 | REG | | 26032301 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26032301 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 40 | UG/KG |
| T1 | REG | | 26032301 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T1 | REG | | 26032301 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032301 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032301 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032301 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032301 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032301 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032301 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |

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# Fish Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Solutions | Method | Collection | Matrix | Station Type | Mango | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | REG | | 26032301 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T1 | REG | | 26032301 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T1 | REG | | 26032301 | TRIBUTYLTIN | 688-73-3 | 3.8 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T1 | REG | | 26032301 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T1 | REG | | 26040001 | BENZO(A)PYRENE, EQUIV | | 6.67 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040001 | NAPHTHALENE, EQUIV | | 153 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040001 | PHENANTHRENE, EQUIV | | 104 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040001 | PYRENE, EQUIV | | 82.8 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040201 | BENZO(A)PYRENE, EQUIV | | 3.99 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040201 | NAPHTHALENE, EQUIV | | 154 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040201 | PHENANTHRENE, EQUIV | | 78.7 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040201 | PYRENE, EQUIV | | 34.2 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040301 | BENZO(A)PYRENE, EQUIV | | 5.63 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040301 | NAPHTHALENE, EQUIV | | 104 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040301 | PHENANTHRENE, EQUIV | | 78.9 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040301 | PYRENE, EQUIV | | 43.2 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040501 | BENZO(A)PYRENE, EQUIV | | 4.08 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040501 | NAPHTHALENE, EQUIV | | 81.5 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040501 | PHENANTHRENE, EQUIV | | 51.3 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T1 | REG | | 26040501 | PYRENE, EQUIV | | 24.2 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T2 | REG | | 26030101 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | 4,4'-DDE | 72-55-9 | 25 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | ANTIMONY, TOTAL | 7440-36-0 | 0.6 | MG/KG | U | UJ | FF1 | | EPA 7041 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T2 | REG | | 26030101 | ARSENIC, TOTAL | 7440-38-2 | 0.6 | MG/KG | U | UJ | FF1 | | EPA 7060 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T2 | REG | | 26030101 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | UJ | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.1 | MG/KG |
| T2 | REG | | 26030101 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | UJ | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T2 | REG | | 26030101 | CHLORDANE | 57-74-9 | 50 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T2 | REG | | 26030101 | CHROMIUM, TOTAL | 7440-47-3 | 0.6 | MG/KG | U | UJ | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.6 | MG/KG |
| T2 | REG | | 26030101 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | UJ | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T2 | REG | | 26030101 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | UJ | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T2 | REG | | 26030101 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | ENDRIN | 72-20-8 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |



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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T2 | REG | | 26030101 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF1 | | EPA 7421 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T2 | REG | | 26030101 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T2 | REG | | 26030101 | LIPIDS | | 1090 | MG/KG | | | FF1 | | EPA 9071 | TRAWL | FF1 | MFAUNA | VV | 50 | MG/KG |
| T2 | REG | | 26030101 | MERCURY, TOTAL | 7439-97-6 | 0.13 | MG/KG | | | FF1 | | EPA 7470 | TRAWL | FF1 | MFAUNA | VV | 0.01 | MG/KG |
| T2 | REG | | 26030101 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T2 | REG | | 26030101 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T2 | REG | | 26030101 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 3 | MG/KG |
| T2 | REG | | 26030101 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T2 | REG | | 26030101 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T2 | REG | | 26030101 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T2 | REG | | 26030101 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T2 | REG | | 26030101 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T2 | REG | | 26030101 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T2 | REG | | 26030101 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T2 | REG | | 26030101 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 10 | UG/KG |
| T2 | REG | | 26030101 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7740 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T2 | REG | | 26030101 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FF1 | | EPA 7760 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T2 | REG | | 26030101 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7841 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T2 | REG | | 26030101 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T2 | REG | | 26030101 | TRIBUTYLTIN | 688-73-3 | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T2 | REG | | 26030101 | ZINC, TOTAL | 7440-66-6 | 5 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T2 | REG | | 26040101 | BENZO(A)PYRENE, EQUIV | | 88.8 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T2 | REG | | 26040101 | NAPHTHALENE, EQUIV | | 665 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T2 | REG | | 26040101 | PHENANTHRENE, EQUIV | | 538 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T2 | REG | | 26040101 | PYRENE, EQUIV | | 488 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T3 | REG | | 26032701 | 4,4'-DDD | 72-54-8 | 28 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | 4,4'-DDE | 72-55-9 | 210 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032701 | ARSENIC, TOTAL | 7440-38-2 | 1.4 | MG/KG | | | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032701 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T3 | REG | | 26032701 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032701 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26032701 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |

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VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T3 | REG | | 26032701 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T3 | REG | | 26032701 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | DIBUTYLTIN | | 1 | UG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26032701 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | ENDOSULFAN II | 33213-65-9 | 24 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | ENDRIN | 72-20-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | FLUORENE | 86-73-7 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032701 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032701 | LIPIDS | | 46700 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| T3 | REG | | 26032701 | MERCURY, TOTAL | 7439-97-6 | 0.07 | MG/KG | U | UJ | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T3 | REG | | 26032701 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26032701 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26032701 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26032701 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T3 | REG | | 26032701 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | PYRENE | 129-00-0 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032701 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032701 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7760 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032701 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032701 | TRIBUTYLTIN | 688-73-3 | 6.9 | UG/KG | J | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032701 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26032801 | 4,4'-DDD | 72-54-8 | 27 | UG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T3 | REG | | 26032801 | 4,4'-DDE | 72-55-9 | 210 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032801 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032801 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032801 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032801 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032801 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032801 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032801 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032801 | ARSENIC, TOTAL | 7440-38-2 | 1.1 | MG/KG | | | FW2 | | EPA 7061 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032801 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | UJ | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032801 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |



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Fish Tissue Analytical Data

CTO-0096

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Collection Limit | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T3 | REG | | 26032801 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | | 0.1 | MG/KG |
| T3 | REG | | 26032801 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | | 0.5 | MG/KG |
| T3 | REG | | 26032801 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 20 | UG/KG |
| T3 | REG | | 26032801 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | | 0.5 | MG/KG |
| T3 | REG | | 26032801 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | COPPER, TOTAL | 7440-50-8 | 3 | MG/KG | U | UJ | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | | 1 | MG/KG |
| T3 | REG | | 26032801 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | | 1 | UG/KG |
| T3 | REG | | 26032801 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | ENDOSULFAN II | 33213-65-9 | 26 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | ENDRIN | 72-20-8 | 9.4 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | FLUORENE | 86-73-7 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | UJ | FW2 | | EPA 8085 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW2 | | EPA 7481 | TRAWL | FW2 | MFAUNA | VV | | 0.5 | MG/KG |
| T3 | REG | | 26032801 | LIPIDS | | 41700 | MG/KG | | | FW2 | | EPA 6020 | TRAWL | FW2 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032801 | MERCURY, TOTAL | 7439-97-6 | 0.14 | MG/KG | | | FW2 | | EPA 8071 | TRAWL | FW2 | MFAUNA | VV | | 50 | MG/KG |
| T3 | REG | | 26032801 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | | 0.01 | MG/KG |
| T3 | REG | | 26032801 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 20 | UG/KG |
| T3 | REG | | 26032801 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | | 1 | UG/KG |
| T3 | REG | | 26032801 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 20 | UG/KG |
| T3 | REG | | 26032801 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | | 3 | MG/KG |
| T3 | REG | | 26032801 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 | UG/KG |
| T3 | REG | | 26032801 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 | UG/KG |
| T3 | REG | | 26032801 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 | UG/KG |
| T3 | REG | | 26032801 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 | UG/KG |
| T3 | REG | | 26032801 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 | UG/KG |
| T3 | REG | | 26032801 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 | UG/KG |
| T3 | REG | | 26032801 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 | UG/KG |
| T3 | REG | | 26032801 | PYRENE | 129-00-0 | 10 | UG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | U | UJ | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 10 | UG/KG |
| T3 | REG | | 26032801 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | | 0.5 | MG/KG |
| T3 | REG | | 26032801 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7760 | TRAWL | FW2 | MFAUNA | VV | | 0.5 | MG/KG |
| T3 | REG | | 26032801 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | UJ | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | | 0.5 | MG/KG |
| T3 | REG | | 26032801 | TRIBUTYLTIN | 688-73-3 | 3.3 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 | UG/KG |
| T3 | REG | | 26032801 | ZINC, TOTAL | 7440-66-6 | 15 | MG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | | 1 | UG/KG |
| T3 | REG | | 26032901 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | | 3 | MG/KG |
| T3 | REG | | 26032901 | 4,4'-DDE | 72-55-9 | 60 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032901 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | | 5 | UG/KG |
| T3 | REG | | 26032901 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | | 5 | UG/KG |
| | | | | | | | | | | | | GC/MS | TRAWL | FW1 | MFAUNA | VV | | 10 | UG/KG |

6/11/96



R0063335

C0956 VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T3 | REG | | 26032901 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032901 | ARSENIC, TOTAL | 7440-38-2 | 0.6 | MG/KG | | U | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032901 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T3 | REG | | 26032901 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032901 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26032901 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032901 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T3 | REG | | 26032901 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | DIBUTYLTIN | | 3 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26032901 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | LIPIDS | | 680 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032901 | MERCURY, TOTAL | 7439-97-6 | 0.05 | MG/KG | U | U | FW1 | | EPA 8071 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26032901 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T3 | REG | | 26032901 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T3 | REG | | 26032901 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26032901 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26032901 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26032901 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T3 | REG | | 26032901 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032901 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032901 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032901 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032901 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032901 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032901 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26032901 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032901 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |



R0063336

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Solutions | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T3 | REG | | 26032901 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26032901 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26032901 | TRIBUTYLTIN | 688-73-3 | 7.8 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26032901 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T3 | REG | | 26033001 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | 4,4'-DDE | 72-55-9 | 41 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033001 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033001 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T3 | REG | | 26033001 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033001 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26033001 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033001 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T3 | REG | | 26033001 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | DIBUTYLTIN | | 2 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26033001 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | ENDRIN | 72-20-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | FLUORENE | 86-73-7 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033001 | LIPIDS | | 3940 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033001 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | | | FW1 | | EPA 7471 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T3 | REG | | 26033001 | METHOXYCHLOR | 72-43-5 | 50 | UG/KG | U | UJ | FW1 | | EPA 7479 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T3 | REG | | 26033001 | MONOBUTYLTIN | | 1 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26033001 | NAPHTHALENE | 91-65-3 | 50 | UG/KG | U | UJ | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26033001 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26033001 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T3 | REG | | 26033001 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033001 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033001 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033001 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |



R0063337

C096

VOL 18

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T3 | REG | | 26033001 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033001 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033001 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033001 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033001 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033001 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033001 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033001 | TRIBUTYLTIN | 688-73-3 | 9.3 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26033001 | ZINC, TOTAL | 7440-66-6 | 10 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T3 | REG | | 26033101 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | 4,4'-DDE | 72-55-9 | 89 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033101 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033101 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T3 | REG | | 26033101 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033101 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26033101 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033101 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T3 | REG | | 26033101 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | DIBUTYLTIN | | 4 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26033101 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033101 | LIPIDS | | 6270 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T3 | REG | | 26033101 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | U | U | FW1 | | EPA 8071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T3 | REG | | 26033101 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T3 | REG | | 26033101 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T3 | REG | | 26033101 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T3 | REG | | 26033101 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| | | | | | | | | | | | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |

8/11/06



R0063338

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T3 | REG | | 26033101 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T3 | REG | | 26033101 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T3 | REG | | 26033101 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033101 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T3 | REG | | 26033101 | TRIBUTYLTIN | 688-73-3 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033201 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | U | U | FW1 | | QC-FPD | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033201 | 4,4'-DDE | 72-55-9 | 1000 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26033201 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | ANTIMONY, TOTAL | 7440-38-0 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | ARSENIC, TOTAL | 7440-36-2 | 1.2 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | FW2 | | EPA 7080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033201 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 0.8 | MG/KG |
| T4 | REG | | 26033201 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T4 | REG | | 26033201 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033201 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033201 | COPPER, TOTAL | 7440-50-8 | 4 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033201 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26033201 | DIBUTYLTIN | | 1.1 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | QC-FPD | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033201 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | ENDRIN | 72-20-8 | 33 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | LEAD, TOTAL | 7439-92-1 | 0.8 | MG/KG | U | J | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| | | | | | | | | | | | | | | | | | 0.8 | MG/KG |

8/11/98



R006339

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26033201 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033201 | LIPIDS | | 61500 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| T4 | REG | | 26033201 | MERCURY, TOTAL | 7439-97-6 | 0.08 | MG/KG | | | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T4 | REG | | 26033201 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033201 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033201 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033201 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26033201 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033201 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033201 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7760 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033201 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033201 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033201 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033301 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW2 | | EPA 8018 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26033301 | 4,4'-DDE | 72-55-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | ARSENIC, TOTAL | 7440-38-2 | 1.4 | MG/KG | | | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033301 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033301 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T4 | REG | | 26033301 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033301 | CHROMIUM, TOTAL | 7440-47-3 | 0.7 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033301 | COPPER, TOTAL | 7440-50-8 | 4 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26033301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | DIBUTYLTIN | | 5.5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033301 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033301 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033301 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |



R0063340

| Station ID | Sample Type | Station Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Lifestage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | REG | | 26033301 | ENDRIN | 72-20-8 | 5 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UGKG |
| 14 | REG | | 26033301 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UGKG |
| 14 | REG | | 26033301 | FLUORANTHENE | 206-44-0 | 20 | UGKG | | | FW2 | | GCMS | TRAWL | FW2 | MFAUNA | VV | 20 | UGKG |
| 14 | REG | | 26033301 | FLUORENE | 86-73-7 | 20 | UGKG | | | FW2 | | GCMS | TRAWL | FW2 | MFAUNA | VV | 20 | UGKG |
| 14 | REG | | 26033301 | HEPTACHLOR | 76-44-8 | 5 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UGKG |
| 14 | REG | | 26033301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UGKG |
| 14 | REG | | 26033301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UGKG | | | FW2 | | GCMS | TRAWL | FW2 | MFAUNA | VV | 20 | UGKG |
| 14 | REG | | 26033301 | LEAD, TOTAL | 7439-92-1 | 0.5 | MGKG | | | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MGKG |
| 14 | REG | | 26033301 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UGKG |
| 14 | REG | | 26033301 | LIPIDS | | 38000 | MGKG | | | FW2 | | EPA 8081 | TRAWL | FW2 | MFAUNA | VV | 50 | MGKG |
| 14 | REG | | 26033301 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MGKG | | | FW2 | | EPA 7471 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MGKG |
| 14 | REG | | 26033301 | METHOXYCHLOR | 72-43-5 | 20 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UGKG |
| 14 | REG | | 26033301 | MONOBUTYLTIN | | 1 | UGKG | | | FW2 | | QC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UGKG |
| 14 | REG | | 26033301 | NAPHTHALENE | 91-20-3 | 40 | UGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 40 | UGKG |
| 14 | REG | | 26033301 | NICKEL, TOTAL | 7440-02-0 | 3 | MGKG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MGKG |
| 14 | REG | | 26033301 | PCB-1016 | 12674-11-2 | 100 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033301 | PCB-1221 | 11104-28-2 | 100 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033301 | PCB-1232 | 11141-16-5 | 100 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033301 | PCB-1242 | 53469-21-9 | 100 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033301 | PCB-1248 | 12672-29-6 | 100 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033301 | PCB-1254 | 11097-69-1 | 100 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033301 | PCB-1260 | 11096-82-5 | 100 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033301 | PHENANTHRENE | 85-01-8 | 20 | UGKG | | | FW2 | | GCMS | TRAWL | FW2 | MFAUNA | VV | 20 | UGKG |
| 14 | REG | | 26033301 | PYRENE | 129-00-0 | 20 | UGKG | | | FW2 | | GCMS | TRAWL | FW2 | MFAUNA | VV | 20 | UGKG |
| 14 | REG | | 26033301 | SELENIUM, TOTAL | 7782-49-2 | 1 | MGKG | | | FW2 | | EPA 6020 | TRAWL | FW2 | MFAUNA | VV | 1 | MGKG |
| 14 | REG | | 26033301 | SILVER, TOTAL | 7440-22-4 | 0.5 | MGKG | | | FW2 | | EPA 7760 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MGKG |
| 14 | REG | | 26033301 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MGKG | | | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MGKG |
| 14 | REG | | 26033301 | TOXAPHENE | 8001-35-2 | 100 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033301 | TRIBUTYLTIN | 688-73-3 | 10 | UGKG | | | FW2 | | QC-FPD | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033301 | ZINC, TOTAL | 7440-66-6 | 14 | MGKG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MGKG |
| 14 | REG | | 26033501 | 4,4'-DDD | 72-54-8 | 10 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033501 | 4,4'-DDE | 72-55-9 | 200 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UGKG |
| 14 | REG | | 26033501 | 4,4'-DDT | 50-29-3 | 5 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UGKG |
| 14 | REG | | 26033501 | ACENAPHTHENE | 83-32-9 | 10 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | ACENAPHTHYLENE | 208-96-8 | 10 | UGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | ALDRIN | 309-00-2 | 5 | UGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 5 | UGKG |
| 14 | REG | | 26033501 | ALPHA-BHC (HCH) | 319-84-6 | 10 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | ANTHRACENE | 120-12-7 | 0.5 | MGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 0.5 | MGKG |
| 14 | REG | | 26033501 | ANTIMONY, TOTAL | 7440-36-0 | 1.4 | MGKG | | | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 1 | MGKG |
| 14 | REG | | 26033501 | ARSENIC, TOTAL | 7440-38-2 | 10 | UGKG | | | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | BENZO(A)PYRENE | 50-32-8 | 10 | UGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | BENZO(G,H,I)PERYLENE | 191-24-2 | 10 | UGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UGKG | | | FW2 | | QCMS | TRAWL | FW2 | MFAUNA | VV | 10 | UGKG |
| 14 | REG | | 26033501 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MGKG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MGKG |
| 14 | REG | | 26033501 | BETA-BHC (HCH) | 319-85-7 | 0.5 | MGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MGKG |
| 14 | REG | | 26033501 | CADMIUM, TOTAL | 7440-43-9 | 5 | UGKG | | | FW2 | | EPA 6020 | TRAWL | FW2 | MFAUNA | VV | 5 | UGKG |
| 14 | REG | | 26033501 | CHLORDANE | 57-74-9 | 20 | UGKG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UGKG |
| 14 | REG | | 26033501 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MGKG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MGKG |
| 14 | REG | | 26033501 | COPPER, TOTAL | 7440-50-8 | 10 | MGKG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 10 | MGKG |





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Fish Tissue Analytical Data

| Station ID | Sample Type | Station Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Result Validation | Method | Collection | Matrix | Station Type | Storage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26033501 | COPPER, TOTAL | 7440-50-8 | 3 | MG/KG | | U | FW2 | | EPA 6010 | TRAWL | FW2 | INFAUNA | VV | | 1 MG/KG |
| T4 | REG | | 26033501 | DELTA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | DIBUTYLTIN | | 3.3 | UG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 1 UG/KG |
| T4 | REG | | 26033501 | ENDOSULFAN II | 33213-65-9 | 20 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | ENDRIN | 72-20-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | | FW8 | | EPA 8080 | TRAWL | FW8 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | FLUORENE | 86-73-7 | 10 | UG/KG | U | | FW8 | | GC/MS | TRAWL | FW8 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | | | FW2 | | EPA 7421 | TRAWL | FW2 | INFAUNA | VV | | 0.5 MG/KG |
| T4 | REG | | 26033501 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | LIPIDS | | 8810 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | MERCURY, TOTAL | 7439-97-6 | 0.09 | MG/KG | | | FW2 | | EPA 7471 | TRAWL | FW2 | INFAUNA | VV | | 0.5 MG/KG |
| T4 | REG | | 26033501 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | MONOBUTYLTIN | | 1 | UG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | INFAUNA | VV | | 50 MG/KG |
| T4 | REG | | 26033501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 0.01 MG/KG |
| T4 | REG | | 26033501 | NICKEL, TOTAL | 7440-02-0 | 5 | MG/KG | | | FW2 | | EPA 7521 | TRAWL | FW2 | INFAUNA | VV | | 20 UG/KG |
| T4 | REG | | 26033501 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 1 UG/KG |
| T4 | REG | | 26033501 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 20 UG/KG |
| T4 | REG | | 26033501 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 2 MG/KG |
| T4 | REG | | 26033501 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 100 UG/KG |
| T4 | REG | | 26033501 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 100 UG/KG |
| T4 | REG | | 26033501 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 100 UG/KG |
| T4 | REG | | 26033501 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 100 UG/KG |
| T4 | REG | | 26033501 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | | FW8 | | EPA 8080 | TRAWL | FW8 | INFAUNA | VV | | 100 UG/KG |
| T4 | REG | | 26033501 | PYRENE | 129-00-0 | 10 | UG/KG | U | | FW8 | | GC/MS | TRAWL | FW8 | INFAUNA | VV | | 100 UG/KG |
| T4 | REG | | 26033501 | SELENIUM, TOTAL | 7782-49-2 | 1 | MG/KG | | | FW2 | | EPA 7740 | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | | | FW2 | | EPA 7760 | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | | | FW2 | | EPA 7841 | TRAWL | FW2 | INFAUNA | VV | | 0.5 MG/KG |
| T4 | REG | | 26033501 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 0.5 MG/KG |
| T4 | REG | | 26033501 | TRIBUTYLTIN | 688-73-3 | 7.7 | UG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | INFAUNA | VV | | 0.8 MG/KG |
| T4 | REG | | 26033501 | ZINC, TOTAL | 7440-66-6 | 18 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | INFAUNA | VV | | 100 UG/KG |
| T4 | REG | | 26033501 | 4,4'-DDD | 72-54-8 | 30 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 1 UG/KG |
| T4 | REG | | 26033501 | 4,4'-DDE | 72-55-9 | 480 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 3 MG/KG |
| T4 | REG | | 26033501 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | ALDRIN | 309-00-2 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | | FW8 | | EPA 8080 | TRAWL | FW8 | INFAUNA | VV | | 5 UG/KG |
| T4 | REG | | 26033501 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | | | FW2 | | EPA 7041 | TRAWL | FW2 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | ARSENIC, TOTAL | 7440-38-2 | 1.5 | MG/KG | | | FW2 | | EPA 7060 | TRAWL | FW2 | INFAUNA | VV | | 0.5 MG/KG |
| T4 | REG | | 26033501 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | | FW8 | | GC/MS | TRAWL | FW8 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | | FW8 | | GC/MS | TRAWL | FW8 | INFAUNA | VV | | 10 UG/KG |
| T4 | REG | | 26033501 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | | FW8 | | GC/MS | TRAWL | FW8 | INFAUNA | VV | | 10 UG/KG |



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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26033601 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T4 | REG | | 26033601 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033601 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033601 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033601 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26033601 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | DIBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033601 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | ENDOSULFAN II | 33213-65-9 | 35 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | LIPIDS | | 20700 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033601 | MERCURY, TOTAL | 7439-97-6 | 0.08 | MG/KG | U | U | FW2 | | EPA 8071 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 80 | MG/KG |
| T4 | REG | | 26033601 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T4 | REG | | 26033601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033601 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033601 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033601 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26033601 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033601 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033601 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033601 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033601 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033601 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033601 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033601 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033601 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7760 | TRAWL | FW2 | MFAUNA | VV | 0.8 | MG/KG |
| T4 | REG | | 26033601 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.8 | MG/KG |
| T4 | REG | | 26033601 | TRIBUTYLTIN | 688-73-3 | 7.9 | UG/KG | J | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033601 | ZINC, TOTAL | 7440-66-6 | 12 | MG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033601 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033601 | 4,4'-DDE | 72-55-9 | 17 | UG/KG | | | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26033601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033601 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |

8/11/98



R0063343

C0967

NOV 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26033801 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | ALPHA BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7041 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033801 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | U | U | FF1 | | EPA 7060 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033801 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.1 | MG/KG |
| T4 | REG | | 26033801 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033801 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033801 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26033801 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033801 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF1 | | EPA 7421 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | LIPIDS | | 1330 | MG/KG | | | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033801 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | U | U | FF1 | | EPA 8071 | TRAWL | FF1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033801 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF1 | | EPA 7470 | TRAWL | FF1 | MFAUNA | VV | 50 | MG/KG |
| T4 | REG | | 26033801 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 0.01 | MG/KG |
| T4 | REG | | 26033801 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033801 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 40 | UG/KG |
| T4 | REG | | 26033801 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26033801 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033801 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033801 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033801 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033801 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033801 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | FF1 | | GC/MS | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033801 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF1 | | EPA 7740 | TRAWL | FF1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033801 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF1 | | EPA 7841 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033801 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF1 | | EPA 8080 | TRAWL | FF1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033801 | TRIBUTYLTIN | 688-73-3 | 1.4 | UG/KG | U | U | FF1 | | GC-FPD | TRAWL | FF1 | MFAUNA | VV | 100 | UG/KG |
| | | | | | | | | | | | | | | | | | 1 | UG/KG |



R0063344

NOV 18 2008

## Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26033801 | ZINC, TOTAL | 7440-66-6 | 7 | MG/KG | | | FF1 | | EPA 6010 | TRAWL | FF1 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26033901 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | 4,4'-DDE | 72-55-9 | 52 | UG/KG | | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | ALDRIN | 309-00-2 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | R | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033901 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | | R | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033901 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | R | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T4 | REG | | 26033901 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | R | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033901 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | R | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033901 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | R | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033901 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | R | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26033901 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | DIBUTYLTIN | | 2.7 | UG/KG | | R | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033901 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033901 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | ENDRIN | 72-20-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | FLUORENE | 86-73-7 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | R | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | LIPIDS | | 7140 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033901 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | | R | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26033901 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | R | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 80 | MG/KG |
| T4 | REG | | 26033901 | MONOBUTYLTIN | | 1 | UG/KG | | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T4 | REG | | 26033901 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | R | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033901 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033901 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | R | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26033901 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26033901 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033901 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033901 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033901 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033901 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |



R0063345

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VOL 18

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26033901 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033901 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | PYRENE | 129-00-0 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26033901 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033901 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033901 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26033901 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26033901 | TRIBUTYLTIN | 688-73-3 | 7.6 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26033901 | ZINC, TOTAL | 7440-66-6 | 15 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26034001 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | 4,4'-DDE | 72-55-9 | 65 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | ALPHA BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | UJ | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T4 | REG | | 26034001 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26034001 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | COPPER, TOTAL | 7440-50-8 | 37 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26034001 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | DIBUTYLTIN | | 1 | UG/KG | U | UJ | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26034001 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ENDRIN | 72-20-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | FLUORENE | 86-73-7 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | LEAD, TOTAL | 7439-92-1 | 1.7 | MG/KG | | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | LIPIDS | | 7880 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | U | UJ | FW1 | | EPA 8071 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034001 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T4 | REG | | 26034001 | MONOBUTYLTIN | | 1 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| | | | | | | | | | | | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| | | | | | | | | | | | | | | | | | 1 | UG/KG |

8/11/95



R0063346

C-1863

OCT 18 AM

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26034001 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26034001 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | J | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26034001 | PCB-1016 | 12674-11-2 | 100 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034001 | PCB-1221 | 11104-28-2 | 100 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034001 | PCB-1232 | 11141-16-5 | 100 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034001 | PCB-1242 | 53469-21-9 | 100 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034001 | PCB-1248 | 12672-29-6 | 100 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034001 | PCB-1254 | 11097-69-1 | 100 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034001 | PCB-1260 | 11096-82-5 | 100 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034001 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | PYRENE | 129-00-0 | 10 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034001 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | | J | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | | J | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | | J | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034001 | TRIBUTYLTIN | 688-73-3 | 1.1 | UG/KG | | J | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034001 | ZINC, TOTAL | 7440-66-6 | 33 | MG/KG | | J | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26034101 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26034101 | 4,4'-DDE | 72-55-9 | 75 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | ALDRIN | 309-00-2 | 5 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | ANTHRACENE | 120-12-7 | 10 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | | J | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034101 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | | J | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034101 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | | J | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T4 | REG | | 26034101 | CADMIUM, TOTAL | 7440-43-9 | 0.6 | MG/KG | | J | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | CHLORDANE | 57-74-9 | 20 | UG/KG | | J | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034101 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26034101 | CHRYSENE | 218-01-9 | 10 | UG/KG | | J | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034101 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | | J | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26034101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | DIBUTYLTIN | | 2.7 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | DIELDRIN | 60-57-1 | 5 | UG/KG | | J | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26034101 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | ENDRIN | 72-20-8 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | FLUORENE | 86-73-7 | 10 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | | J | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| | | | | | | | | | | | | EPA 8081 | | | | | 5 | UG/KG |



R0063347

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Lineage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26034101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034101 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034101 | LIPIDS | | 6810 | MG/KG | | | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T4 | REG | | 26034101 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | | | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T4 | REG | | 26034101 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26034101 | MONOBUTYLTIN | | 1 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26034101 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26034101 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26034101 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T4 | REG | | 26034101 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034101 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034101 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034101 | TRIBUTYLTIN | 688-73-3 | 8.9 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034101 | ZINC, TOTAL | 7440-66-6 | 14 | MG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26034701 | 4,4'-DDD | 72-54-8 | 39 | UG/KG | | | FW2 | | EPA 8016 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26034701 | 4,4'-DDE | 72-55-9 | 370 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| T4 | REG | | 26034701 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| T4 | REG | | 26034701 | ACENAPHTHENE | 83-32-9 | 50 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | ACENAPHTHYLENE | 208-96-8 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 90 | UG/KG |
| T4 | REG | | 26034701 | ALDRIN | 309-00-2 | 8 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 90 | UG/KG |
| T4 | REG | | 26034701 | ALPHA-BHC (HCH) | 319-84-6 | 8 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| T4 | REG | | 26034701 | ANTHRACENE | 120-12-7 | 50 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 90 | UG/KG |
| T4 | REG | | 26034701 | ARSENIC, TOTAL | 7440-38-2 | 1.5 | MG/KG | | | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034701 | BENZO(A)ANTHRACENE | 56-55-3 | 50 | UG/KG | U | U | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034701 | BENZO(A)PYRENE | 50-32-8 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | BENZO(B)FLUORANTHENE | 205-99-2 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | BENZO(GHI)PERYLENE | 191-24-2 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | BENZO(K)FLUORANTHENE | 207-08-9 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | BETA-BHC (HCH) | 319-85-7 | 8 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T4 | REG | | 26034701 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034701 | CHROMIUM, TOTAL | 7440-47-3 | 0.7 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26034701 | CHRYSENE | 218-01-9 | 50 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034701 | COPPER, TOTAL | 7440-50-8 | 4 | MG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | DELTA-BHC (HCH) | 319-86-8 | 8 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T4 | REG | | 26034701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 50 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |
| T4 | REG | | 26034701 | DIBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | DIELDRIN | 60-57-1 | 8 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| | | | | | | | | | | | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 8 | UG/KG |



R0063348

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4 | REG | | 26034701 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | ENDOSULFAN II | 33213-65-9 | 31 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | ENDRIN | 72-20-8 | 7.5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | FLUORANTHENE | 206-44-0 | 50 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | FLUORENE | 86-73-7 | 50 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 50 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | | | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034701 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T4 | REG | | 26034701 | LIPIDS | | $1000 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| T4 | REG | | 26034701 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | | | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T4 | REG | | 26034701 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T4 | REG | | 26034701 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26034701 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | PHENANTHRENE | 85-01-8 | 50 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26034701 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T4 | REG | | 26034701 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034701 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034701 | TRIBUTYLTIN | 688-73-3 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T4 | REG | | 26034701 | ZINC, TOTAL | 7440-66-6 | 11 | UG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T4 | REG | | 26041401 | BENZO(A)PYRENE, EQUIV | | 10 | MG/KG | | | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T4 | REG | | 26041401 | NAPHTHALENE, EQUIV | | 11.4 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T4 | REG | | 26041401 | PHENANTHRENE, EQUIV | | 174 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T4 | REG | | 26041401 | PYRENE, EQUIV | | 139 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T4 | REG | | 26041501 | BENZO(A)PYRENE, EQUIV | | 96.8 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T4 | REG | | 26041501 | NAPHTHALENE, EQUIV | | 8.53 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T4 | REG | | 26041501 | PHENANTHRENE, EQUIV | | 96.5 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T4 | REG | | 26041501 | PYRENE, EQUIV | | 71.2 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26034201 | 4,4'-DDD | | 39.8 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26034201 | 4,4'-DDE | 72-54-8 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | 4,4'-DDT | 72-55-9 | 71 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ACENAPHTHENE | 50-29-3 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ACENAPHTHYLENE | 83-32-9 | 10 | UG/KG | U | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034201 | ALDRIN | 208-96-8 | 10 | UG/KG | U | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034201 | ALPHA-BHC (HCH) | 309-00-2 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ANTHRACENE | 319-84-6 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ANTIMONY, TOTAL | 120-12-7 | 10 | UG/KG | U | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ARSENIC, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034201 | BERYLLIUM, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | | FW1 | | EPA 7080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034201 | BETA-BHC (HCH) | 7440-41-7 | 0.1 | MG/KG | U | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034201 | CADMIUM, TOTAL | 319-85-7 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| | | | | | 7440-43-9 | 0.5 | MG/KG | | | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | | | | | | 0.5 | MG/KG |

8/11/06



R0063349

E-J6C3

VOL 18

Fish Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Assign | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 26034201 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034201 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034201 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T5 | REG | | 26034201 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | DIBUTYLTIN | | 2.1 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034201 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ENDOSULFAN II | 33213-65-9 | 13 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034201 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034201 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034201 | LIPIDS | | 7980 | MG/KG | | | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034201 | MERCURY, TOTAL | 7439-97-6 | 0.58 | MG/KG | | | FW1 | | EPA 7471 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T5 | REG | | 26034201 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T5 | REG | | 26034201 | MONOBUTYLTIN | | 1 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T5 | REG | | 26034201 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034201 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034201 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T5 | REG | | 26034201 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26034201 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034201 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034201 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034201 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034201 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034201 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034201 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | | | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034201 | SILVER, TOTAL | 7440-22-4 | 0.8 | MG/KG | | | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034201 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | | | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034201 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034201 | TRIBUTYLTIN | 688-73-3 | 7.9 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034201 | ZINC, TOTAL | 7440-66-6 | 18 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034301 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 2 | MG/KG |
| T5 | REG | | 26034301 | 4,4'-DDE | 72-55-9 | 180 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034301 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034301 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | | | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | | | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034301 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | | | FW1 | | EPA 7080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034301 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034301 | CADMIUM, TOTAL | 7440-43-9 | 0.6 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T5 | REG | | 26034301 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | | | | | | 20 | UG/KG |





R0063350

VOL 18 0974

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Stage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 26034301 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034301 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | UJ | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T5 | REG | | 26034301 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | DIBUTYLTIN | | 1.4 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034301 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ENDOSULFAN II | 33213-65-9 | 20 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ENDRIN | 72-20-8 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | FLUORENE | 86-73-7 | 10 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034301 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | LIPIDS | | 6810 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034301 | MERCURY, TOTAL | 7439-97-6 | 0.05 | MG/KG | U | UJ | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034301 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T5 | REG | | 26034301 | MONOBUTYLTIN | | 1 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T5 | REG | | 26034301 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | UJ | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034301 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034301 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034301 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26034301 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034301 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034301 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034301 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034301 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034301 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | UJ | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034301 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | UJ | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034301 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26034301 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW1 | | EPA 7760 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034301 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | UJ | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034301 | TRIBUTYLTIN | 688-73-3 | 6 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034301 | ZINC, TOTAL | 7440-66-6 | 6 | MG/KG | U | UJ | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | 4,4'-DDD | 72-54-8 | 16 | UG/KG | U | UJ | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034401 | 4,4'-DDE | 72-55-9 | 140 | UG/KG | U | UJ | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26034401 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | UJ | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | UJ | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | UJ | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ALDRIN | 309-00-2 | 5 | UG/KG | U | UJ | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T5 | REG | | 26034401 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T5 | REG | | 26034401 | ANTHRACENE | 120-12-7 | 30 | UG/KG | U | UJ | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | UJ | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | UJ | FF2 | | EPA 7041 | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T5 | REG | | 26034401 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | UJ | FF2 | | EPA 7080 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034401 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034401 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | UJ | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.1 | MG/KG |
| T5 | REG | | 26034401 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | UJ | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | UJ | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| | | | | | | | | | | | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| | | | | | | | | | | | | | | | | | 0.5 | MG/KG |

8/11/06



R0063351

5-J6C3

OCT 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 26034401 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| T5 | REG | | 26034401 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034401 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ENDOSULFAN II | 33213-65-9 | 30 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ENDRIN | 72-20-8 | 7.4 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | FLUORANTHENE | 206-44-0 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T5 | REG | | 26034401 | FLUORENE | 86-73-7 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T5 | REG | | 26034401 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | LEAD, TOTAL | 7439-92-1 | 4.2 | MG/KG | U | U | FF2 | | EPA 7421 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034401 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034401 | LIPIDS | | 88100 | MG/KG | | | FF2 | | EPA 9071 | TRAWL | FF2 | MFAUNA | VV | 50 | MG/KG |
| T5 | REG | | 26034401 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | | | FF2 | | EPA 7470 | TRAWL | FF2 | MFAUNA | VV | 0.01 | MG/KG |
| T5 | REG | | 26034401 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034401 | MONOBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034401 | NAPHTHALENE | 91-20-3 | 60 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 60 | UG/KG |
| T5 | REG | | 26034401 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26034401 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T5 | REG | | 26034401 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF2 | | EPA 7740 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034401 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FF2 | | EPA 7760 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034401 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF2 | | EPA 7841 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034401 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034401 | TRIBUTYLTIN | 688-73-3 | 0.7 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034401 | ZINC, TOTAL | 7440-66-6 | 10 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26034501 | 4,4'-DDD | 72-54-8 | 11 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034501 | 4,4'-DDE | 72-55-9 | 71 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034501 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034501 | ACENAPHTHENE | 83-32-9 | 60 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 60 | UG/KG |
| T5 | REG | | 26034501 | ACENAPHTHYLENE | 208-96-8 | 60 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 60 | UG/KG |
| T5 | REG | | 26034501 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034501 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034501 | ANTHRACENE | 120-12-7 | 60 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 60 | UG/KG |
| T5 | REG | | 26034501 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FF2 | | EPA 7041 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034501 | ARSENIC, TOTAL | 7440-38-2 | 1 | MG/KG | U | U | FF2 | | EPA 7060 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034501 | BENZO(A)ANTHRACENE | 56-55-3 | 30 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034501 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.1 | MG/KG |
| T5 | REG | | 26034501 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034501 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034501 | CHLORDANE | 57-74-9 | 50 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034501 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |



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Fish Tissue Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TS | REG | | 26034501 | CHRYSENE | 218-01-9 | 50 | UG/KG | U | J | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034501 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| TS | REG | | 26034501 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | DIBUTYLTIN | | 1 | UG/KG | U | J | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| TS | REG | | 26034501 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | ENDOSULFAN II | 33213-65-9 | 19 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | ENDRIN | 72-20-8 | 8.4 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | FLUORANTHENE | 206-44-0 | 80 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | FLUORENE | 86-73-7 | 80 | UG/KG | U | J | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034501 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | J | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | J | FF2 | | EPA 7421 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| TS | REG | | 26034501 | LIPIDS | | 49400 | MG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034501 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | U | J | FF2 | | EPA 7471 | TRAWL | FF2 | MFAUNA | VV | 50 | MG/KG |
| TS | REG | | 26034501 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.01 | MG/KG |
| TS | REG | | 26034501 | MONOBUTYLTIN | | 1 | UG/KG | U | J | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| TS | REG | | 26034501 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | J | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| TS | REG | | 26034501 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 3 | MG/KG |
| TS | REG | | 26034501 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | PHENANTHRENE | 85-01-8 | 50 | UG/KG | U | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | PYRENE | 129-00-0 | 80 | UG/KG | U | J | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034501 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | J | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034501 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | J | FF2 | | EPA 7760 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| TS | REG | | 26034501 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | J | FF2 | | EPA 7760 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| TS | REG | | 26034501 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | J | FF2 | | EPA 7841 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| TS | REG | | 26034501 | TRIBUTYLTIN | 688-73-3 | 4.7 | UG/KG | | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| TS | REG | | 26034501 | ZINC, TOTAL | 7440-66-6 | 6 | MG/KG | | | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| TS | REG | | 26034601 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | J | FW2 | | EPA 8016 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| TS | REG | | 26034601 | 4,4'-DDE | 72-55-9 | 450 | UG/KG | | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034601 | ACENAPHTHENE | 83-32-9 | 80 | UG/KG | U | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034601 | ACENAPHTHYLENE | 208-96-8 | 80 | UG/KG | U | J | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034601 | ALDRIN | 309-00-2 | 5 | UG/KG | U | J | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034601 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034601 | ANTHRACENE | 120-12-7 | 80 | UG/KG | U | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| TS | REG | | 26034601 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | J | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034601 | ARSENIC, TOTAL | 7440-38-2 | 1.8 | MG/KG | | | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| TS | REG | | 26034601 | BENZO(A)ANTHRACENE | 56-55-3 | 80 | UG/KG | U | J | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| TS | REG | | 26034601 | BENZO(A)PYRENE | 50-32-8 | 80 | UG/KG | U | J | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034601 | BENZO(B)FLUORANTHENE | 205-99-2 | 80 | UG/KG | U | J | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| TS | REG | | 26034601 | BENZO(GHI)PERYLENE | 191-24-2 | 80 | UG/KG | U | J | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 26034601 | BENZO(K)FLUORANTHENE | 207-08-9 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T5 | REG | | 26034601 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034601 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034601 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034601 | CHRYSENE | 218-01-9 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T5 | REG | | 26034601 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | DIBUTYLTIN | | 1.4 | UG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034601 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | FLUORANTHENE | 206-44-0 | 50 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | FLUORENE | 86-73-7 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 50 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034601 | LIPIDS | | 83100 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | U | U | FW2 | | EPA 8071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| T5 | REG | | 26034601 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T5 | REG | | 26034601 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034601 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034601 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26034601 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034601 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034601 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034601 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034601 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034601 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034601 | PHENANTHRENE | 85-01-8 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | SELENIUM, TOTAL | 7782-49-2 | 0.9 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034601 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034601 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034601 | TRIBUTYLTIN | 688-73-3 | 13 | UG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034601 | ZINC, TOTAL | 7440-66-6 | 10 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26034601 | 4,4'-DDD | 72-54-8 | 57 | UG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | 4,4'-DDE | 72-55-9 | 560 | UG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | ACENAPHTHENE | 83-32-9 | 50 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | ACENAPHTHYLENE | 208-96-8 | 50 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034601 | ANTHRACENE | 120-12-7 | 50 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034601 | ANTIMONY, TOTAL | 7440-36-0 | 0.6 | MG/KG | U | U | FF2 | | EPA 7041 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |



R0063354

Flux Tissue Analytical Data

| Station ID | Sample Type | Sample Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Validator Qualifier | Percent Moisture | Method Type | Method | Collection Quality | Station Type | Matrix | Description | Description Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 20034801 | ARSENIC, TOTAL | 7440-38-2 | 1.4 | MG/KG | | | | FF2 | EPA 7060 | | | SF ALUVA | VV | 0.5 MG/KG |
| T5 | REG | | 20034801 | BENZO(A)ANTHRACENE | 56-55-3 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | BENZO(A)PYRENE | 50-32-8 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | BENZO(B)FLUORANTHENE | 205-99-2 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | BENZO(GHI)PERYLENE | 191-24-2 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | BENZO(K)FLUORANTHENE | 207-08-9 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | | | | FF2 | EPA 6010 | | | TRAWL | FF2 | 0.1 MG/KG |
| T5 | REG | | 20034801 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | | | | FF2 | EPA 6010 | | | TRAWL | FF2 | 0.5 MG/KG |
| T5 | REG | | 20034801 | CHLORDANE | 57-74-9 | 20 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 20 UG/KG |
| T5 | REG | | 20034801 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | | | | FF2 | EPA 6010 | | | TRAWL | FF2 | 0.5 MG/KG |
| T5 | REG | | 20034801 | CHRYSENE | 218-01-9 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | | FF2 | EPA 6010 | | | TRAWL | FF2 | 1 MG/KG |
| T5 | REG | | 20034801 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | DIELDRIN | 60-57-1 | 5 | UG/KG | | | | FF2 | GC-FPD | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | ENDOSULFAN II | 33213-65-9 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | ENDRIN | 72-20-8 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | FLUORANTHENE | 206-44-0 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | FLUORENE | 86-73-7 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 50 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | LEAD, TOTAL | 7439-92-1 | 3 | MG/KG | | | | FF2 | EPA 6010 | | | TRAWL | FF2 | 3 MG/KG |
| T5 | REG | | 20034801 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | LIPIDS | | 0.05 | MG/KG | | | | FF2 | EPA 9071 | | | TRAWL | FF2 | 0.05 MG/KG |
| T5 | REG | | 20034801 | MERCURY, TOTAL | 7439-97-6 | 0.97 | MG/KG | | | | FF2 | EPA 7471 | | | TRAWL | FF2 | 0.01 MG/KG |
| T5 | REG | | 20034801 | METHOXYCHLOR | 72-43-5 | 50 | UG/KG | | | | FF2 | EPA 8081 | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | | | | FF2 | EPA 8260 | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | | FF2 | EPA 6010 | | | TRAWL | FF2 | 3 MG/KG |
| T5 | REG | | 20034801 | PCB-1016 | 12674-11-2 | 100 | UG/KG | | | | FF2 | EPA 8082 | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | PCB-1221 | 11104-28-2 | 100 | UG/KG | | | | FF2 | EPA 8082 | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | PCB-1232 | 11141-16-5 | 100 | UG/KG | | | | FF2 | EPA 8082 | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | PCB-1242 | 53469-21-9 | 100 | UG/KG | | | | FF2 | EPA 8082 | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | PCB-1248 | 12672-29-6 | 100 | UG/KG | | | | FF2 | EPA 8082 | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | PCB-1254 | 11097-69-1 | 100 | UG/KG | | | | FF2 | EPA 8082 | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | PCB-1260 | 11096-82-5 | 100 | UG/KG | | | | FF2 | EPA 8082 | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | PHENANTHRENE | 85-01-8 | 80 | UG/KG | | | | FF2 | EPA 8270 | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | | | | FF2 | EPA 7740 | | | TRAWL | FF2 | 0.5 MG/KG |
| T5 | REG | | 20034801 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | | | | FF2 | EPA 7841 | | | TRAWL | FF2 | 0.5 MG/KG |
| T5 | REG | | 20034801 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | | | | FF2 | EPA 8081 | | | TRAWL | FF2 | 50 UG/KG |
| T5 | REG | | 20034801 | TRIBUTYLTIN | 688-73-3 | 0.5 | MG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 0.5 MG/KG |
| T5 | REG | | 20034801 | ZINC, TOTAL | 7440-66-6 | 6 | MG/KG | | | | FF2 | EPA 6010 | | | TRAWL | FF2 | 1 MG/KG |
| T5 | REG | | 20034801 | 4,4'-DDD | 72-54-8 | 1 | UG/KG | | | | FF2 | GC-FPD | | | TRAWL | FF2 | 1 UG/KG |
| T5 | REG | | 20034801 | 4,4'-DDE | 72-55-9 | 100 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 100 UG/KG |
| T5 | REG | | 20034801 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | | | | FF2 | GCMS | | | TRAWL | FF2 | 5 UG/KG |
| T5 | REG | | 20034801 | ACENAPHTHENE | 83-32-9 | 80 | UG/KG | | | | FF2 | EPA 8270 | | | TRAWL | FF2 | 50 UG/KG |



R00063355

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 26034901 | ACENAPHTHYLENE | 208-96-8 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | ANTHRACENE | 120-12-7 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034901 | ARSENIC, TOTAL | 7440-38-2 | 1.1 | MG/KG | | | FW2 | | EPA 7060 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034901 | BENZO(A)ANTHRACENE | 56-55-3 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | BENZO(A)PYRENE | 50-32-8 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | BENZO(B)FLUORANTHENE | 205-99-2 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | BENZO(GHI)PERYLENE | 191-24-2 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | BENZO(K)FLUORANTHENE | 207-08-9 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | 0.1 | MG/KG |
| T5 | REG | | 26034901 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034901 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034901 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034901 | CHRYSENE | 218-01-9 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | 1 | MG/KG |
| T5 | REG | | 26034901 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | DIBUTYLTIN | | 1.9 | UG/KG | | U | FW2 | | GC-FPD | TRAWL | FW2 | MF AUNA | VV | 1 | UG/KG |
| T5 | REG | | 26034901 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | FLUORANTHENE | 206-44-0 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | FLUORENE | 86-73-7 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034901 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 5 | UG/KG |
| T5 | REG | | 26034901 | LIPIDS | | 30700 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MF AUNA | VV | 50 | MG/KG |
| T5 | REG | | 26034901 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | | | FW2 | | EPA 7470 | TRAWL | FW2 | MF AUNA | VV | 0.01 | MG/KG |
| T5 | REG | | 26034901 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | UJ | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 20 | UG/KG |
| T5 | REG | | 26034901 | NAPHTHALENE | 91-20-3 | 100 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | 3 | MG/KG |
| T5 | REG | | 26034901 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | PHENANTHRENE | 85-01-8 | 50 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | 50 | UG/KG |
| T5 | REG | | 26034901 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | | UJ | FW2 | | EPA 7740 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034901 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | UJ | FW2 | | EPA 7841 | TRAWL | FW2 | MF AUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26034901 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | 100 | UG/KG |
| T5 | REG | | 26034901 | TRIBUTYLTIN | 688-73-3 | 11 | UG/KG | | U | FW2 | | GC-FPD | TRAWL | FW2 | MF AUNA | VV | 1 | UG/KG |



R0063356

C3863

V01 T8

Fish Tissue Analytical Data

CTO-0029

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 26034901 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26035001 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | 4,4'-DDE | 72-55-9 | 380 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | ALDRIN | 309-00-2 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | R | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | U | R | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26035001 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26035001 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | R | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T5 | REG | | 26035001 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26035001 | CHLORDANE | 57-74-9 | 50 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 50 | UG/KG |
| T5 | REG | | 26035001 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26035001 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T5 | REG | | 26035001 | DELTA-BHC (HCH) | 53-70-3 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | DIBENZO(A,H)ANTHRACENE | 84-74-2 | 10 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | DIBUTYLTIN | 60-57-1 | 3 | UG/KG | U | R | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26035001 | DIELDRIN | 959-98-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | ENDOSULFAN I | 33213-65-9 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | ENDOSULFAN II | 1031-07-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26035001 | ENDOSULFAN SULFATE | 72-20-8 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | ENDRIN | 7421-93-4 | 5 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | ENDRIN ALDEHYDE | 206-44-0 | 10 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | FLUORANTHENE | 86-73-7 | 10 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | FLUORENE | 76-44-8 | 5 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | HEPTACHLOR | 1024-57-3 | 5 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | HEPTACHLOR EPOXIDE | 193-39-5 | 10 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | INDENO(1,2,3-CD)PYRENE | 7439-92-1 | 0.5 | MG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | LEAD, TOTAL | 58-89-9 | 5 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | LINDANE (GAMMA-BHC) | 7439-97-6 | 9860 | MG/KG | J | R | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | LIPIDS | 72-43-5 | 0.03 | MG/KG | J | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26035001 | MERCURY, TOTAL | 91-20-3 | 20 | UG/KG | U | R | FW1 | | EPA 8270 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26035001 | METHOXYCHLOR | 7440-02-0 | 3 | MG/KG | U | R | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T5 | REG | | 26035001 | NAPHTHALENE | 12674-11-2 | 160 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T5 | REG | | 26035001 | NICKEL, TOTAL | 11104-28-2 | 160 | UG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26035001 | PCB-1016 | 11141-16-5 | 160 | UG/KG | U | R | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26035001 | PCB-1221 | 53469-21-9 | 160 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26035001 | PCB-1232 | 12672-29-6 | 160 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26035001 | PCB-1242 | 11097-69-1 | 160 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26035001 | PCB-1248 | 11096-82-5 | 160 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26035001 | PCB-1254 | | | | | | | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26035001 | PCB-1260 | | | | | | | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |

8/11/95



R0063357

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VOL 18

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 26035001 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T5 | REG | | 26035001 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26035001 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26035001 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26035001 | TRIBUTYLTIN | 688-73-3 | 8.1 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26035001 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T5 | REG | | 26036901 | 4,4'-DDD | 72-54-8 | 0.8 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | 4,4'-DDE | 72-55-9 | 63 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | U | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26036901 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | U | U | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26036901 | BENZO(A)ANTHRACENE | 56-55-3 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T5 | REG | | 26036901 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | CADMIUM, TOTAL | 7440-43-9 | 0.8 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26036901 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | CHROMIUM, TOTAL | 7440-47-3 | 0.8 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26036901 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T5 | REG | | 26036901 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | DIBUTYLTIN | | 2 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26036901 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26036901 | LIPIDS | | 9030 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T5 | REG | | 26036901 | MERCURY, TOTAL | 7439-97-6 | 0.02 | MG/KG | U | U | FW1 | | EPA 7471 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T5 | REG | | 26036901 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T5 | REG | | 26036901 | MONOBUTYLTIN | | 1 | UG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26036901 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 40 | UG/KG |
| T5 | REG | | 26036901 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| | | | | | | | | | | | | | | | | | 100 | UG/KG |



R0063358

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | REG | | 26036901 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26036901 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26036901 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26036901 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26036901 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26036901 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26036901 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26036901 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | R | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T5 | REG | | 26036901 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | R | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26036901 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | R | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T5 | REG | | 26036901 | TRIBUTYLTIN | 688-73-3 | 3.4 | UG/KG | U | R | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T5 | REG | | 26036901 | ZINC, TOTAL | 7440-66-6 | 8 | MG/KG | | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T5 | REG | | 26041801 | BENZO(A)PYRENE, EQUIV | | 17 | MG/L | | | FB1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T5 | REG | | 26041801 | NAPHTHALENE, EQUIV | | 268 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041801 | PHENANTHRENE, EQUIV | | 170 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041801 | PYRENE, EQUIV | | 120 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041701 | BENZO(A)PYRENE, EQUIV | | 33.2 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041701 | NAPHTHALENE, EQUIV | | 508 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041701 | PHENANTHRENE, EQUIV | | 323 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041701 | PYRENE, EQUIV | | 229 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041801 | BENZO(A)PYRENE, EQUIV | | 18.3 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041801 | NAPHTHALENE, EQUIV | | 291 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041801 | PHENANTHRENE, EQUIV | | 208 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26041801 | PYRENE, EQUIV | | 132 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26042001 | BENZO(A)PYRENE, EQUIV | | 20.6 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26042001 | NAPHTHALENE, EQUIV | | 318 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26042001 | PHENANTHRENE, EQUIV | | 226 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T5 | REG | | 26042001 | PYRENE, EQUIV | | 143 | MG/L | | | FB1 | | KRAHN 1986 MOD | TRAWL | FB1 | MFAUNA | VV | | |
| T6 | REG | | 26035101 | 4,4'-DDD | 72-54-8 | 20 | UG/KG | U | R | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | 4,4'-DDE | 72-55-9 | 970 | UG/KG | | | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | R | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | R | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | R | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | ALDRIN | 309-00-2 | 5 | UG/KG | U | R | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | R | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | ANTHRACENE | 120-12-7 | 30 | UG/KG | U | R | FP2 | | EPA 7041 | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | R | FP2 | | EPA 7080 | TRAWL | FP2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035101 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | R | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035101 | BENZO(A)ANTHRACENE | 56-55-3 | 30 | UG/KG | U | R | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | BENZO(A)PYRENE | 50-32-8 | 30 | UG/KG | U | R | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | BENZO(B)FLUORANTHENE | 205-99-2 | 30 | UG/KG | U | R | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | BENZO(GHI)PERYLENE | 191-24-2 | 30 | UG/KG | U | R | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | BENZO(K)FLUORANTHENE | 207-08-9 | 30 | UG/KG | U | R | FP2 | | EPA 8010 | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | R | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 0.1 | MG/KG |
| T6 | REG | | 26035101 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | R | FP2 | | EPA 8010 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | R | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035101 | CHLORDANE | 57-74-9 | 30 | UG/KG | U | R | FP2 | | EPA 8010 | TRAWL | FP2 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035101 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | R | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035101 | CHRYSENE | 218-01-9 | 30 | UG/KG | U | R | FP2 | | EPA 8010 | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 1 | MG/KG |
| T6 | REG | | 26035101 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | R | FP2 | | EPA 8010 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | EPA 8080 | TRAWL | | | | | |

8/11/98



R0063359

3 8 6 5 3

8 7 1 0 4

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Solutions | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6 | REG | | 26035101 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 30 | UG/KG | U | R | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | DIBUTYLTIN | | 1 | UG/KG | U | R | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| T6 | REG | | 26035101 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | ENDOSULFAN II | 33213-65-9 | 18 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | ENDRIN | 72-20-8 | 5 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | FLUORANTHENE | 206-44-0 | 30 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | FLUORENE | 86-73-7 | 30 | UG/KG | U | R | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | R | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 30 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | R | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | R | FF2 | | EPA 7421 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035101 | LIPIDS | | 43000 | MG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035101 | MERCURY, TOTAL | 7439-97-6 | 0.07 | MG/KG | U | R | FF2 | | EPA 9071 | TRAWL | FF2 | MFAUNA | VV | 50 | MG/KG |
| T6 | REG | | 26035101 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | R | FF2 | | EPA 7470 | TRAWL | FF2 | MFAUNA | VV | 0.01 | MG/KG |
| T6 | REG | | 26035101 | NAPHTHALENE | 91-20-3 | 60 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035101 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | R | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 60 | UG/KG |
| T6 | REG | | 26035101 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | R | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 3 | MG/KG |
| T6 | REG | | 26035101 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035101 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035101 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035101 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035101 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035101 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035101 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | R | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035101 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | R | FF2 | | EPA 7740 | TRAWL | FF2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035101 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | R | FF2 | | EPA 7841 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035101 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | R | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035101 | TRIBUTYLTIN | 688-73-3 | 4 | UG/KG | U | R | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035101 | ZINC, TOTAL | 7440-66-6 | 5 | MG/KG | U | R | FF2 | | EPA 8010 | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| T6 | REG | | 26035201 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | R | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T6 | REG | | 26035201 | 4,4'-DDE | 72-55-9 | 360 | UG/KG | U | R | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035201 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | R | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035201 | ACENAPHTHENE | 83-32-9 | 20 | UG/KG | U | R | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035201 | ACENAPHTHYLENE | 208-96-8 | 20 | UG/KG | U | R | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035201 | ALDRIN | 309-00-2 | 5 | UG/KG | U | R | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035201 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | R | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035201 | ANTHRACENE | 120-12-7 | 20 | UG/KG | U | R | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035201 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | R | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035201 | ARSENIC, TOTAL | 7440-38-2 | 1.1 | MG/KG | | R | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035201 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | R | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035201 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | R | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T6 | REG | | 26035201 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | R | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035201 | CHLORDANE | 57-74-9 | 50 | UG/KG | U | R | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035201 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | R | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035201 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | U | R | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035201 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | R | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T6 | REG | | 26035201 | DIBUTYLTIN | | 1.7 | UG/KG | | R | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | | | | | | 1 | UG/KG |



R0063360

C0897

V01 T8

Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6 | REG | | 26035201 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 20 UG/KG |
| T6 | REG | | 26035201 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 20 UG/KG |
| T6 | REG | | 26035201 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035201 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035201 | LIPIDS | | 95100 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 50 MG/KG |
| T6 | REG | | 26035201 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | | 0.01 MG/KG |
| T6 | REG | | 26035201 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | | 20 UG/KG |
| T6 | REG | | 26035201 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 40 UG/KG |
| T6 | REG | | 26035201 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 3 MG/KG |
| T6 | REG | | 26035201 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035201 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | | 20 UG/KG |
| T6 | REG | | 26035201 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035201 | TRIBUTYLTIN | 688-73-3 | 12 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035201 | ZINC, TOTAL | 7440-66-6 | 13 | MG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035301 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | | 1 UG/KG |
| T6 | REG | | 26035301 | 4,4'-DDE | 72-55-9 | 350 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 3 MG/KG |
| T6 | REG | | 26035301 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035301 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035301 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035301 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035301 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035301 | ANTHRACENE | 120-12-7 | 30 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035301 | ANTIMONY, TOTAL | 7440-38-0 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035301 | ARSENIC, TOTAL | 7440-38-2 | 1.1 | MG/KG | | | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035301 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035301 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035301 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 0.1 MG/KG |
| T6 | REG | | 26035301 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035301 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035301 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | | | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | | 20 UG/KG |
| T6 | REG | | 26035301 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035301 | DIBUTYLTIN | | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 1 MG/KG |
| T6 | REG | | 26035301 | DIELDRIN | 60-57-1 | 1.6 | UG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035301 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 1 UG/KG |
| T6 | REG | | 26035301 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |
| | | | | | | | | | | | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | | 5 UG/KG |

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V01 7 8

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6 | REG | | 26035301 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035301 | ENDRIN | 72-20-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035301 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035301 | FLUORANTHENE | 206-44-0 | 30 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035301 | FLUORENE | 86-73-7 | 30 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035301 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035301 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035301 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035301 | LIPIDS | | 37200 | MG/KG | | | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| T6 | REG | | 26035301 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | U | | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T6 | REG | | 26035301 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035301 | NAPHTHALENE | 91-20-3 | 60 | UG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 60 | UG/KG |
| T6 | REG | | 26035301 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T6 | REG | | 26035301 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | PHENANTHRENE | 85-01-8 | 30 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035301 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035301 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035301 | TRIBUTYLTIN | 688-73-3 | 12 | UG/KG | U | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035301 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T6 | REG | | 26035401 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | | FW1 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T6 | REG | | 26035401 | 4,4'-DDE | 72-55-9 | 340 | UG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | ALDRIN | 309-00-2 | 5 | UG/KG | U | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | ARSENIC, TOTAL | 7440-38-2 | 0.5 | MG/KG | U | | FW1 | | EPA 7041 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035401 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035401 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T6 | REG | | 26035401 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035401 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035401 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035401 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | DIBUTYLTIN | | 2.7 | UG/KG | U | J | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| T6 | REG | | 26035401 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T6 | REG | | 26035401 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |



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Fish Tissue Analytical Data

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6 | REG | | 26035401 | ENDRIN | 72-20-8 | 5 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | FLUORENE | 86-73-7 | 10 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | W | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035401 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035401 | LIPIDS | | 24500 | MG/KG | | | FW1 | | EPA 9071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T6 | REG | | 26035401 | MERCURY, TOTAL | 7439-97-6 | 0.03 | MG/KG | U | W | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T6 | REG | | 26035401 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035401 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035401 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | W | FW1 | | EPA 6010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T6 | REG | | 26035401 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | W | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035401 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | W | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035401 | TRIBUTYLTIN | 688-73-3 | 8.3 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035401 | ZINC, TOTAL | 7440-66-6 | 16 | MG/KG | U | W | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035501 | 4,4'-DDD | 72-54-8 | 5 | UG/KG | U | W | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | 4,4'-DDE | 72-55-9 | 67 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T6 | REG | | 26035501 | 4,4'-DDT | 83-32-9 | 8 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T6 | REG | | 26036501 | ACENAPHTHENE | 208-96-8 | 10 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26036501 | ACENAPHTHYLENE | 309-00-2 | 10 | UG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | ALDRIN | 319-84-6 | 8 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | ALPHA-BHC (HCH) | 120-12-7 | 10 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | ANTHRACENE | 7440-38-2 | 0.5 | MG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26036501 | ARSENIC, TOTAL | 56-55-3 | 10 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | BENZO(A)ANTHRACENE | 50-32-8 | 10 | UG/KG | U | W | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | BENZO(A)PYRENE | 205-99-2 | 10 | UG/KG | U | W | FW1 | | EPA 7060 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | BENZO(B)FLUORANTHENE | 191-24-2 | 10 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035501 | BENZO(GHI)PERYLENE | 207-08-9 | 10 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035501 | BENZO(K)FLUORANTHENE | 7440-41-7 | 0.1 | MG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | BERYLLIUM, TOTAL | 319-85-7 | 5 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26036501 | BETA-BHC (HCH) | 7440-43-9 | 0.5 | MG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | CADMIUM, TOTAL | 57-74-9 | 20 | UG/KG | U | W | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | CHLORDANE | 7440-47-3 | 0.5 | MG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | CHROMIUM, TOTAL | 218-01-9 | 10 | UG/KG | U | W | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.1 | MG/KG |
| T6 | REG | | 26035501 | CHRYSENE | 7440-50-8 | 3 | MG/KG | U | W | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | COPPER, TOTAL | 319-86-8 | 5 | UG/KG | U | W | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035501 | DELTA-BHC (HCH) | 53-70-3 | 10 | UG/KG | U | W | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035501 | DIBENZO(A,H)ANTHRACENE | 688-73-3 | 2.9 | UG/KG | U | W | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035501 | DIBUTYLTIN | | | | | | | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| | | | | | | | | | | | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 1 | MG/KG |
| | | | | | | | | | | | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | | | | | | 10 | UG/KG |
| | | | | | | | | | | | | | | | | | 1 | UG/KG |

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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Statistical Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6 | REG | | 26035501 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW1 | | EPA 7421 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035501 | LIPIDS | | 18600 | MG/KG | | | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035501 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | U | U | FW1 | | EPA 8071 | TRAWL | FW1 | MFAUNA | VV | 50 | MG/KG |
| T6 | REG | | 26035501 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW1 | | EPA 7470 | TRAWL | FW1 | MFAUNA | VV | 0.01 | MG/KG |
| T6 | REG | | 26035501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035501 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 20 | UG/KG |
| T6 | REG | | 26035501 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW1 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T6 | REG | | 26035501 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW1 | | GC/MS | TRAWL | FW1 | MFAUNA | VV | 10 | UG/KG |
| T6 | REG | | 26035501 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW1 | | EPA 7740 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035501 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW1 | | EPA 7841 | TRAWL | FW1 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035501 | TRIBUTYLTIN | 688-73-3 | 9.9 | UG/KG | U | U | FW1 | | EPA 8080 | TRAWL | FW1 | MFAUNA | VV | 100 | UG/KG |
| T6 | REG | | 26035501 | ZINC, TOTAL | 7440-66-6 | 19 | MG/KG | U | U | FW1 | | GC-FPD | TRAWL | FW1 | MFAUNA | VV | 1 | UG/KG |
| T6 | REG | | 26035601 | 4,4'-DDD | 72-54-8 | 21 | UG/KG | U | U | FP2 | | EPA 8010 | TRAWL | FW1 | MFAUNA | VV | 3 | MG/KG |
| T6 | REG | | 26035601 | 4,4'-DDE | 72-55-9 | 310 | UG/KG | U | U | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035601 | ACENAPHTHENE | 83-32-9 | 30 | UG/KG | U | U | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | ACENAPHTHYLENE | 208-96-8 | 30 | UG/KG | U | U | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035601 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035601 | ANTHRACENE | 120-12-7 | 30 | UG/KG | U | U | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | ANTIMONY, TOTAL | 7440-36-0 | 0.8 | MG/KG | U | U | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035601 | ARSENIC, TOTAL | 7440-38-2 | 0.6 | MG/KG | U | U | FP2 | | EPA 7041 | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | BENZO(A)ANTHRACENE | 56-55-3 | 30 | UG/KG | U | U | FP2 | | EPA 7060 | TRAWL | FP2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035601 | BENZO(A)PYRENE | 50-32-8 | 30 | UG/KG | U | U | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 0.5 | MG/KG |
| T6 | REG | | 26035601 | BENZO(B)FLUORANTHENE | 205-99-2 | 30 | UG/KG | U | U | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | BENZO(GHI)PERYLENE | 191-24-2 | 30 | UG/KG | U | U | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | BENZO(K)FLUORANTHENE | 207-08-9 | 30 | UG/KG | U | U | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FP2 | | GC/MS | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FP2 | | EPA 8015 | TRAWL | FP2 | MFAUNA | VV | 30 | UG/KG |
| T6 | REG | | 26035601 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 0.1 | MG/KG |
| T6 | REG | | 26035601 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FP2 | | EPA 8010 | TRAWL | FP2 | MFAUNA | VV | 5 | UG/KG |
| T6 | REG | | 26035601 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FP2 | | EPA 8080 | TRAWL | FP2 | MFAUNA | VV | 0.5 | MG/KG |
| | | | | | | | | | | | | EPA 8010 | TRAWL | FP2 | MFAUNA | VV | 20 | UG/KG |

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## Fish Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Colony Number | Method | Collection | Matrix | Station Type | Storage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6 | REG | | 26035601 | CHRYSENE | 218-01-9 | | 30 UG/KG | U | | FF2 | | GC/MS | TRAWL | FF2 | MF AUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035601 | COPPER, TOTAL | 7440-50-8 | | 2 MG/KG | | | FF2 | | EPA 6010 | TRAWL | FF2 | MF AUNA | VV | | 1 MG/KG |
| T6 | REG | | 26035601 | DELTA-BHC (HCH) | 319-86-8 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | | 30 UG/KG | U | | FF2 | | GC/MS | TRAWL | FF2 | MF AUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035601 | DIBUTYLTIN | | | 1 UG/KG | U | | FF2 | | GC-FPD | TRAWL | FF2 | MF AUNA | VV | | 1 UG/KG |
| T6 | REG | | 26035601 | DIELDRIN | 60-57-1 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | ENDOSULFAN I | 959-98-8 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | ENDOSULFAN II | 33213-65-9 | | 10 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 10 UG/KG |
| T6 | REG | | 26035601 | ENDOSULFAN SULFATE | 1031-07-8 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | ENDRIN | 72-20-8 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | ENDRIN ALDEHYDE | 7421-93-4 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | FLUORANTHENE | 206-44-0 | | 30 UG/KG | U | | FF2 | | GC/MS | TRAWL | FF2 | MF AUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035601 | FLUORENE | 86-73-7 | | 30 UG/KG | U | | FF2 | | GC/MS | TRAWL | FF2 | MF AUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035601 | HEPTACHLOR | 76-44-8 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | HEPTACHLOR EPOXIDE | 1024-57-3 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | | 30 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035601 | LEAD, TOTAL | 7439-92-1 | | 0.5 MG/KG | | | FF2 | | EPA 7421 | TRAWL | FF2 | MF AUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035601 | LINDANE (GAMMA-BHC) | 58-89-9 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T6 | REG | | 26035601 | LIPIDS | | | 34000 MG/KG | | | FF2 | | EPA 9071 | TRAWL | FF2 | MF AUNA | VV | | 8 MG/KG |
| T6 | REG | | 26035601 | MERCURY, TOTAL | 7439-97-6 | | 0.08 MG/KG | | | FF2 | | EPA 7470 | TRAWL | FF2 | MF AUNA | VV | | 80 MG/KG |
| T6 | REG | | 26035601 | METHOXYCHLOR | 72-43-5 | | 20 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 0.01 MG/KG |
| T6 | REG | | 26035601 | NAPHTHALENE | 91-20-3 | | 60 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 20 UG/KG |
| T6 | REG | | 26035601 | NICKEL, TOTAL | 7440-02-0 | | 3 MG/KG | | | FF2 | | GC/MS | TRAWL | FF2 | MF AUNA | VV | | 60 UG/KG |
| T6 | REG | | 26035601 | PCB-1016 | 12674-11-2 | | 100 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 3 MG/KG |
| T6 | REG | | 26035601 | PCB-1221 | 11104-28-2 | | 100 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035601 | PCB-1232 | 11141-16-5 | | 100 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035601 | PCB-1242 | 53469-21-9 | | 100 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035601 | PCB-1248 | 12672-29-6 | | 100 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035601 | PCB-1254 | 11097-69-1 | | 100 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035601 | PCB-1260 | 11096-82-5 | | 100 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035601 | PHENANTHRENE | 85-01-8 | | 30 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 100 UG/KG |
| T6 | REG | | 26035601 | SELENIUM, TOTAL | 7782-49-2 | | 0.5 MG/KG | U | | FF2 | | GC/MS | TRAWL | FF2 | MF AUNA | VV | | 30 UG/KG |
| T6 | REG | | 26035601 | THALLIUM, TOTAL | 7440-28-0 | | 0.5 MG/KG | U | | FF2 | | EPA 7740 | TRAWL | FF2 | MF AUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035601 | TOXAPHENE | 8001-35-2 | | 100 UG/KG | U | | FF2 | | EPA 7841 | TRAWL | FF2 | MF AUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035601 | TRIBUTYLTIN | 688-73-3 | | 5.9 UG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 0.5 MG/KG |
| T6 | REG | | 26035601 | ZINC, TOTAL | 7440-66-6 | | 9 MG/KG | | | FF2 | | QC-FPD | TRAWL | FF2 | MF AUNA | VV | | 100 UG/KG |
| T6 | REG | | 26041901 | BENZO(A)PYRENE, EQUIV | | | 2.73 MG/L | | | FB1 | | EPA 6010 | TRAWL | FF2 | MF AUNA | VV | | 1 UG/KG |
| T6 | REG | | 26041901 | NAPHTHALENE, EQUIV | | | 58.4 MG/L | | | FB1 | | KRAHN 1988 MOD | TRAWL | FB1 | MF AUNA | VV | | 3 MG/KG |
| T6 | REG | | 26041901 | PHENANTHRENE, EQUIV | | | 43.8 MG/L | | | FB1 | | KRAHN 1988 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| T6 | REG | | 26041901 | PYRENE, EQUIV | | | 21.4 MG/L | | | FB1 | | KRAHN 1988 MOD | TRAWL | FB1 | MF AUNA | VV | | |
| T7 | REG | | 26036301 | 4,4'-DDD | 72-54-8 | | 81 UG/KG | | | FF2 | | EPA 8080 | TRAWL | FB1 | MF AUNA | VV | | |
| T7 | REG | | 26036301 | 4,4'-DDE | 72-55-9 | | 63 UG/KG | | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T7 | REG | | 26036301 | 4,4'-DDT | 50-29-3 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 6 UG/KG |
| T7 | REG | | 26036301 | ACENAPHTHENE | 83-32-9 | | 20 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T7 | REG | | 26036301 | ACENAPHTHYLENE | 208-96-8 | | 20 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T7 | REG | | 26036301 | ALDRIN | 309-00-2 | | 5 UG/KG | U | | FF2 | | GC/MS | TRAWL | FF2 | MF AUNA | VV | | 20 UG/KG |
| T7 | REG | | 26036301 | ALPHA-BHC (HCH) | 319-84-6 | | 5 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 20 UG/KG |
| T7 | REG | | 26036301 | ANTHRACENE | 120-12-7 | | 20 UG/KG | U | | FF2 | | EPA 8080 | TRAWL | FF2 | MF AUNA | VV | | 20 UG/KG |
| T7 | REG | | 26036301 | ANTIMONY, TOTAL | 7440-36-0 | | 0.5 MG/KG | U | | FF2 | | EPA 7041 | TRAWL | FF2 | MF AUNA | VV | | 5 UG/KG |
| T7 | REG | | 26036301 | ARSENIC, TOTAL | 7440-38-2 | | 0.8 MG/KG | | | FF2 | | EPA 7060 | TRAWL | FF2 | MF AUNA | VV | | 20 UG/KG |
| T7 | REG | | 26036301 | BENZO(A)ANTHRACENE | 56-55-3 | | 20 UG/KG | U | | FF2 | | GC/MS | TRAWL | FF2 | MF AUNA | VV | | 0.5 MG/KG |
| | | | | | | | | | | | | | | | | | | 0.5 MG/KG |
| | | | | | | | | | | | | | | | | | | 20 UG/KG |





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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Solutions | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7 | REG | | 26036301 | BENZO(A)PYRENE | 50-32-8 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | BENZO(B)FLUORANTHENE | 205-99-2 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | BENZO(GHI)PERYLENE | 191-24-2 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | BENZO(K)FLUORANTHENE | 207-08-9 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.1 | MG/KG |
| T7 | REG | | 26036301 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036301 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036301 | CHRYSENE | 218-01-9 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 1 | MG/KG |
| T7 | REG | | 26036301 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | DIBUTYLTIN | | 1 | UG/KG | U | U | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 1 | UG/KG |
| T7 | REG | | 26036301 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | FLUORANTHENE | 206-44-0 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | FLUORENE | 86-73-7 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FF2 | | EPA 7421 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036301 | LIPIDS | | 33800 | MG/KG | | | FF2 | | EPA 8071 | TRAWL | FF2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036301 | MERCURY, TOTAL | 7439-97-6 | 0.07 | MG/KG | J | J | FF2 | | EPA 7470 | TRAWL | FF2 | MFAUNA | VV | 50 | MG/KG |
| T7 | REG | | 26036301 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.01 | MG/KG |
| T7 | REG | | 26036301 | NAPHTHALENE | 91-20-3 | 40 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FF2 | | EPA 6010 | TRAWL | FF2 | MFAUNA | VV | 40 | UG/KG |
| T7 | REG | | 26036301 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 3 | MG/KG |
| T7 | REG | | 26036301 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036301 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036301 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036301 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036301 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036301 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036301 | PHENANTHRENE | 85-01-8 | 20 | UG/KG | U | U | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036301 | PYRENE | 129-00-0 | 20 | UG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036301 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FF2 | | GC/MS | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FF2 | | EPA 7740 | TRAWL | FF2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036301 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FF2 | | EPA 7760 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036301 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FF2 | | EPA 7841 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036301 | TRIBUTYLTIN | 688-73-3 | 2.9 | UG/KG | J | J | FF2 | | EPA 8080 | TRAWL | FF2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036301 | ZINC, TOTAL | 7440-66-6 | 7 | MG/KG | | | FF2 | | GC-FPD | TRAWL | FF2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | 4,4'-DDD | 72-54-8 | 72 | UG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T7 | REG | | 26036401 | 4,4'-DDE | 72-55-9 | 750 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T7 | REG | | 26036401 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |

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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7 | REG | | 26036401 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036401 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036401 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036401 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | U | U | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036401 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T7 | REG | | 26036401 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036401 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036401 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036401 | COPPER, TOTAL | 7440-50-8 | 3 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T7 | REG | | 26036401 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | DIBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T7 | REG | | 26036401 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036401 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036401 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036401 | LIPIDS | | 53400 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036401 | MERCURY, TOTAL | 7439-97-6 | 0.07 | MG/KG | U | U | FW2 | | EPA 9071 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| T7 | REG | | 26036401 | METHOXYCHLOR | 72-43-5 | 50 | UG/KG | U | U | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T7 | REG | | 26036401 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036401 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036401 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T7 | REG | | 26036401 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | SELENIUM, TOTAL | 7782-49-2 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036401 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW2 | | EPA 7760 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036401 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7780 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036401 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036401 | TRIBUTYLTIN | 688-73-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036401 | ZINC, TOTAL | 7440-66-6 | 10 | MG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T7 | REG | | 26036501 | 4,4'-DDD | 72-54-8 | 95 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T7 | REG | | 26036501 | 4,4'-DDE | 72-55-9 | 360 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036501 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| | | | | | | | | | | | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |

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Fish Tissue Analytical Data

CTO-0026

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7 | REG | | 26036501 | ALPHA-BHC (HCH) | 319-84-6 | 5.7 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036501 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036501 | ARSENIC, TOTAL | 7440-38-2 | 1 | MG/KG | | | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036501 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T7 | REG | | 26036501 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036501 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036501 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036501 | COPPER, TOTAL | 7440-50-8 | 2 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T7 | REG | | 26036501 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | DIBUTYLTIN | | 1 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T7 | REG | | 26036501 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036501 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036501 | LEAD, TOTAL | 7439-92-1 | 0.8 | MG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | LIPIDS | | 94000 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036501 | MERCURY, TOTAL | 7439-97-6 | 0.04 | MG/KG | U | U | FW2 | | EPA 8071 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036501 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 80 | MG/KG |
| T7 | REG | | 26036501 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T7 | REG | | 26036501 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036501 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036501 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T7 | REG | | 26036501 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036501 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036501 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036501 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036501 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036501 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036501 | SELENIUM, TOTAL | 7782-49-2 | 0.8 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036501 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036501 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7760 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036501 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036501 | TRIBUTYLTIN | 688-73-3 | 3.1 | UG/KG | U | J | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036501 | ZINC, TOTAL | 7440-66-6 | 10 | MG/KG | | | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | 4,4-DDD | 72-54-8 | 18 | UG/KG | U | U | FW2 | | EPA 8010 | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T7 | REG | | 26036701 | 4,4'-DDE | 72-55-9 | 370 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T7 | REG | | 26036701 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | ALDRIN | 309-00-2 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | ANTHRACENE | 120-12-7 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| | | | | | | | | | | | | | | | | | 10 | UG/KG |

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Fish Tissue Analytical Data

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| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7 | REG | | 26036701 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7041 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036701 | ARSENIC, TOTAL | 7440-38-2 | 0.8 | MG/KG | | | FW2 | | EPA 7060 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036701 | BENZO(A)ANTHRACENE | 56-55-3 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | BENZO(A)PYRENE | 50-32-8 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | BENZO(B)FLUORANTHENE | 205-99-2 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | BENZO(GHI)PERYLENE | 191-24-2 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | BENZO(K)FLUORANTHENE | 207-08-9 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.1 | MG/KG |
| T7 | REG | | 26036701 | CADMIUM, TOTAL | 7440-43-9 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | CHLORDANE | 57-74-9 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036701 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036701 | CHRYSENE | 218-01-9 | 10 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036701 | COPPER, TOTAL | 7440-50-8 | 3 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | DELTA-BHC (HCH) | 319-86-8 | 5 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| T7 | REG | | 26036701 | DIBENZO(A,H)ANTHRACENE | 53-70-3 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | DIBUTYLTIN | | 1.5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | DIELDRIN | 60-57-1 | 5 | UG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| T7 | REG | | 26036701 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | ENDRIN | 72-20-8 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | FLUORENE | 86-73-7 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | INDENO(1,2,3-CD)PYRENE | 193-39-5 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | U | U | FW2 | | EPA 7421 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | LIPIDS | | 74000 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036701 | MERCURY, TOTAL | 7439-97-6 | 0.08 | MG/KG | U | U | FW2 | | EPA 8071 | TRAWL | FW2 | MFAUNA | VV | 5 | UG/KG |
| T7 | REG | | 26036701 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | U | U | FW2 | | EPA 7470 | TRAWL | FW2 | MFAUNA | VV | 50 | MG/KG |
| T7 | REG | | 26036701 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.01 | MG/KG |
| T7 | REG | | 26036701 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036701 | PCB-1016 | 12674-11-2 | 100 | UG/KG | U | U | FW2 | | EPA 6010 | TRAWL | FW2 | MFAUNA | VV | 20 | UG/KG |
| T7 | REG | | 26036701 | PCB-1221 | 11104-28-2 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 3 | MG/KG |
| T7 | REG | | 26036701 | PCB-1232 | 11141-16-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | PCB-1242 | 53469-21-9 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | PCB-1248 | 12672-29-6 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | PCB-1254 | 11097-69-1 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | PCB-1260 | 11096-82-5 | 100 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | PYRENE | 129-00-0 | 10 | UG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | SELENIUM, TOTAL | 7782-49-2 | 1.3 | MG/KG | U | U | FW2 | | GC/MS | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | SILVER, TOTAL | 7440-22-4 | 0.5 | MG/KG | U | U | FW2 | | EPA 7740 | TRAWL | FW2 | MFAUNA | VV | 10 | UG/KG |
| T7 | REG | | 26036701 | THALLIUM, TOTAL | 7440-28-0 | 0.5 | MG/KG | U | U | FW2 | | EPA 7760 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036701 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | U | U | FW2 | | EPA 7841 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036701 | TRIBUTYLTIN | 688-73-3 | 8.8 | UG/KG | U | U | FW2 | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 0.5 | MG/KG |
| T7 | REG | | 26036701 | ZINC, TOTAL | 7440-66-6 | 18 | MG/KG | U | U | FW2 | | GC-FPD | TRAWL | FW2 | MFAUNA | VV | 100 | UG/KG |
| T7 | REG | | 26036701 | 4,4'-DDD | 72-54-8 | 44 | UG/KG | U | U | FW2 | | EPA 8016 | TRAWL | FW2 | MFAUNA | VV | 1 | UG/KG |
| | | | | | | | | | | | | EPA 8080 | TRAWL | FW2 | MFAUNA | VV | 1 | MG/KG |
| | | | | | | | | | | | | | | | | | 5 | UG/KG |

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Fish Tissue Analytical Data

| Station ID | Sample Type | Bottom Depth (m) | Sample ID | Analyte Name | CAS Number | Result | Result Units | Lab Qualifier | Review Qualifier | Result Type | Percent Moisture | Method | Collection | Matrix | Station Type | Usage | Detection Limit | Detection Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | REG | | 26035601 | 4,4'-DDE | 72-55-9 | 300 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | 4,4'-DDT | 50-29-3 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | ACENAPHTHENE | 83-32-9 | 10 | UG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | ACENAPHTHYLENE | 208-96-8 | 10 | UG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | | 10 UG/KG |
| | REG | | 26035601 | ALDRIN | 309-00-2 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 10 UG/KG |
| | REG | | 26035601 | ALPHA-BHC (HCH) | 319-84-6 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | ANTHRACENE | 120-12-7 | 10 | UG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | ANTIMONY, TOTAL | 7440-36-0 | 0.5 | MG/KG | | | FW2 | | EPA 7041 | TRAWL | FW2 | MF AUNA | VV | | 10 UG/KG |
| | REG | | 26035601 | ARSENIC, TOTAL | 7440-38-2 | 1 | MG/KG | | | FW2 | | EPA 7060 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | BERYLLIUM, TOTAL | 7440-41-7 | 0.1 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | BETA-BHC (HCH) | 319-85-7 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 0.1 MG/KG |
| | REG | | 26035601 | CADMIUM, TOTAL | 7440-43-9 | 0.8 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | CHLORDANE | 57-74-9 | 20 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 1 UG/KG |
| | REG | | 26035601 | CHROMIUM, TOTAL | 7440-47-3 | 0.5 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | COPPER, TOTAL | 7440-50-8 | 1 | MG/KG | | | FW2 | | EPA 6010 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | DELTA BHC (HCH) | 319-86-8 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 20 UG/KG |
| | REG | | 26035601 | DIBUTYLTIN | | 4.1 | UG/KG | | | FW2 | | QC-PPD | TRAWL | FW2 | MF AUNA | VV | | 0.8 MG/KG |
| | REG | | 26035601 | DIELDRIN | 60-57-1 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 1 MG/KG |
| | REG | | 26035601 | ENDOSULFAN I | 959-98-8 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | ENDOSULFAN II | 33213-65-9 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | ENDOSULFAN SULFATE | 1031-07-8 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | ENDRIN | 72-20-8 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | ENDRIN ALDEHYDE | 7421-93-4 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | FLUORANTHENE | 206-44-0 | 10 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | FLUORENE | 86-73-7 | 10 | UG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | | 10 UG/KG |
| | REG | | 26035601 | HEPTACHLOR | 76-44-8 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 10 UG/KG |
| | REG | | 26035601 | HEPTACHLOR EPOXIDE | 1024-57-3 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | LEAD, TOTAL | 7439-92-1 | 0.5 | MG/KG | | | FW2 | | EPA 7421 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | LINDANE (GAMMA-BHC) | 58-89-9 | 5 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | LIPIDS | | 66700 | MG/KG | | | FW2 | | EPA 7431 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | MERCURY, TOTAL | 7439-97-6 | 0.05 | MG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 5 UG/KG |
| | REG | | 26035601 | METHOXYCHLOR | 72-43-5 | 20 | UG/KG | | | FW2 | | EPA 7471 | TRAWL | FW2 | MF AUNA | VV | | 50 MG/KG |
| | REG | | 26035601 | NAPHTHALENE | 91-20-3 | 20 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 0.01 MG/KG |
| | REG | | 26035601 | NICKEL, TOTAL | 7440-02-0 | 3 | MG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | | 20 UG/KG |
| | REG | | 26035601 | PCB-1016 | 12674-11-2 | 100 | UG/KG | | | FW2 | | EPA 8010 | TRAWL | FW2 | MF AUNA | VV | | 20 UG/KG |
| | REG | | 26035601 | PCB-1221 | 11104-28-2 | 100 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 3 MG/KG |
| | REG | | 26035601 | PCB-1232 | 11141-16-5 | 100 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 100 UG/KG |
| | REG | | 26035601 | PCB-1242 | 53469-21-9 | 100 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 100 UG/KG |
| | REG | | 26035601 | PCB-1248 | 12672-29-6 | 100 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 100 UG/KG |
| | REG | | 26035601 | PCB-1254 | 11097-69-1 | 100 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 100 UG/KG |
| | REG | | 26035601 | PCB-1260 | 11096-82-5 | 100 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 100 UG/KG |
| | REG | | 26035601 | PHENANTHRENE | 85-01-8 | 10 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 100 UG/KG |
| | REG | | 26035601 | SELENIUM, TOTAL | 7782-49-2 | 0.6 | MG/KG | | | FW2 | | GC/MS | TRAWL | FW2 | MF AUNA | VV | | 10 UG/KG |
| | REG | | 26035601 | SILVER, TOTAL | 7440-22-4 | 0.7 | MG/KG | | | FW2 | | EPA 7760 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | THALLIUM, TOTAL | 7440-28-0 | 0.8 | MG/KG | | | FW2 | | EPA 7700 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | TOXAPHENE | 8001-35-2 | 100 | UG/KG | | | FW2 | | EPA 7841 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | TRIBUTYLTIN | 688-73-3 | 17 | UG/KG | | | FW2 | | EPA 8080 | TRAWL | FW2 | MF AUNA | VV | | 0.5 MG/KG |
| | REG | | 26035601 | ZINC, TOTAL | 7440-66-6 | 11 | MG/KG | | | FW2 | | QC-PPD | TRAWL | FW2 | MF AUNA | VV | | 100 UG/KG |
| | | | | | | | | | | | | EPA 6010 | | | | | | 1 MG/KG |

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## APPENDIX Q

# SUBSURFACE SEDIMENT BORING LOGS

0995



SAND (SW/SP)
m=sp



CLAYEY SAND (SC)
m=sc2



SILT or
CLAYEY SILT (ML)
m=ml



SANDY CLAY, SANDY CLAY to CLAY, or SANDY SILTY CLAY
m=cls



SILTY SAND (SM)
m=sm2



SANDY SILT or
SILT with Sand (ML)
m=mls



CLAY or
SILTY CLAY (CL/CH)
m=cl



MUD or MUDDY
SHELL HASH
m=cl

**EXPLANATION**



SOIL NAME (USCS Symbol)
m=gINT code

CONTACTS



solid = sharp contact

angled = gradual contact

dashed = inferred contact

angled & dashed = inferred gradual contact

Remedial Investigation Report
Figure 0-1
Borehole Log Graphic Symbols - Soil

West Basin (Site 7), LBNC

Bechtel National, Inc.
CLEAN II Program

Date: 11/17/95
File No.
Job No. 22214-0026

LB026

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R0063372

# BOREHOLE LOG

| | |
|---|---|
| PROJECT and JOB NUMBER | *CLEAN II* 22214-0026 |
| BOREHOLE NO. | STA- 6 |
| SHEET NO. | 1 OF 1 |
| DRILLER/SAMPLER | MEC |
| SITE and LOCATION | West Basin (Site 7), LBNC |
| SAMPLE DATE | 6-25-94 |
| EQUIPMENT/VESSEL | The Crusader |
| COORDINATES | N33°45.00' E118°14.44' |
| ELEVATION (Meters below MLLW) | -10.0 |
| TOTAL DEPTH (Meters) | 5.0 |
| SAMPLING METHOD | Vibracore |
| SAMPLE BARREL DIA. | 4 in. |
| LOGGED BY | S. Rudolph |
| CHECKED BY: | A. Edward Morelan |
| DATA ENTRY DATE | 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | 100 | 5.0/5.0 | -10.0 | | | | 0.0 - 1.0 M: SILT: (ML); black, very soft, slight odor. | Difficulty in extracting barrel due to sticky clay. |
| | | | -11.0 | 3.3 | 1 | | 1.0 - 2.0 M: SANDY SILT: (ML); dark gray, strong odor. | |
| | | | -12.0 | 6.6 | 2 | | 2.0 - 3.4 M: SILTY CLAY: (CL); dark gray, some sand, cohesive. | |
| | | | -13.4 | 11.2 | 3 | | 3.4 - 4.1 M: SAND: (SP); with shell hash, no odor. | |
| | | | -14.1 | 13.5 | 4 | | 4.1 - 5.0 M: SANDY CLAY to CLAY: (CL); clay content increasing with depth. | |
| | | | -15.0 | 16.4 | 5 | | TOTAL DEPTH = 5.0 Meters | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: West Basin (Site 7), LBNC

BOREHOLE NO: STA- 6

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# BOREHOLE LOG

| | | |
|---|---|---|
| PROJECT and JOB NUMBER: *CLEAN II* 22214-0026 | | BOREHOLE NO.: STA- 8 |
| | | SHEET NO. 1 OF 1 |
| DRILLER/SAMPLER: MEC | SITE and LOCATION: West Basin (Site 7), LBNC | SAMPLE DATE: 6-25-94 |
| EQUIPMENT/VESSEL: The Crusader | COORDINATES: N33°44.76' E118°14.37' ELEVATION (Meters below MLLW): -11.0 | TOTAL DEPTH (Meters): 3.0 |
| SAMPLING METHOD: Vibracore SAMPLE BARREL DIA.: 4 in. | LOGGED BY: S. Rudolph CHECKED BY: A. Edward Morelan | DATA ENTRY DATE: 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | -11.0 | | | | | |
| | 100 | 3.0 / 3.0 | | | | | 0.0 - 0.3 M: CLAY: (CL); black, soft, no odor. | |
| | | | -11.3 | 1.0 | | | 1.0 - 3.0 M: SAND: (SP); dark gray, no odor. | |
| | | | | | 1 | | | |
| | | | | | 2 | | | |
| | | | -14.0 | 9.8 | 3 | | | |
| | | | | | | | TOTAL DEPTH = 3.0 Meters | |

See Figure Q-1 for graphic symbols and description.

| | | |
|---|---|---|
| SITE and LOCATION: West Basin (Site 7), LBNC | | BOREHOLE NO.: STA- 8 |

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# BOREHOLE LOG

| | | |
|---|---|---|
| PROJECT and JOB NUMBER: *CLEAN II* 22214-0026 | | BOREHOLE NO.: STA-14 |
| | | SHEET NO. 1 OF 1 |
| DRILLER/SAMPLER: MEC | SITE and LOCATION: West Basin (Site 7), LBNC | SAMPLE DATE: 6-25-94 |
| EQUIPMENT/VESSEL: The Crusader | COORDINATES: N33°45.05' E118°13.96' ELEVATION (Meters below MLLW): -16.0 | TOTAL DEPTH (Meters): 3.0 |
| SAMPLING METHOD: Vibracore SAMPLE BARREL DIA.: 4 in. | LOGGED BY: S. Rudolph CHECKED BY: A. Edward Morelan | DATA ENTRY DATE: 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | 100 | 3.0 / 3.0 | -16.0 | | | | 0.0 - 3.0 M: SAND: (SP); dark gray to black, coarse grained, with shell hash, no odor. | Core barrel bent on first sampling attempt. |
| | | | -19.0 | 9.8 | 3 | | TOTAL DEPTH = 3.0 Meters | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: West Basin (Site 7), LBNC

BOREHOLE NO.: STA-14

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# BOREHOLE LOG

| | | |
|---|---|---|
| PROJECT and JOB NUMBER: *CLEAN II* 22214-0026 | | BOREHOLE NO.: STA-24 |
| | | SHEET NO. 1 OF 1 |
| DRILLER/SAMPLER: MEC | SITE and LOCATION: West Basin (Site 7), LBNC | SAMPLE DATE: 6-25-94 |
| EQUIPMENT/VESSEL: The Crusader | COORDINATES: N33°45.00' E118°13.47' — ELEVATION (Meters below MLLW): -15.0 | TOTAL DEPTH (Meters): 2.8 |
| SAMPLING METHOD: Vibracore — SAMPLE BARREL DIA.: 4 in. | LOGGED BY: S. Rudolph — CHECKED BY: A. Edward Morelan | DATA ENTRY DATE: 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | -15.0 | | | | | |
| | 100 | 2.8 / 2.8 | | | | | 0.0 - 1.0 M: CLAY: (CL); black, soft, no odor, slightly disturbed. | Sampling device refusal at 2.8 M sub bottom depth. |
| | | | -16.0 | 3.3 | 1 | | 1.0 - 2.8 M: SAND: (SP); dark gray to black, with shell hash, no odor. | |
| | | | | | 2 | | | |
| | | | -17.8 | 9.2 | | | | |
| | | | | | | | TOTAL DEPTH = 2.8 Meters | |

See Figure Q-1 for graphic symbols and description.

| | | |
|---|---|---|
| SITE and LOCATION: West Basin (Site 7), LBNC | | BOREHOLE NO.: STA-24 |

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# BOREHOLE LOG

| | | |
|---|---|---|
| DRILLER/SAMPLER: MEC | PROJECT and JOB NUMBER: *CLEAN II* 22214-0026 | BOREHOLE NO.: STA-29 |
| EQUIPMENT/VESSEL: The Crusader | SITE and LOCATION: West Basin (Site 7), LBNC | SHEET NO. 1 OF 1 |
| SAMPLING METHOD: Vibracore | COORDINATES: N33°44.91' E118°13.20' | SAMPLE DATE: 6-25-94 |
| SAMPLE BARREL DIA.: 4 in. | ELEVATION (Meters below MLLW): -19.0 | TOTAL DEPTH (Meters): 3.0 |
| LOGGED BY: S. Rudolph | CHECKED BY: A. Edward Morelan | DATA ENTRY DATE: 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | 100 | 3.0/3.0 | -19.0 | | | | 0.0 - 1.0 M: CLAYEY SAND: (SC); fine grained, clay content increasing with depth. | |
| | | | -20.0 | 3.3 | 1 | | 1.0 - 1.8 M: SANDY CLAY: (CL). | |
| | | | -20.8 | 5.9 | 2 | | 1.8 - 3.0 M: SAND: (SP); slightly clayey. | |
| | | | -22.0 | 9.8 | 3 | | TOTAL DEPTH = 3.0 Meters | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: West Basin (Site 7), LBNC

BOREHOLE NO.: STA-29

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# BOREHOLE LOG

| | | |
|---|---|---|
| PROJECT and JOB NUMBER: *CLEAN II* 22214-0026 | | BOREHOLE NO.: STA-43 |
| | | SHEET NO. 1 OF 1 |
| DRILLER/SAMPLER: Gregg Drilling | SITE and LOCATION: Pier 15, West Basin (Site 7), LBNC | SAMPLE DATE: 7-27-94 |
| EQUIPMENT/VESSEL: Simco | COORDINATES: N33°44.72' E118°13.61' | ELEVATION (Meters below MLLW): -12.2 |
| | | TOTAL DEPTH (Meters): 4.9 |
| SAMPLING METHOD: Vibracore | SAMPLE BARREL DIA.: 2.5 in. | LOGGED BY: N. Molla |
| | | CHECKED BY: A. Edward Morelan |
| | | DATA ENTRY DATE: 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | -12.2 | | | | | |
| 0.2 | 25 | 0.9 / 3.7 | | | | | **0.0 - 0.9 M: MUDDY SHELL HASH**: very dark gray, loose to fluid, ~60% shell fragments, with ~40% black sand, slight oily sheen. | Borehole was advanced through an opening in the pier using 4" steel casing set to sea floor.<br><br>First sampling attempt dropped through soft sediment to 3.7 M sub bottom depth (SBD); 2.7 M of sediment lost upon retrieval.<br><br>Second sampling attempt advanced from 3.7 M to 4.9 M SBD by Vibracore. |
| | | | -13.1 | 3.0 | 1 | | **0.9 - 3.7 M: no recovery.** | |
| | | | | | 2 | | | |
| | | | | | 3 | | | |
| 0.2 | 100 | 1.2 / 1.2 | -15.9 | 12.1 | | | **3.7 - 4.0 M: SANDY SILT**: (ML); dark gray, ~15% fine grained sand, ~5% shell fragments, abundant mica. | |
| | | | -16.2 | 13.1 | 4 | | **4.0 - 4.9 M: SILTY SAND**: (SM); dark gray, ~80% fine to medium grained sand, ~15% silt, ~5% clay, with shell fragments, micaceous, no odor. | |
| | | | -17.1 | 16.1 | | | **TOTAL DEPTH = 4.9 Meters** | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: Pier 15, West Basin (Site 7), LBNC

BOREHOLE NO.: STA-43

Project ID: LB076 Logged by: Crytine Completion: FUGRO, INC

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# BOREHOLE LOG

| | |
|---|---|
| PROJECT and JOB NUMBER | CLEAN II 22214-0026 |
| BOREHOLE NO. | STA-43A |
| SHEET NO. | 1 OF 1 |
| DRILLER/SAMPLER | Gregg Drilling |
| SITE and LOCATION | Pier 15, West Basin (Site 7), LBNC |
| SAMPLE DATE | 8-3-94 |
| EQUIPMENT/VESSEL | Mobile B-61 |
| COORDINATES | N33°44.72' E118°13.61' |
| ELEVATION (Meters below MLLW) | -12.2 |
| TOTAL DEPTH (Meters) | 5.2 |
| SAMPLING METHOD | Vibracore |
| SAMPLE BARREL DIA. | 4 in. |
| LOGGED BY | A. Arnold |
| CHECKED BY: | A. Edward Morelan |
| DATA ENTRY DATE | 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | -12.2 | | | | | |
| | 100 | 5.2/5.2 | | | | | 0.0 - 1.5 M: SILTY CLAY: (CL); black, very soft to fluid becoming firm, at ~1 M, abundant shell fragments up to 2", with hydrogen sulfide odor. | Borehole was advanced through an opening in the pier using 4" steel casing set to sea floor.<br><br>Sampler pushed at a rate of ~2 ft/min. to 4.3 M sub bottom depth (SBD) using weight of drilling rig and vibrated to 5.2 M SBD. |
| | | | -13.7 | 4.9 | 1 | | 1.5 - 5.2 M: CLAYEY SILT: (ML); dark gray, trace fine-grained sand, with hydrogen sulfide odor. | |
| | | | | | 2 | | | |
| | | | | | 3 | | | |
| | | | | | 4 | | increased sand content, some mica, shell fragments up to 1.5", and worm casts up to 1/8". | |
| | | | -17.4 | 17.1 | 5 | | | |
| | | | | | | | TOTAL DEPTH = 5.2 Meters | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: Pier 15, West Basin (Site 7), LBNC

BOREHOLE NO.: STA-43A

Form ID: LBG01.# Ogden template 8/8/94, 8/95

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# BOREHOLE LOG

| | | |
|---|---|---|
| PROJECT and JOB NUMBER: *CLEAN II* 22214-0026 | | BOREHOLE NO.: STA-46 |
| | | SHEET NO. 1 OF 1 |
| DRILLER/SAMPLER: Gregg Drilling | SITE and LOCATION: Pier 12, West Basin (Site 7), LBNC | SAMPLE DATE: 8-3-94 |
| EQUIPMENT/VESSEL: Mobile B-61 | COORDINATES: N33°44.71' E118°13.97' — ELEVATION (Meters below MLLW): -16.2 | TOTAL DEPTH (Meters): 2.9 |
| SAMPLING METHOD: Vibracore — SAMPLE BARREL DIA.: 4 in. | LOGGED BY: A. Arnold — CHECKED BY: A. Edward Morelan | DATA ENTRY DATE: 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | -16.2 | | | | | |
| | 100 | 2.9 / 2.9 | | | | | 0.0 - 1.2 M: SILTY CLAY: (CL); black, very soft to fluid, abundant shell fragments, with hydrogen sulfide odor. | Borehole was advanced through an opening in the pier using 4" steel casing set to sea floor. Sampler pushed to 2.1 M sub bottom depth (SBD) using weight of drilling rig and vibrated to 2.9 M SBD. |
| | | | -17.4 | 3.9 | 1 | | 1.2 - 2.9 M: SILTY CLAY to SANDY SILT: (ML); dark gray, soft to stiff with depth, fine-grained sand content increasing with depth, some shell fragments, few worm-hole casts, with hydrogen sulfide odor. | |
| | | | -19.1 | 9.5 | 2 | | | |
| | | | | | | | TOTAL DEPTH = 2.9 Meters | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: Pier 12, West Basin (Site 7), LBNC

BOREHOLE NO.: STA-46

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# BOREHOLE LOG

| | |
|---|---|
| PROJECT and JOB NUMBER | CLEAN II 22214-0026 |
| BOREHOLE NO. | STA-51 |
| SHEET NO. | 1 OF 1 |
| DRILLER/SAMPLER | Gregg Drilling |
| SITE and LOCATION | Pier 2, West Basin (Site 7), LBNC |
| SAMPLE DATE | 7-26-94 |
| EQUIPMENT/VESSEL | Mobile B-61 |
| COORDINATES | N33°45.15' E118°13.72' |
| ELEVATION (Meters below MLLW) | -14.6 |
| TOTAL DEPTH (Meters) | 5.2 |
| SAMPLING METHOD | Vibracore |
| SAMPLE BARREL DIA. | 2.5 in. |
| LOGGED BY | R. Migues |
| CHECKED BY: | A. Edward Morelan |
| DATA ENTRY DATE | 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | -14.6 | | | | | |
| 0 | 45 | 2.4/3.2 | | | | | 0.0 - 0.8 M: MUD mixed with Oil Sludge: black, plastic, with mussel shells in upper 5". | Borehole was advanced through an opening in the pier using 4" steel casing set to sea floor. |
| | | | -15.4 | 2.6 | 1 | | 0.8 - 4.5 M: SANDY SILTY CLAY (CL): black changing to dark gray with depth, sand is fine grained, abundant to moderate petroleum sludge content. | First sampling attempt hit obstruction at 0.8 M sub bottom depth (SBD) and was abandoned.<br>Second sampling attempt advanced to 2.1 M SBD under weight of sampling device and vibrated to 5.2 M SBD.<br>Sample had petroleum and H2S odor; no organic reading with Organic Vapor Meter. |
| | | | | | 2 | | | |
| | | | | | 3 | | | |
| | | | | | 4 | | | |
| | | | -19.1 | 14.8 | | | 4.5 - 4.6 M: SILTY CLAY (CL): grayish black, some petroleum sludge. | |
| | | | -19.2 | 15.1 | | | 4.6 - 5.2 M: SILTY SAND (SM): grayish black to dark gray, fine to medium grained, abundant mica flakes. | |
| | | | -19.8 | 17.1 | 5 | | | |
| | | | | | | | TOTAL DEPTH = 5.2 Meters | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: Pier 2, West Basin (Site 7), LBNC

BOREHOLE NO.: STA-51

Project ID: LB024 4-Color template: BOREA.prt

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# BOREHOLE LOG

| | |
|---|---|
| PROJECT and JOB NUMBER | *CLEAN II* 22214-0026 |
| BOREHOLE NO. | STA-51A |
| SHEET NO. | 1 OF 1 |
| DRILLER/SAMPLER | Gregg Drilling |
| SITE and LOCATION | Pier 2, West Basin (Site 7), LBNC |
| SAMPLE DATE | 8-3-94 |
| EQUIPMENT/VESSEL | Mobile B-61 |
| COORDINATES | N33°45.15' E118°13.72' |
| ELEVATION (Meters below MLLW) | -14.3 |
| TOTAL DEPTH (Meters) | 4.9 |
| SAMPLING METHOD | Vibracore |
| SAMPLE BARREL DIA. | 4 in. |
| LOGGED BY | A. Arnold |
| CHECKED BY: | A. Edward Morelan |
| DATA ENTRY DATE | 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below See Floor: Equivalent in feet | Depth below See Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | 78 | 3.8<br>4.9 | -14.3 | | | | **0.0 - 1.8 M: SILTY CLAY**: (CL); black, soft to fluid, abundant shell fragments up to 2", hydrogen sulfide odor. | Borehole was advanced through an opening in the pier using 4" steel casing set to sea floor (location resampled to obtain better recovery).<br><br>Sampler pushed at a rate of ~1 ft/min. to 4.0 M sub bottom depth (SBD) using weight of drilling rig and vibrated to 4.9 M SBD.<br><br>Sample appears compacted by drilling technique. |
| | | | -16.1 | 5.9 | 1 | | **1.8 - 3.0 M: CLAYEY SILT (ML)**: dark gray, saturated, with sand lenses, soft, hydrogen sulfide odor. | |
| | | | -17.3 | 9.8 | 2 | | **3.0 - 3.7 M: SILTY CLAY (CL)**: dark gray, sticky, hydrogen sulfide odor, saturated. | |
| | | | -18.0 | 12.1 | 3 | | **3.7 - 4.9 M: CLAYEY SILT with SAND**: (ML); dark gray, relatively dense, sand is fine grained. | |
| | | | -19.2 | 16.1 | 4 | | **TOTAL DEPTH = 4.9 Meters** | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: Pier 2, West Basin (Site 7), LBNC

BOREHOLE NO.: STA-51A

Project ID: LB014 & 015 Template: BOREHOLE.TPL

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# BOREHOLE LOG

| | | |
|---|---|---|
| PROJECT and JOB NUMBER: *CLEAN II* 22214-0026 | | BOREHOLE NO.: 40010.1 |
| | | SHEET NO. 1 OF 1 |
| DRILLER/SAMPLER: MEC | SITE and LOCATION: Reference Station, West Basin (Site 7), LBNC | SAMPLE DATE: 6-26-94 |
| EQUIPMENT/VESSEL: The Crusader | COORDINATES: N33°44.88' E118°16.83' ELEVATION (Meters below MLLW): -4.0 | TOTAL DEPTH (Meters): 2.0 |
| SAMPLING METHOD: Vibracore SAMPLE BARREL DIA.: 4 in. | LOGGED BY: S. Rudolph CHECKED BY: A. Edward Morelan | DATA ENTRY DATE: 11-17-95 |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | 100 | 2.0 / 2.0 | -4.0 | | | | 0.0 - 2.0 M: CLAY: (CL); dark brown, very cohesive, no odor. | Sampling device refusal at 2.0 M sub bottom depth; barrel bent. |
| | | | | | 1 | | | |
| | | | | | | | at 1.8 M: blocky. | |
| | | | -6.0 | 6.6 | 2 | | | |
| | | | | | | | TOTAL DEPTH = 2.0 Meters | |

See Figure Q-1 for graphic symbols and description.

SITE and LOCATION: Reference Station, West Basin (Site 7), LBNC

BOREHOLE NO.: 40010.1

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# BOREHOLE LOG

| | | |
|---|---|---|
| PROJECT and JOB NUMBER: *CLEAN II* 22214-0026 | | BOREHOLE NO.: 40018.3 |
| DRILLER/SAMPLER: MEC | SITE and LOCATION: Reference Station, West Basin (Site 7), LBNC | SHEET NO. 1 OF 1 |
| EQUIPMENT/VESSEL: The Crusader | COORDINATES: N33°43.87' E118°09.97' | ELEVATION (Meters below MLLW): -15.8 |
| SAMPLING METHOD: Vibracore | SAMPLE BARREL DIA.: 4 in. | LOGGED BY: S. Rudolph |
| CHECKED BY: A. Edward Morelan | | DATA ENTRY DATE: 11-17-95 |
| SAMPLE DATE: 6-26-94 | TOTAL DEPTH (Meters): 5.0 | |

| Organic Vapor Reading (ppm) | Sample Recovery (%) | Core Recovered/ Advance in Meters | Elevation, Meters below MLLW | Depth below Sea Floor: Equivalent in feet | Depth below Sea Floor: Meters | Lithology | Lithologic Description | Remarks |
|---|---|---|---|---|---|---|---|---|
| | 100 | 5.0/5.0 | -15.8 | | | | 0.0 - 1.0 M: SILTY CLAY: (CL); black, becoming sandy with depth. | |
| | | | -16.8 | 3.3 | 1 | | 1.0 - 2.0 M: CLAYEY SAND: (SC); abundant shell hash in upper one-third of section. | |
| | | | -17.8 | 6.6 | 2 | | 2.0 - 3.0 M: CLAY: (CL); light gray, hard. | |
| | | | -18.8 | 9.8 | 3 | | 3.0 - 4.0 M: SANDY CLAY: (CL); light gray, hard. | |
| | | | -19.8 | 13.1 | 4 | | 4.0 - 5.0 M: SAND: (SP); very dense, partially cemented. | |
| | | | -20.8 | 16.4 | 5 | | | |
| | | | | | | | TOTAL DEPTH = 5.0 Meters | |

See Figure Q-1 for graphic symbols and description

SITE and LOCATION: Reference Station, West Basin (Site 7), LBNC

BOREHOLE NO.: 40018.3

VOL 18

1008

R0063384

VOL 18

## APPENDIX R

# PARTICLE SIZE DISTRIBUTION CURVES

10099

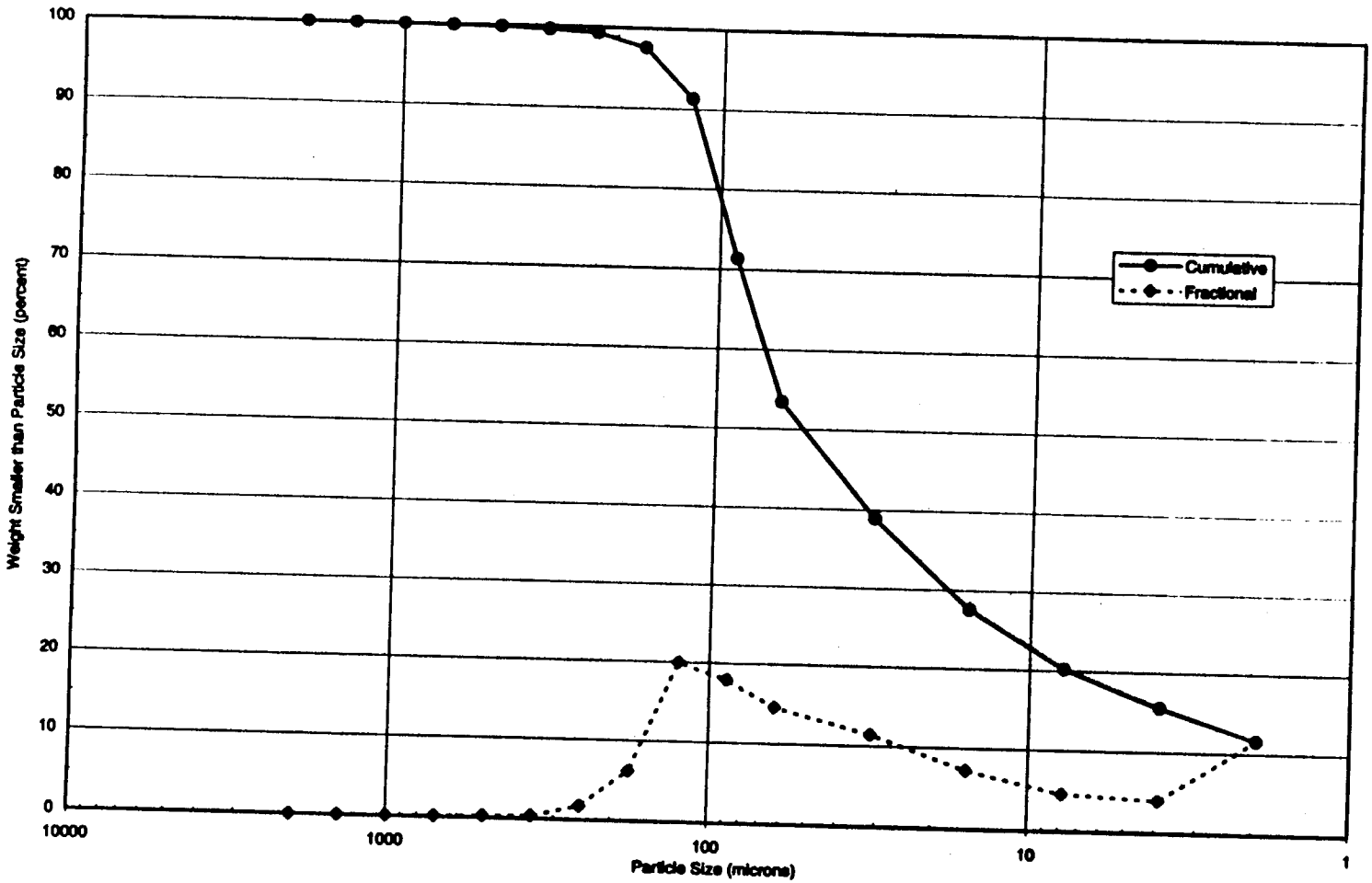


**Figure R-1**
**Particle Size Distribution**
**West Basin Station 1**

11/16/95 12:24 PM L:\CTO28\RRV_DRFT\APPENDIX\26_PSD.XLS\D Chart 3

R0063386

VOL 18

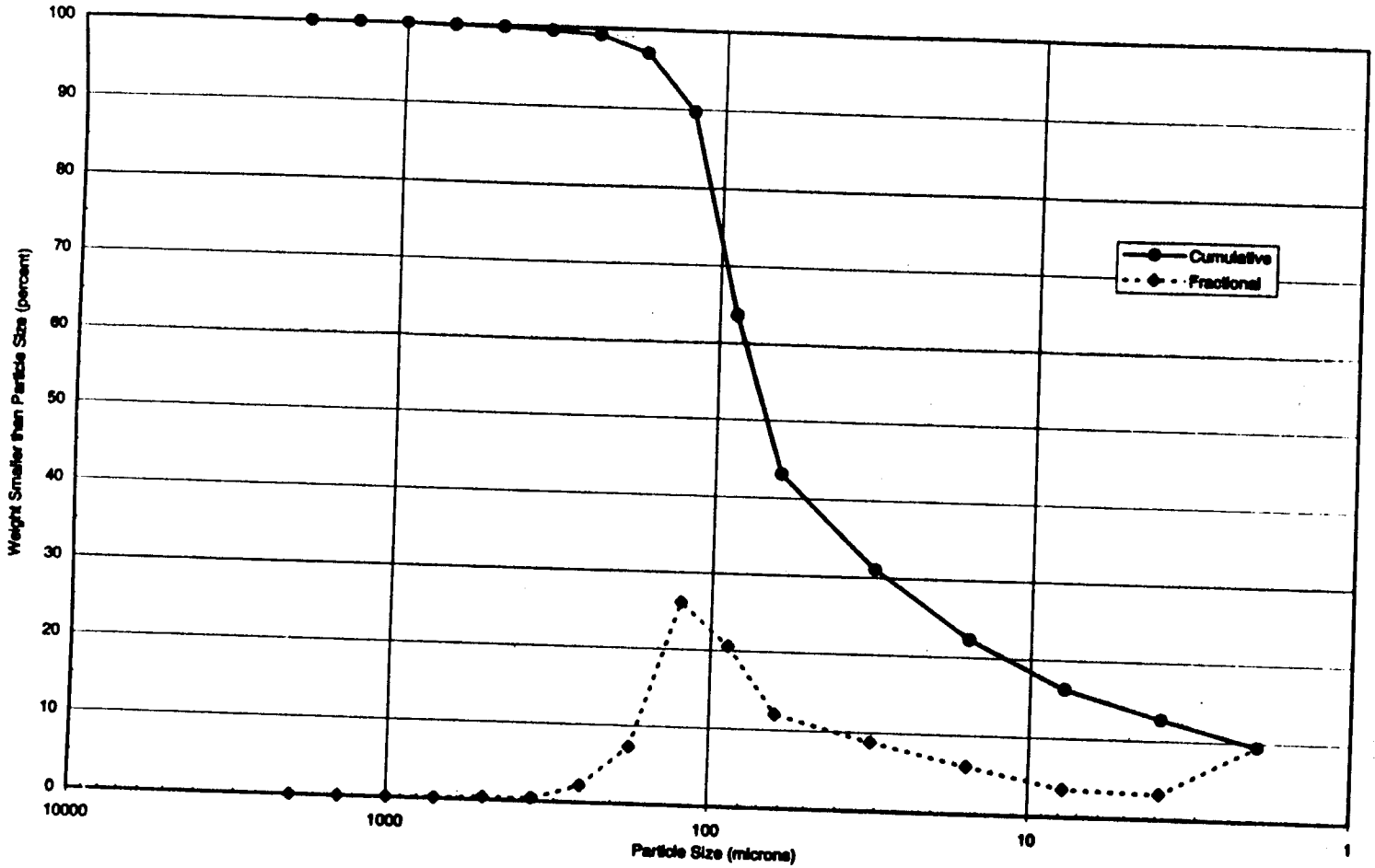


**Figure R-1.1**
**Particle Size Distribution**
**West Basin Station 1 - REP1**

11/16/95 1:46 PM L:\CTO26\RNRV_DRFT\APPENDIX\26_PSD.XLS\D Chart 11-1

R0063387

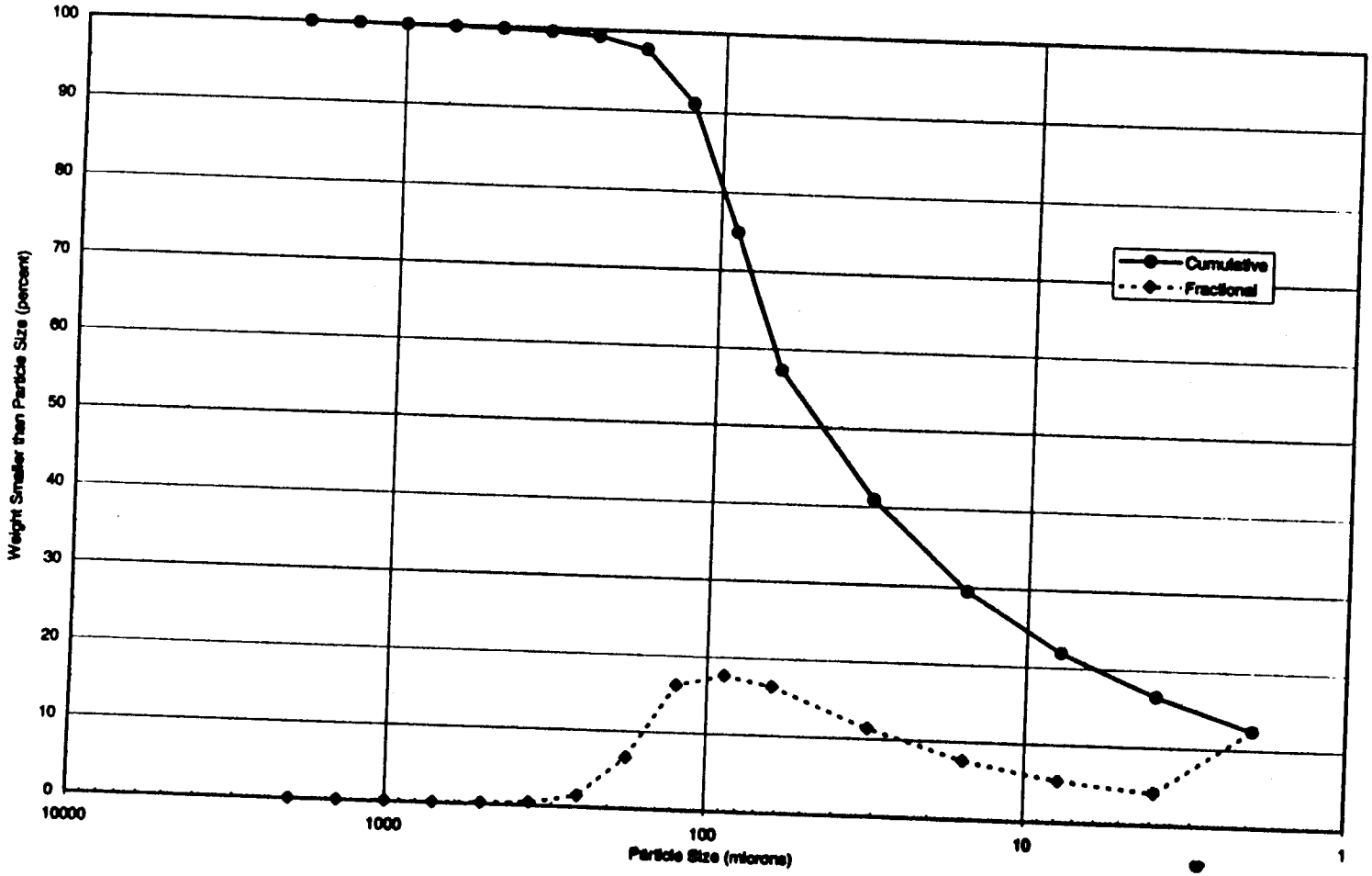


**Figure R-1.2**
**Particle Size Distribution**
**West Basin Station 1 - REP2**

11/16/98 1:44 PM L:\CTO26\RI\RV_DRFT\APPENDIX\26_PSD.XLS\D Chart 11-2

R0063388

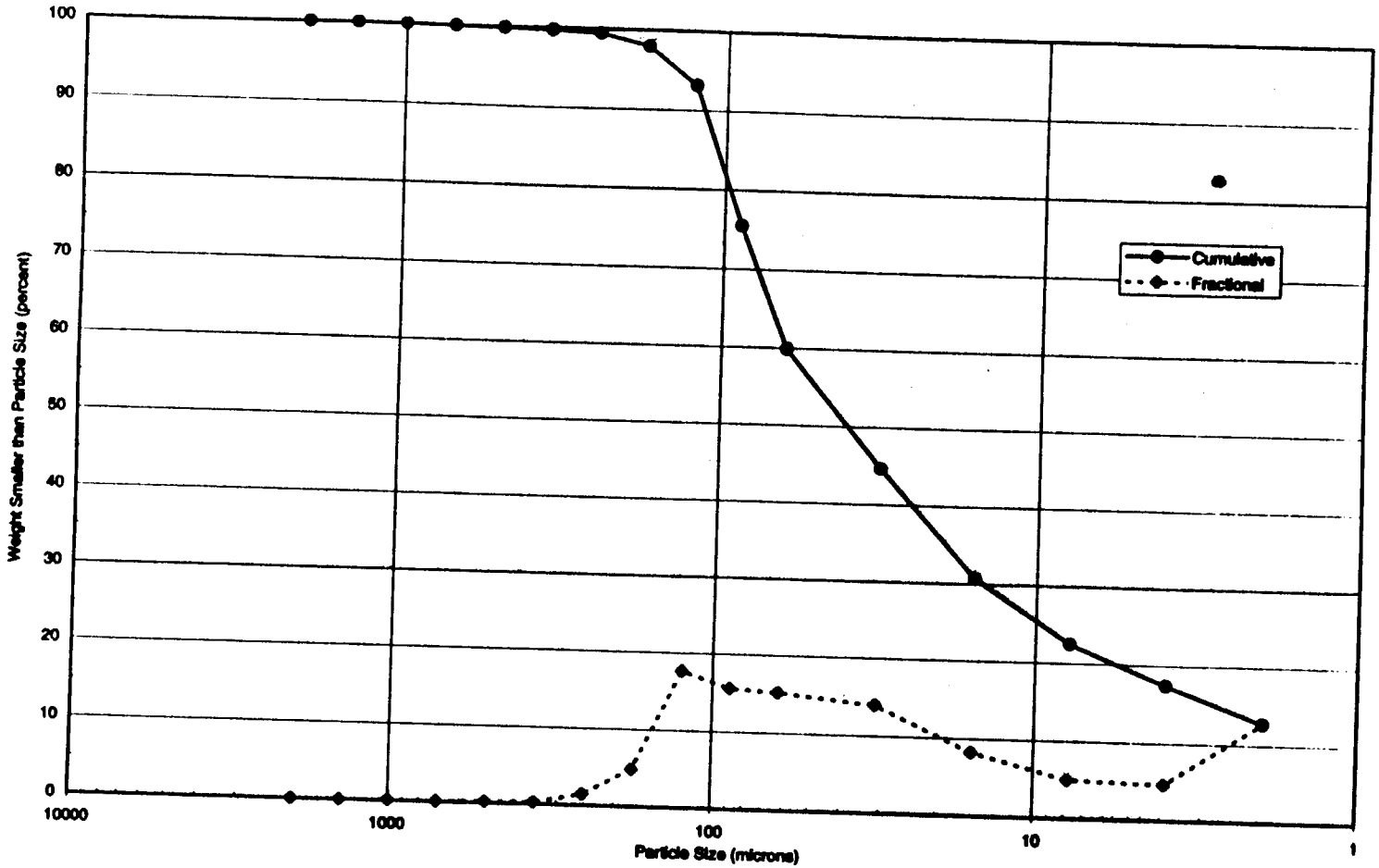


**Figure R-1.3**
**Particle Size Distribution**
**West Basin Station 1 - REP3**

11/16/96 1:42 PM L:\CTO26\RIVRV_DRFT\APPENDIX\98_PSD.XLS\D Chart 11-8

R0063389

VOL 18

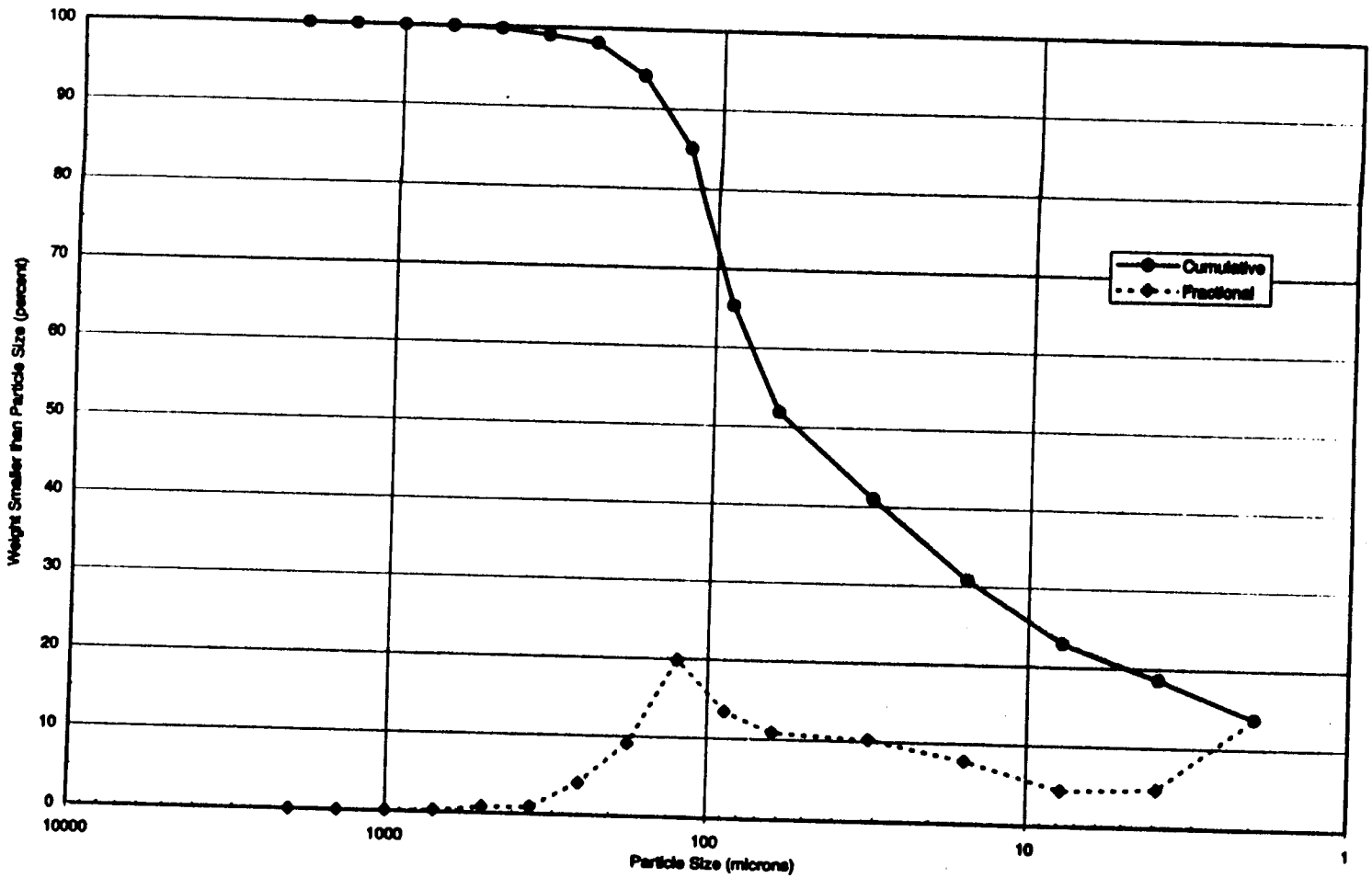


**Figure R-2**
**Particle Size Distribution**
**West Basin Station 2**

11/18/95 10:48 AM L:\CTO28\WMRV_DRFT\APPENDIX\96_PSD.XLS\C Chart 3

R0063390

VOL 18

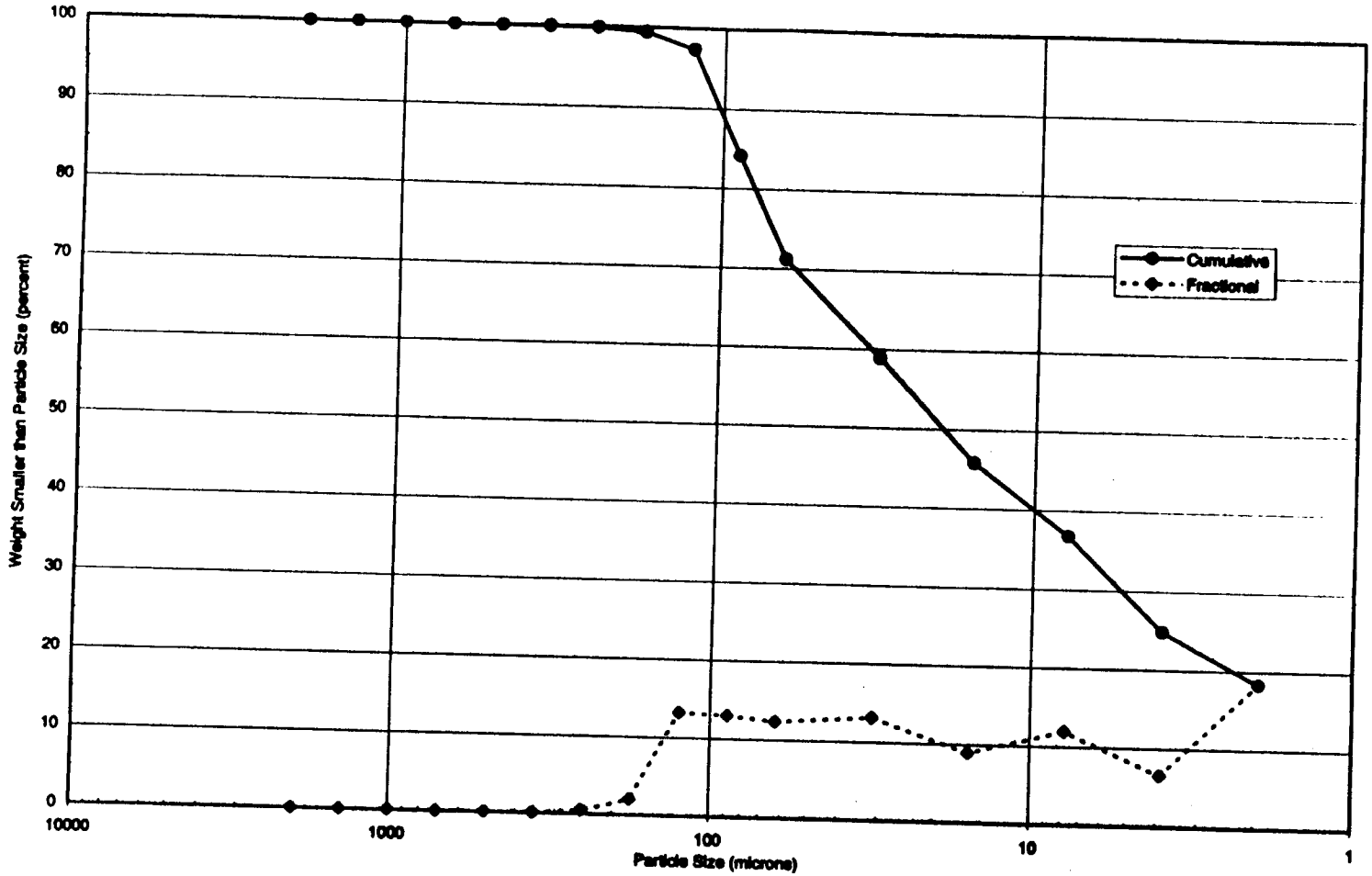


**Figure R-3**
**Particle Size Distribution**
**West Basin Station 3**

11/16/95 12:26 PM L:\CTO26\RNRV_DRFT\APPENDIX\26_PSD.XLS\D Chart 11

R0063391

VOL 18

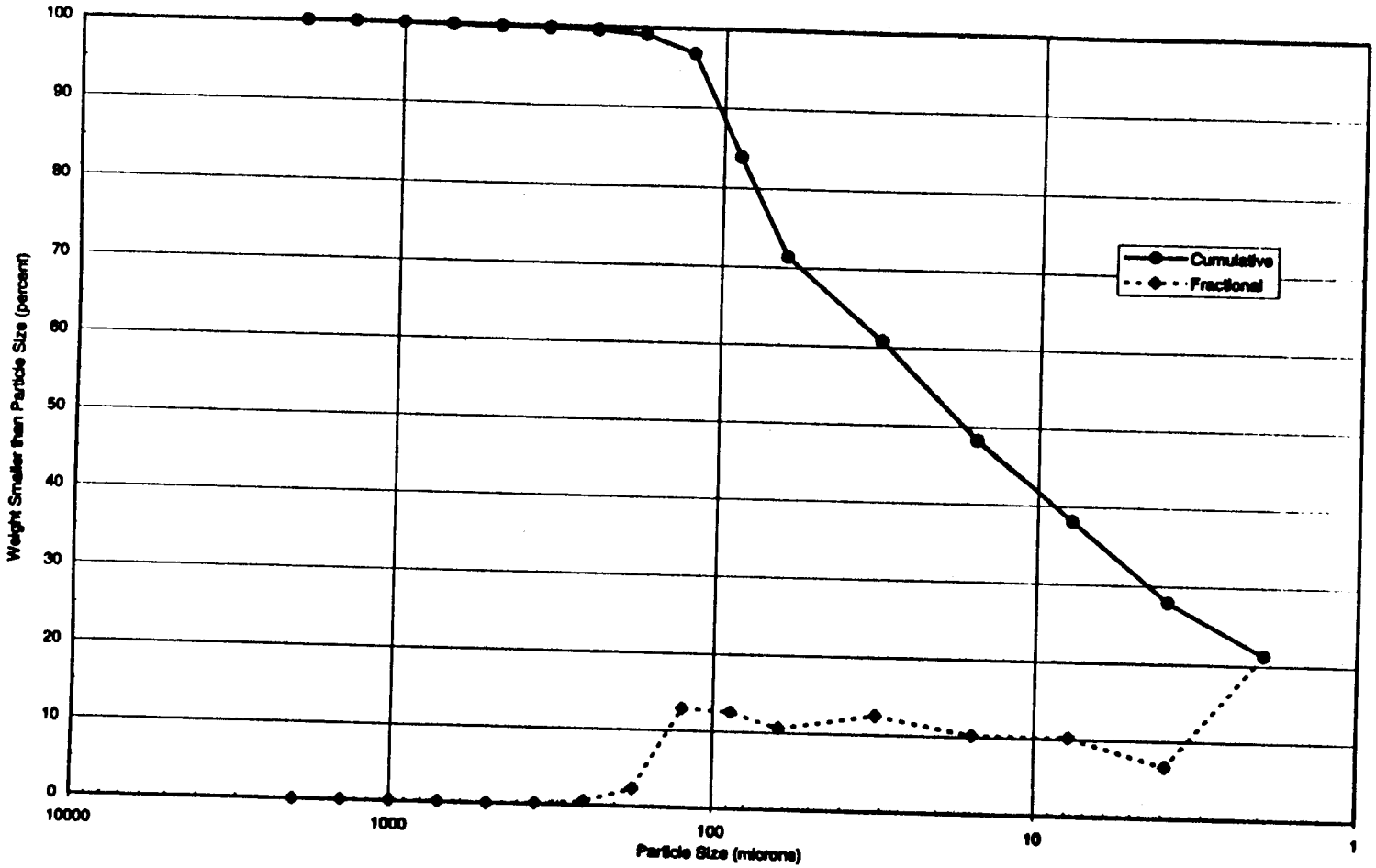


**Figure R-4**
**Particle Size Distribution**
**West Basin Station 4**

11/16/95 12:32 PM L:\CTO26\RNRV_DRFT\APPENDIX\26_PSD.XLS\D Chart 11-1

R0063392

VOL 18

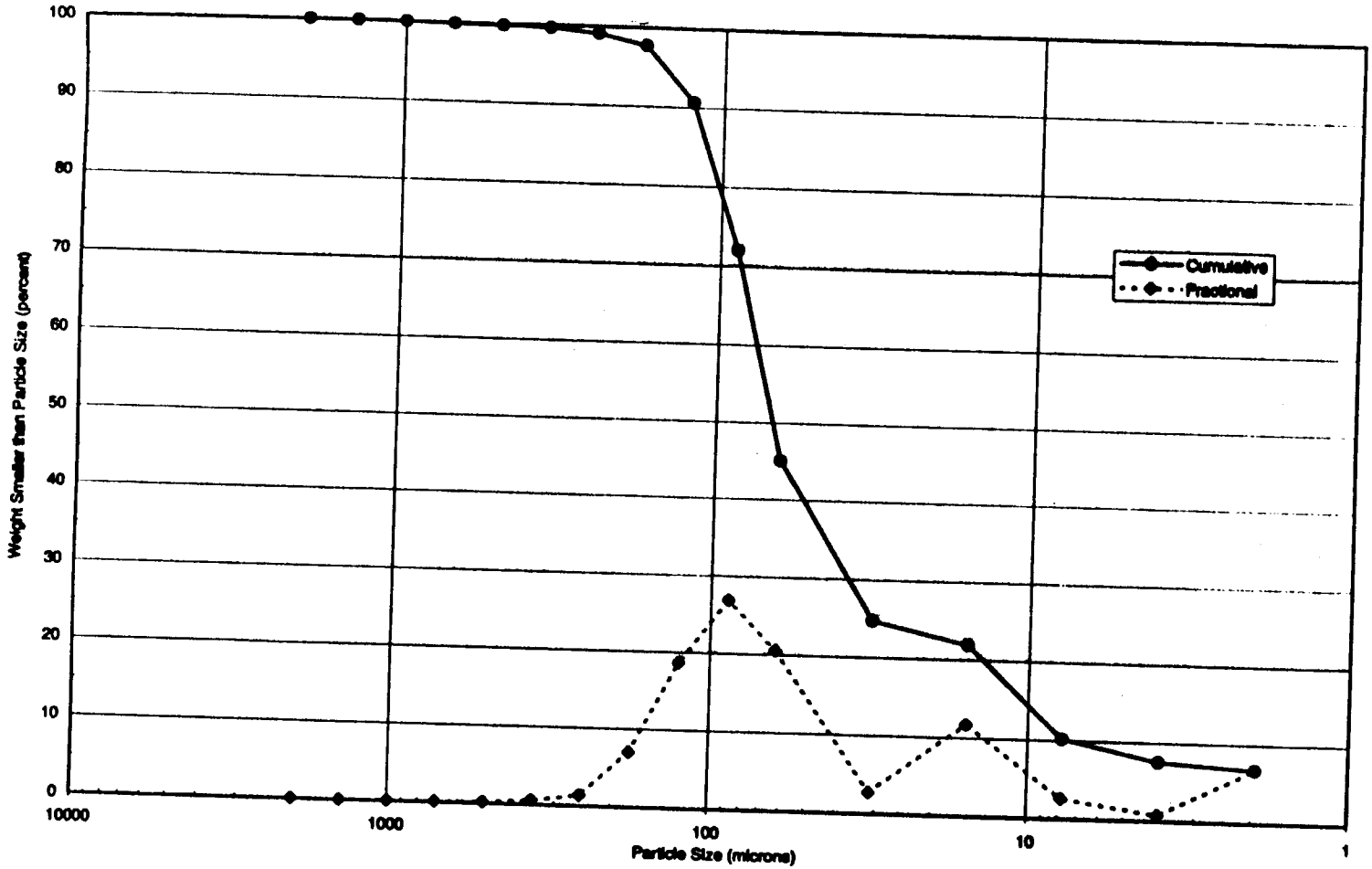


**Figure R-5**
**Particle Size Distribution**
**West Basin Station 5**

11/16/95 10:21 AM L:\CTO26\RRV_DRFT\APPENDIX\26_PSD.XLS\B Chart 3

10:25

R0063393

VOL 18

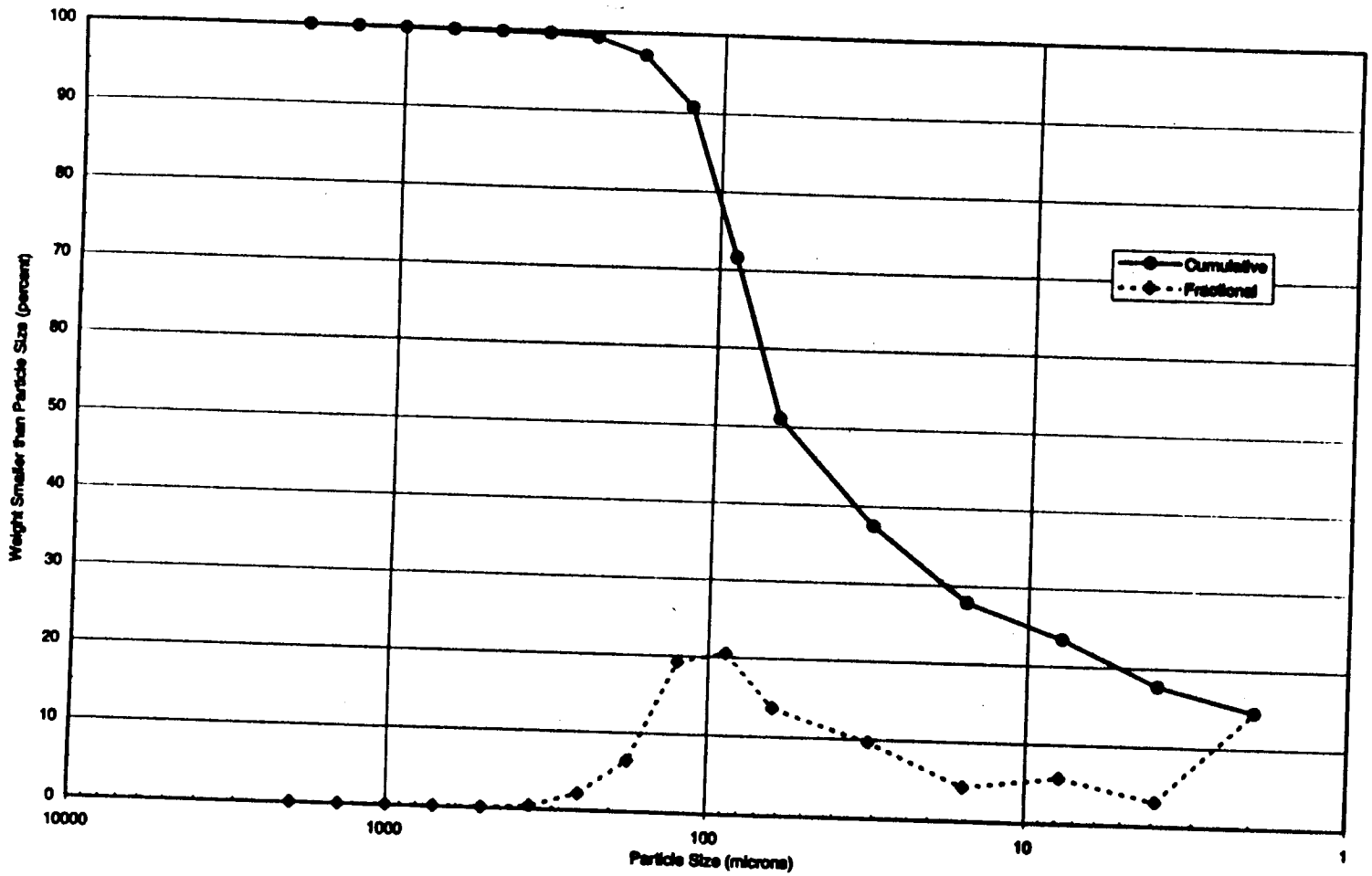


**Figure R-6**
**Particle Size Distribution**
**West Basin Station 6**

11/18/95 10:25 AM L:\CTO26\RWRV_DRFT\APPENDIX\26_PSD.XLS\B Chart 6

R0063394

VOL 18

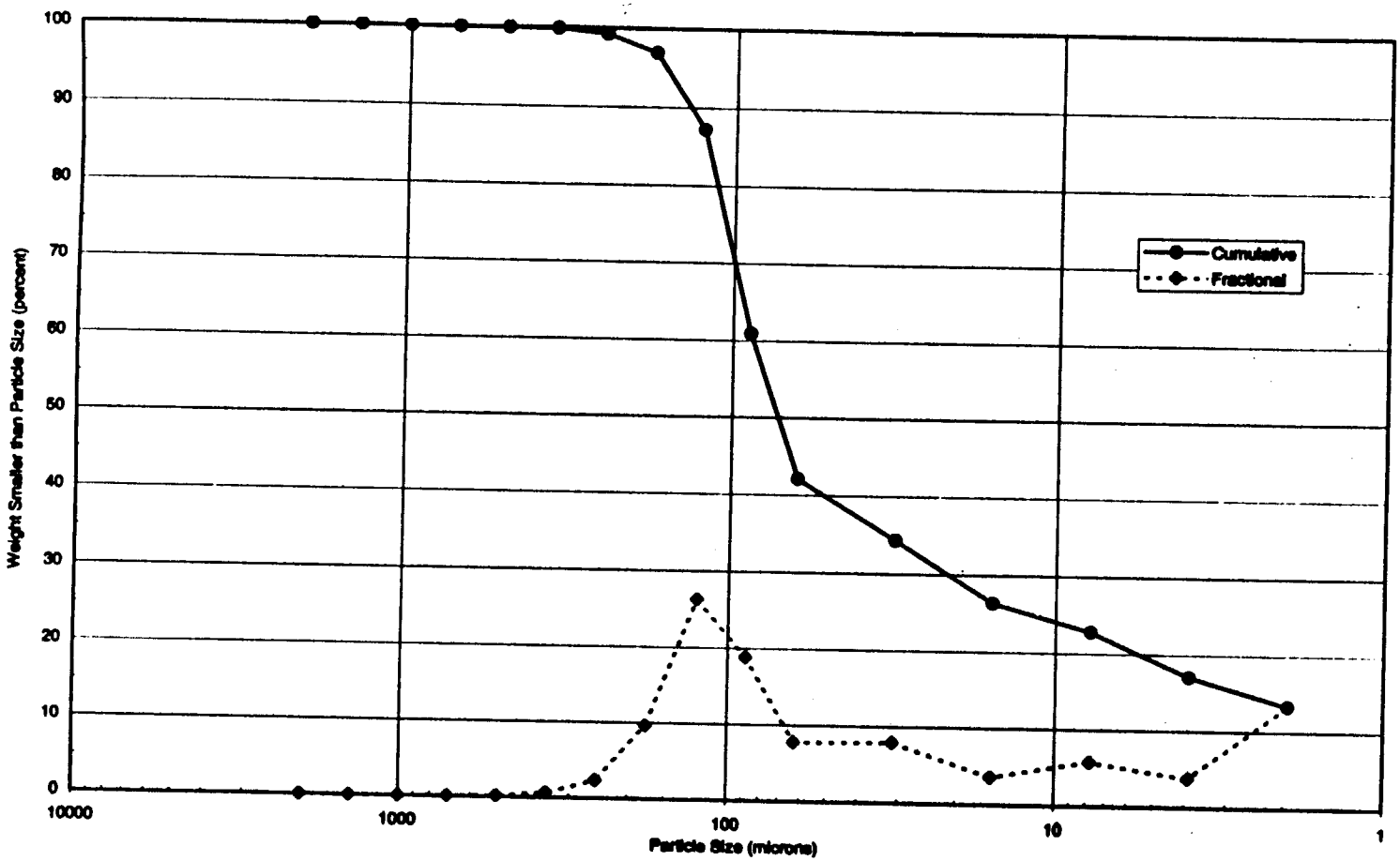


**Figure R-7**
**Particle Size Distribution**
**West Basin Station 7**

11/16/95 12:35 PM L:\CTO26\RI\RV_DRFT\APPENDIX\26_PSD.XLS\D Chart 11-2

32 AM

R0063395

VOL 18

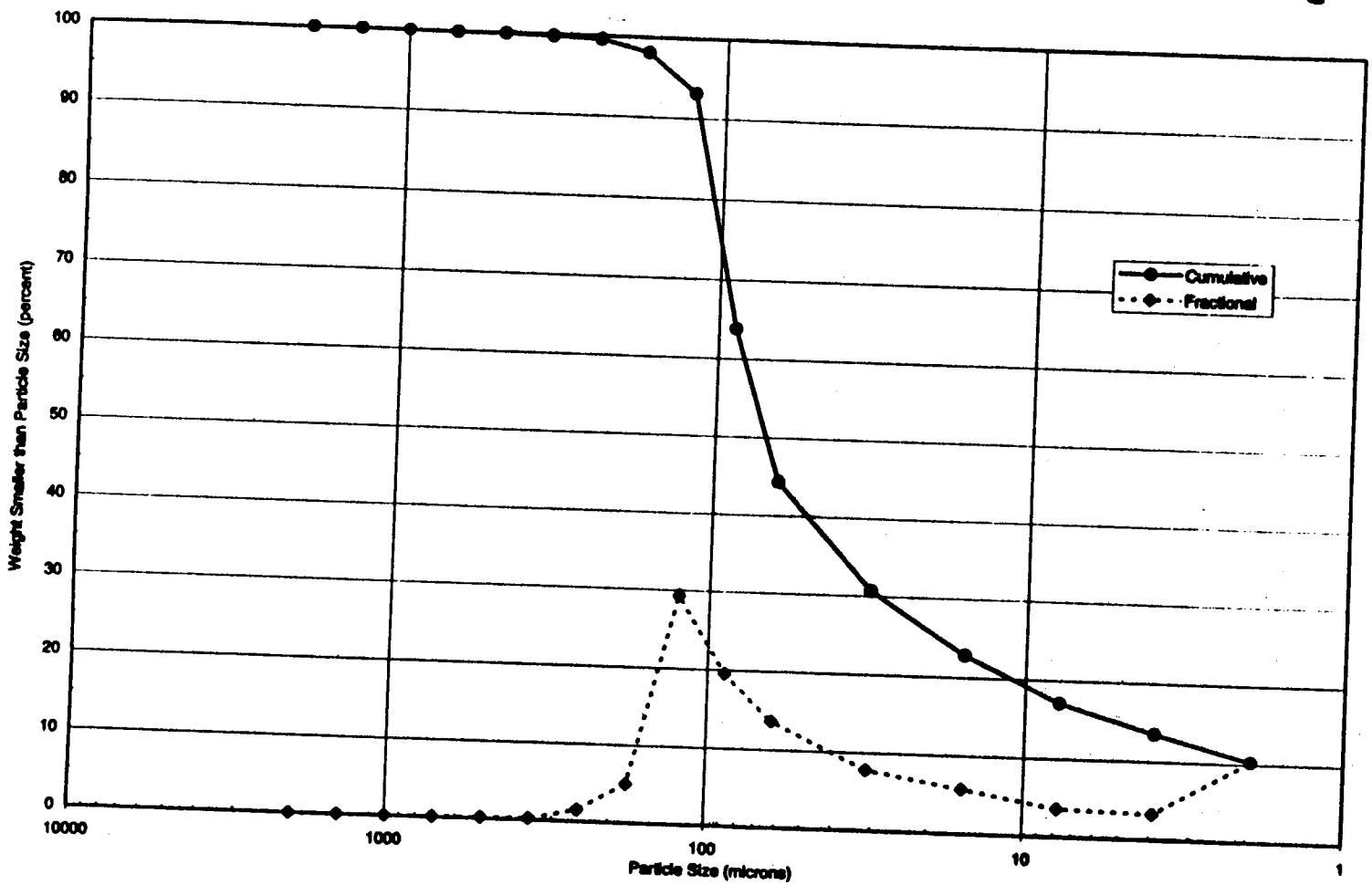


**Figure R-8**
**Particle Size Distribution**
**West Basin Station 8**

11/18/96 10:32 AM L:\CTO26\RWRV_DRFT\APPENDIX\26_PSD.XLS\8 Chart 8-1

R0063396

VOL 18

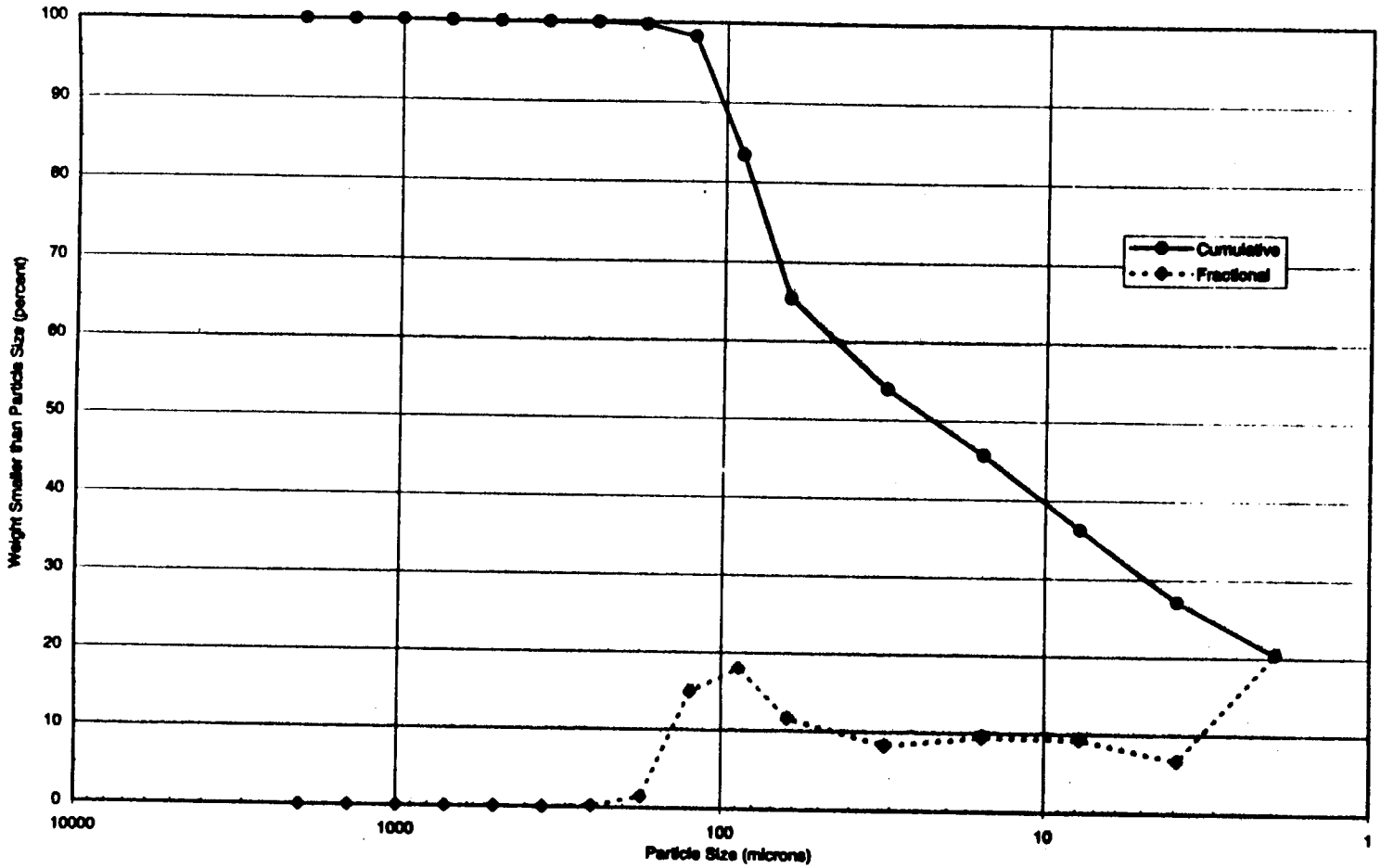


**Figure R-9**
**Particle Size Distribution**
**West Basin Station 9**

11/16/95 10:56 AM L:\CTO26\RNRV_DRFT\APPENDIX\26_PSD.XLS\C Chart 13

R0063397

VOL 18

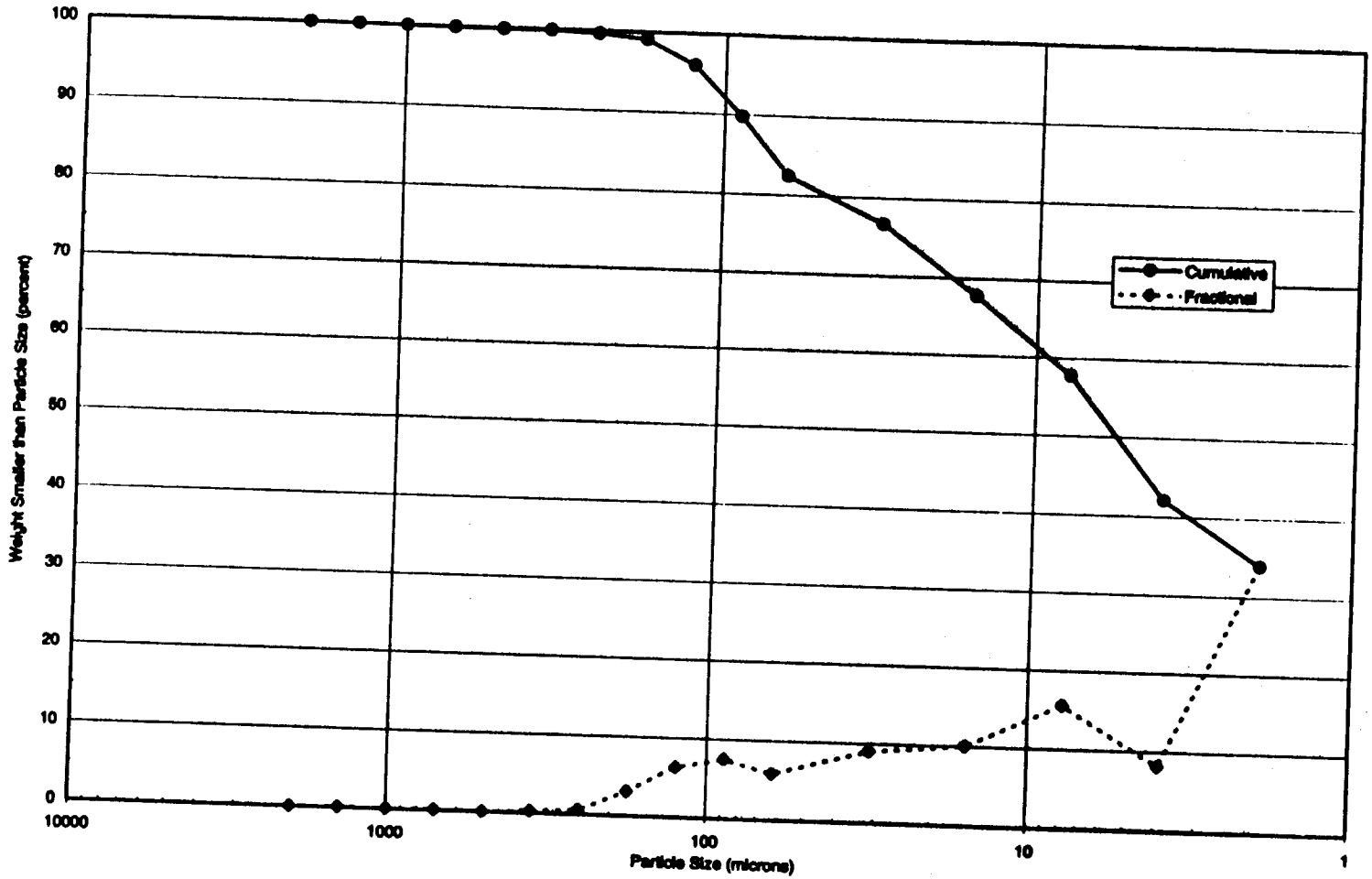


**Figure R-10**
**Particle Size Distribution**
**West Basin Station 10**

1/16/98 2:32 PM L:\CTO28\WWRV_DRFT\APPENDIX\R6_PSD.XLS\F Chart 3

R0063398

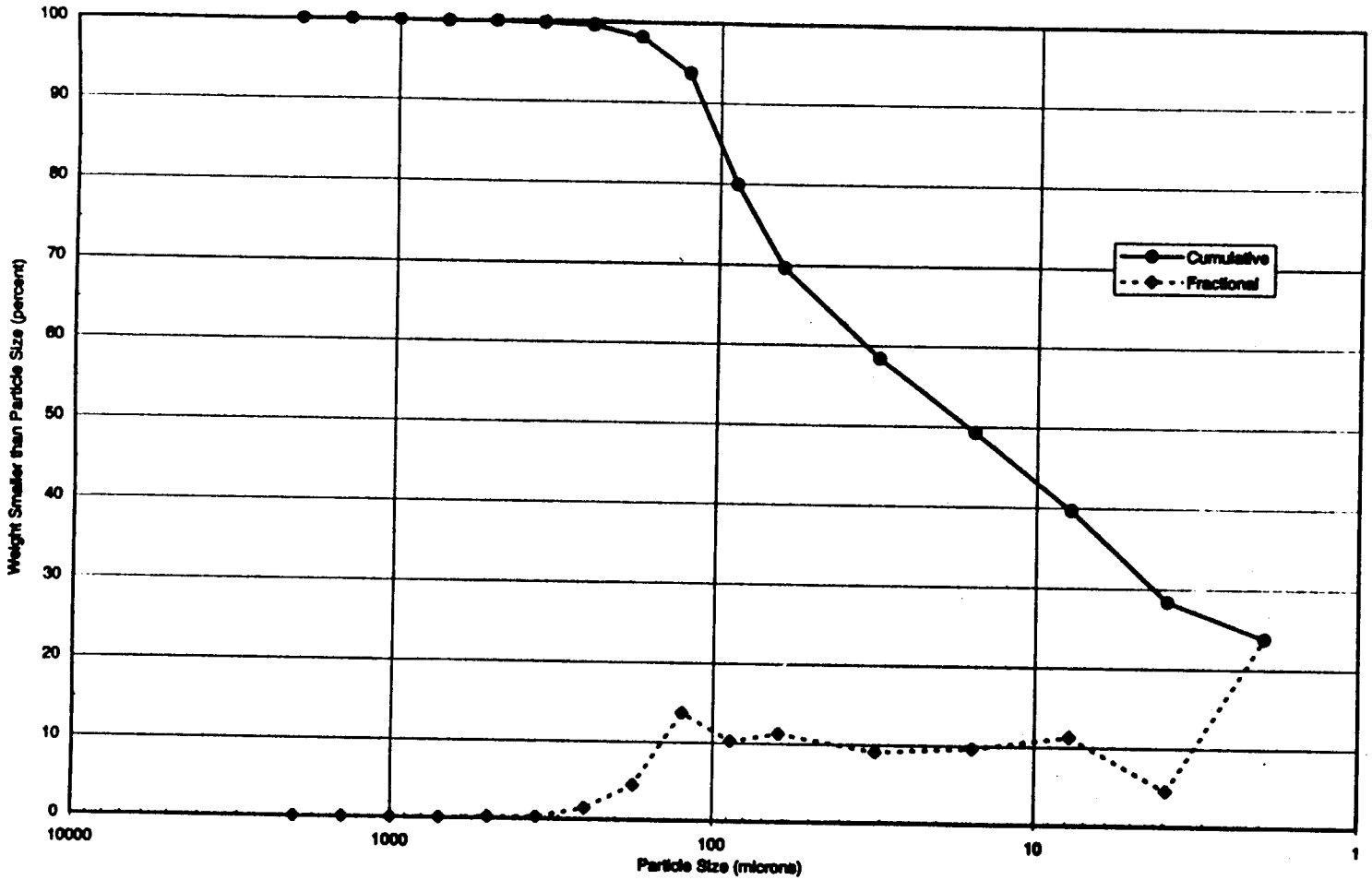


**Figure R-11**
**Particle Size Distribution**
**West Basin Station 11**

11/16/95 1:56 PM L:\CTO29\WRV_DRFT\APPENDIX\28_PSD.XLS\E Chart 3

R0063399

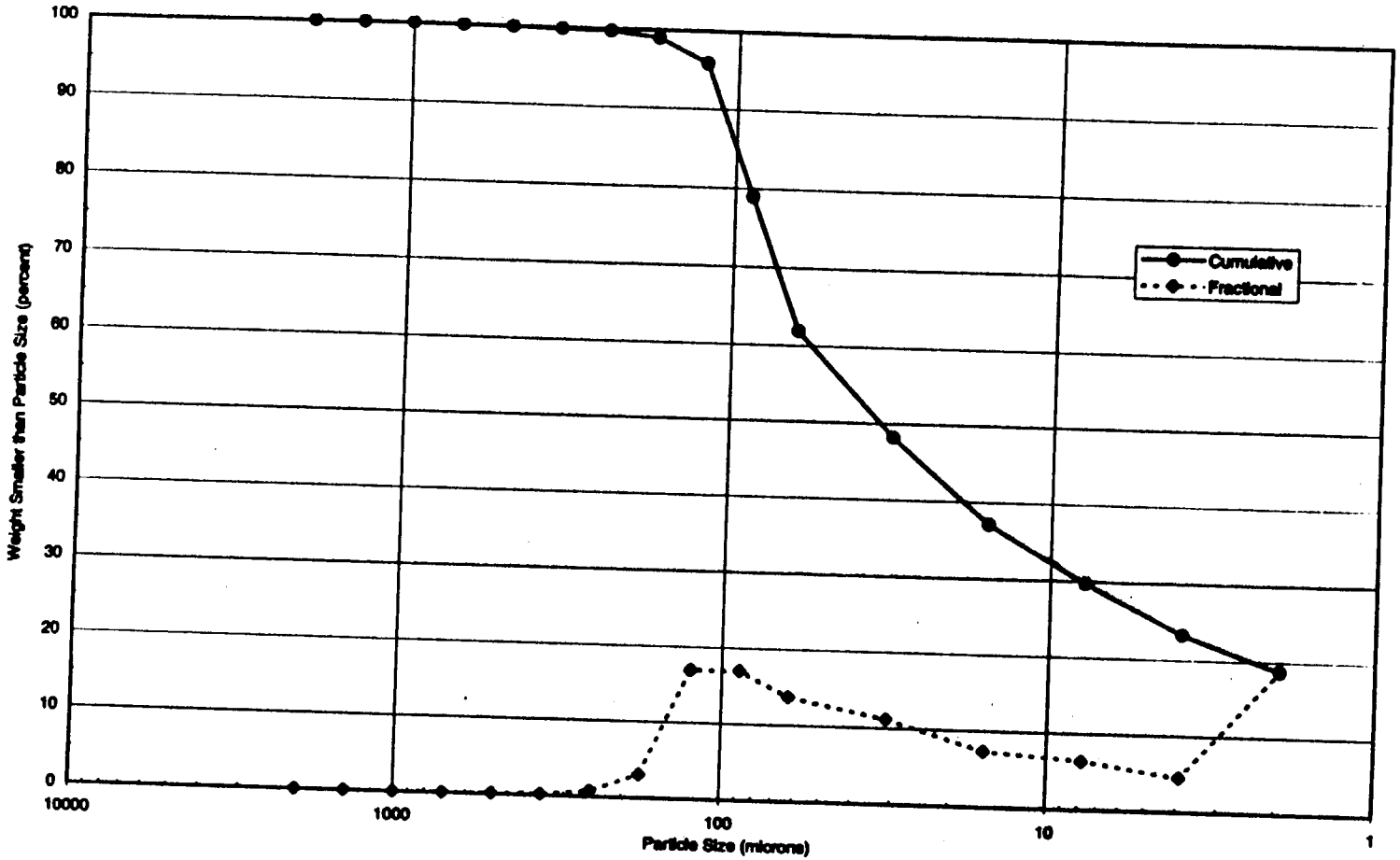


**Figure R-12**
**Particle Size Distribution**
**West Basin Station 12**

11/16/98 12:38 PM L:\CTO26\RWRV_DRFT\APPENDIX\98_PSD.XLS\D Chart 11-3

R0063400

VOL 18

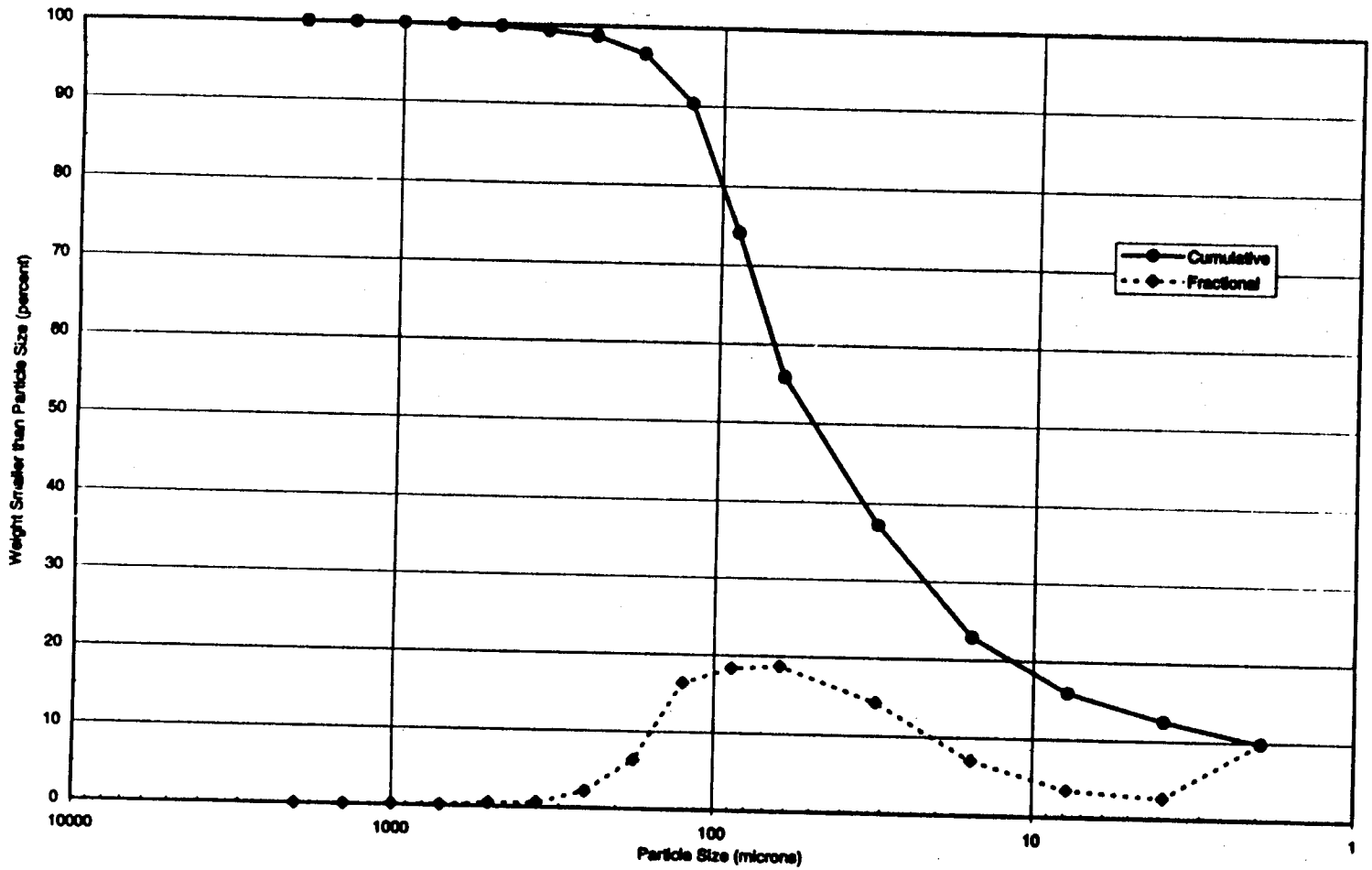


**Figure R-13**
**Particle Size Distribution**
**West Basin Station 13**

11/16/95 1:22 PM L:\CTO26\RRRV_DRFT\APPENDIX\26_PSD.XLS\D Chart 11

10:37

R0063401

VOL 18

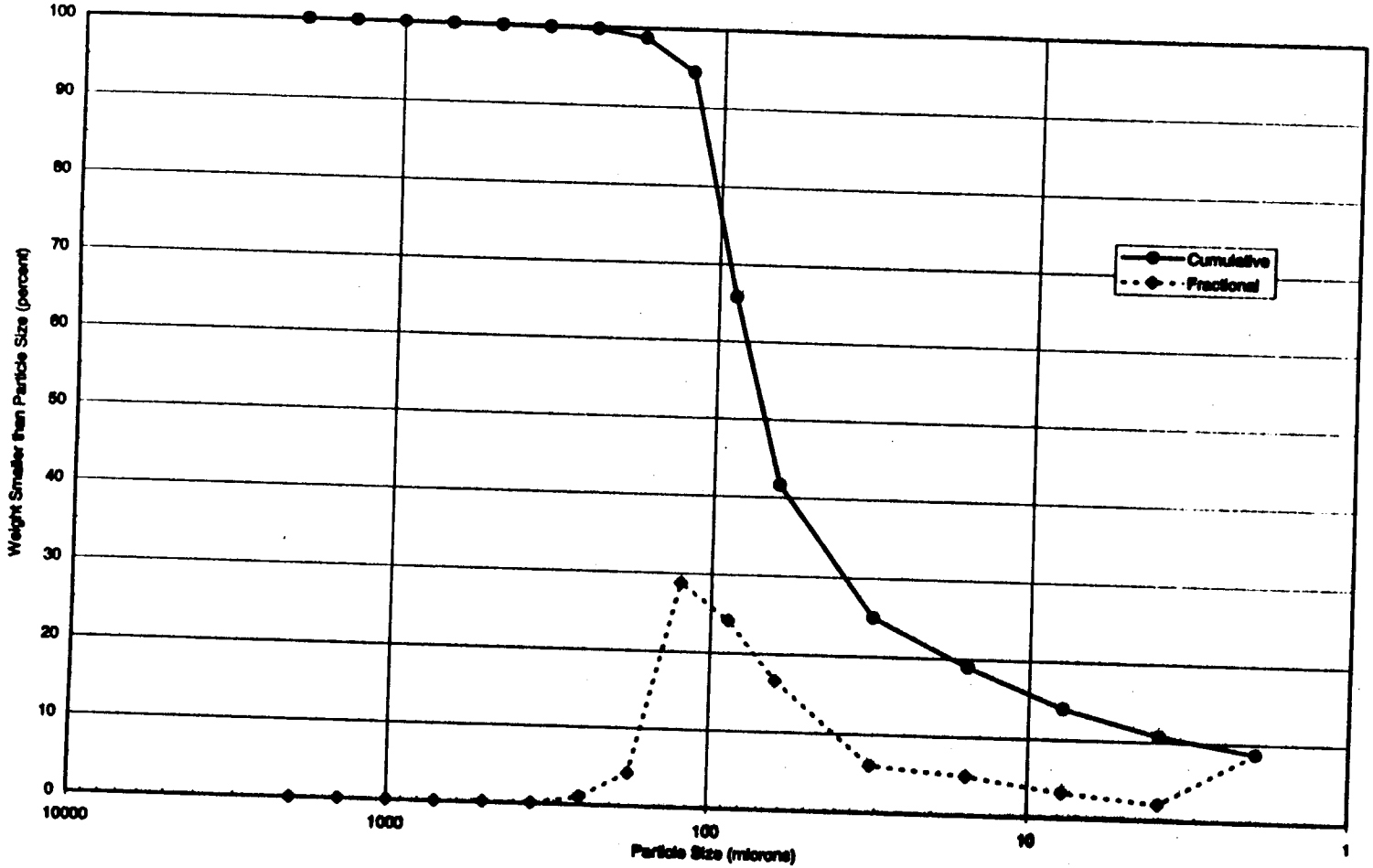


**Figure R-14**
**Particle Size Distribution**
**West Basin Station 14**

11/16/98 10:37 AM L:\CTO\...\RWRV_DRFT\APPENDIX\...\PSD.XLS\B Chart 6-2

R0063402

VOL 18

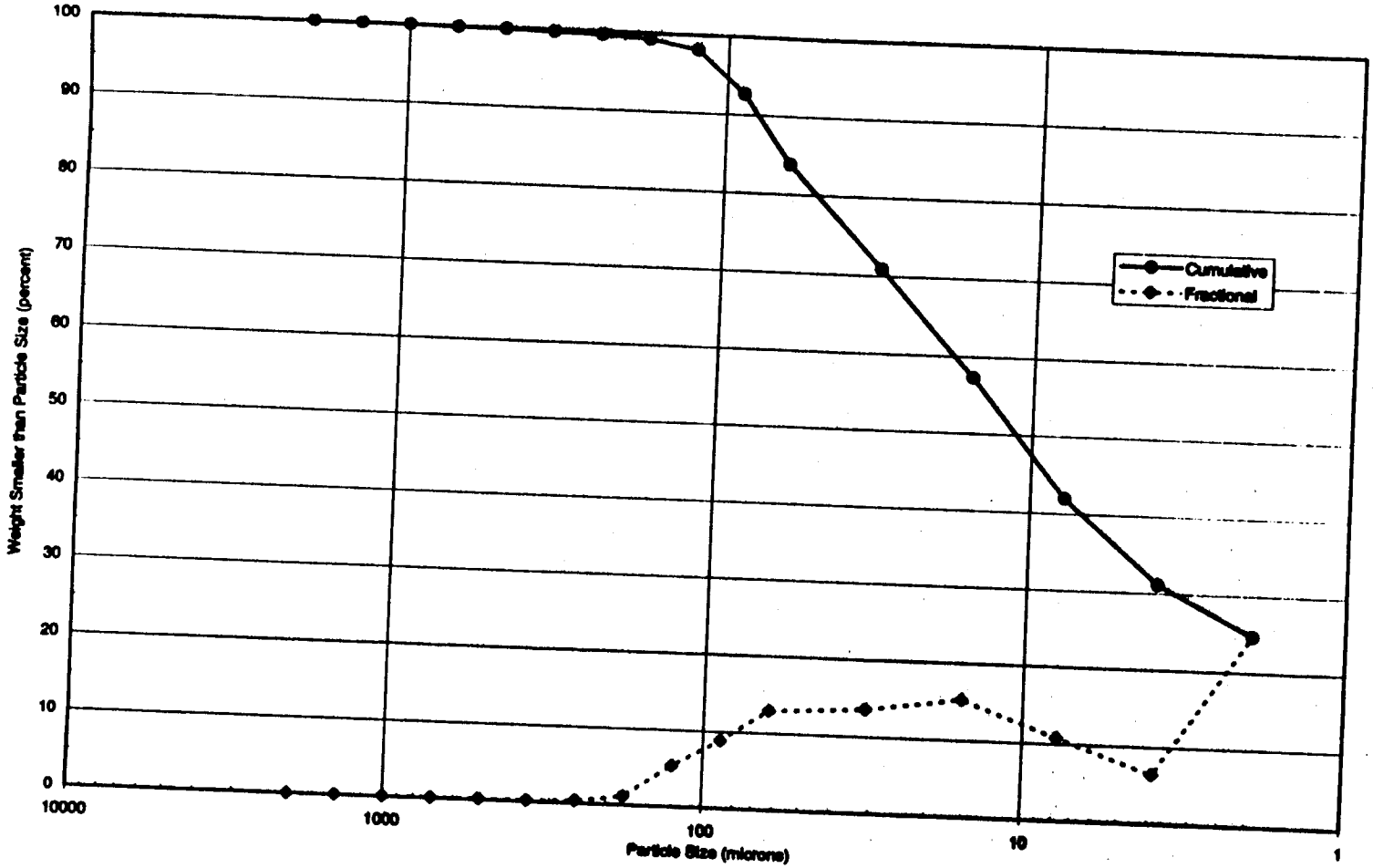


**Figure R-15**
**Particle Size Distribution**
**West Basin Station 15**

11/18/96 10:58 AM L:\CTO28\WRV_DRFT\APPENDIX\98_PSD.XLS\C Chart 15-1

R0063403

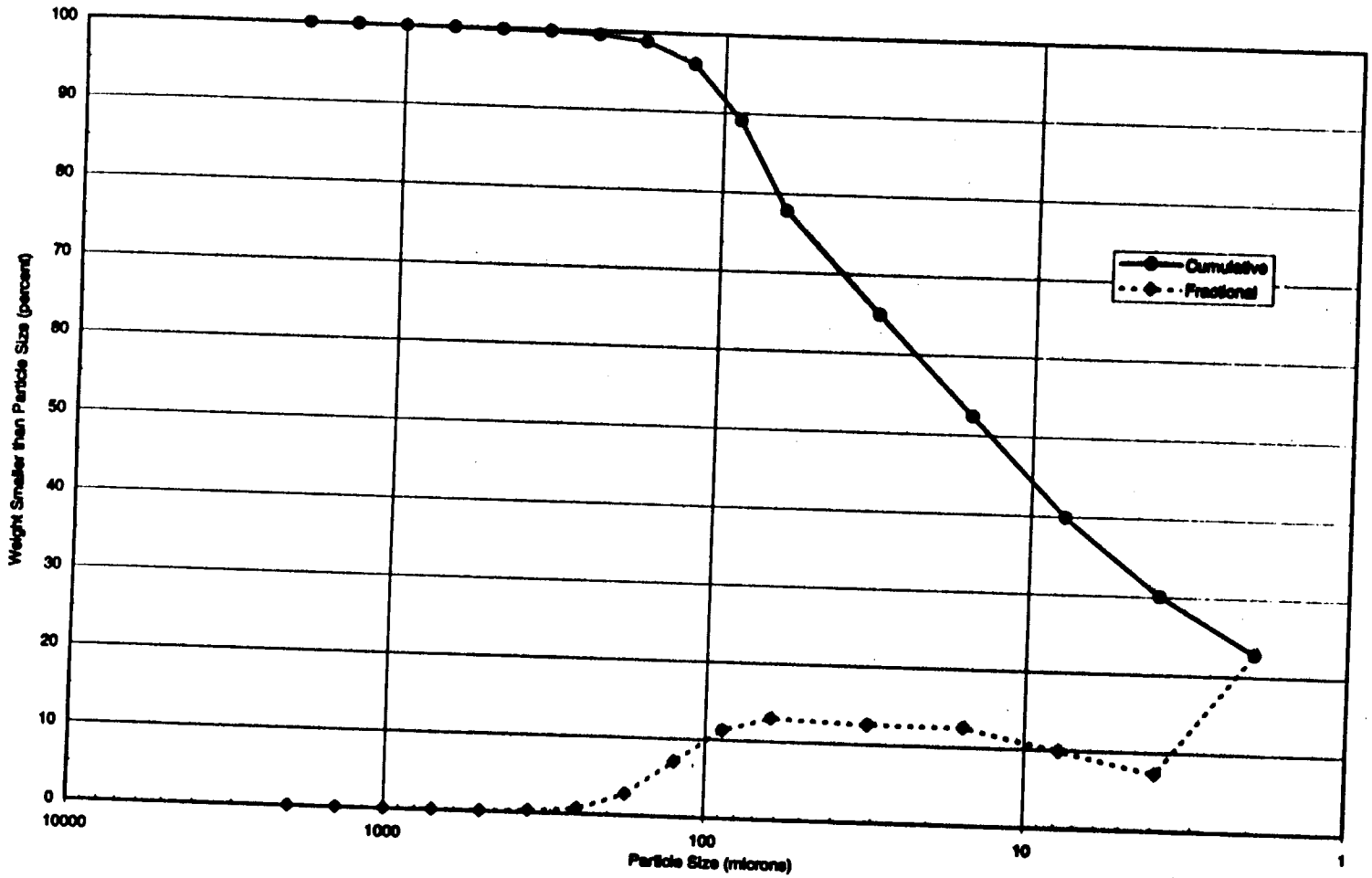


**Figure R-16**
**Particle Size Distribution**
**West Basin Station 16**

11/16/95 11:09 AM L:\CTO29\RWRV_DRFT\APPENDIX\B8_PSD.XLS\C Chart 13-2

R0063404

8203-
VOL 18

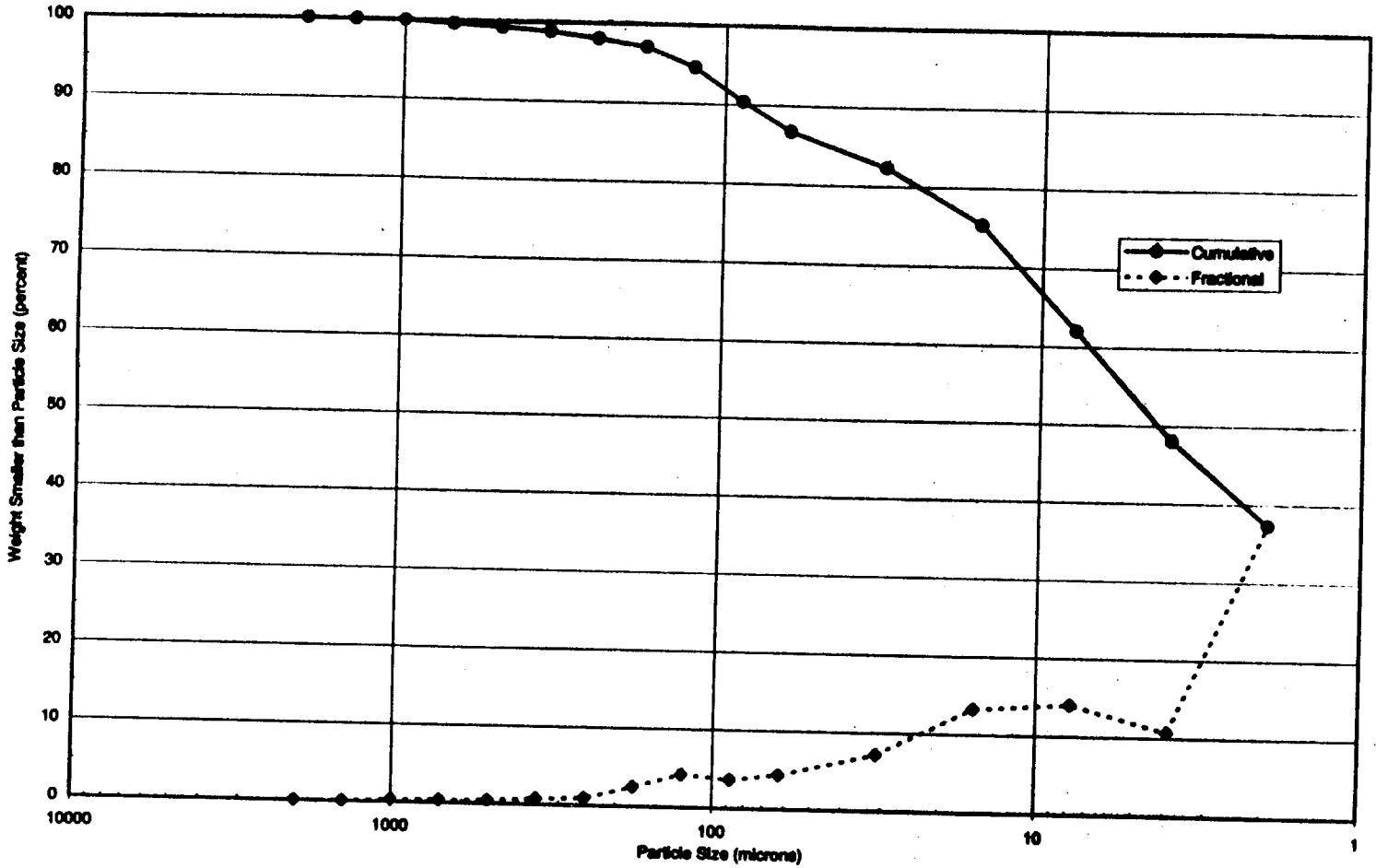


**Figure R-17**
**Particle Size Distribution**
**West Basin Station 17**

11/16/95 2:41 PM L:\CTO26\RWRV_DRFT\APPEND0\26_PSD.XLS\F Chart 5

2:14 P

R0063405

NOV 18

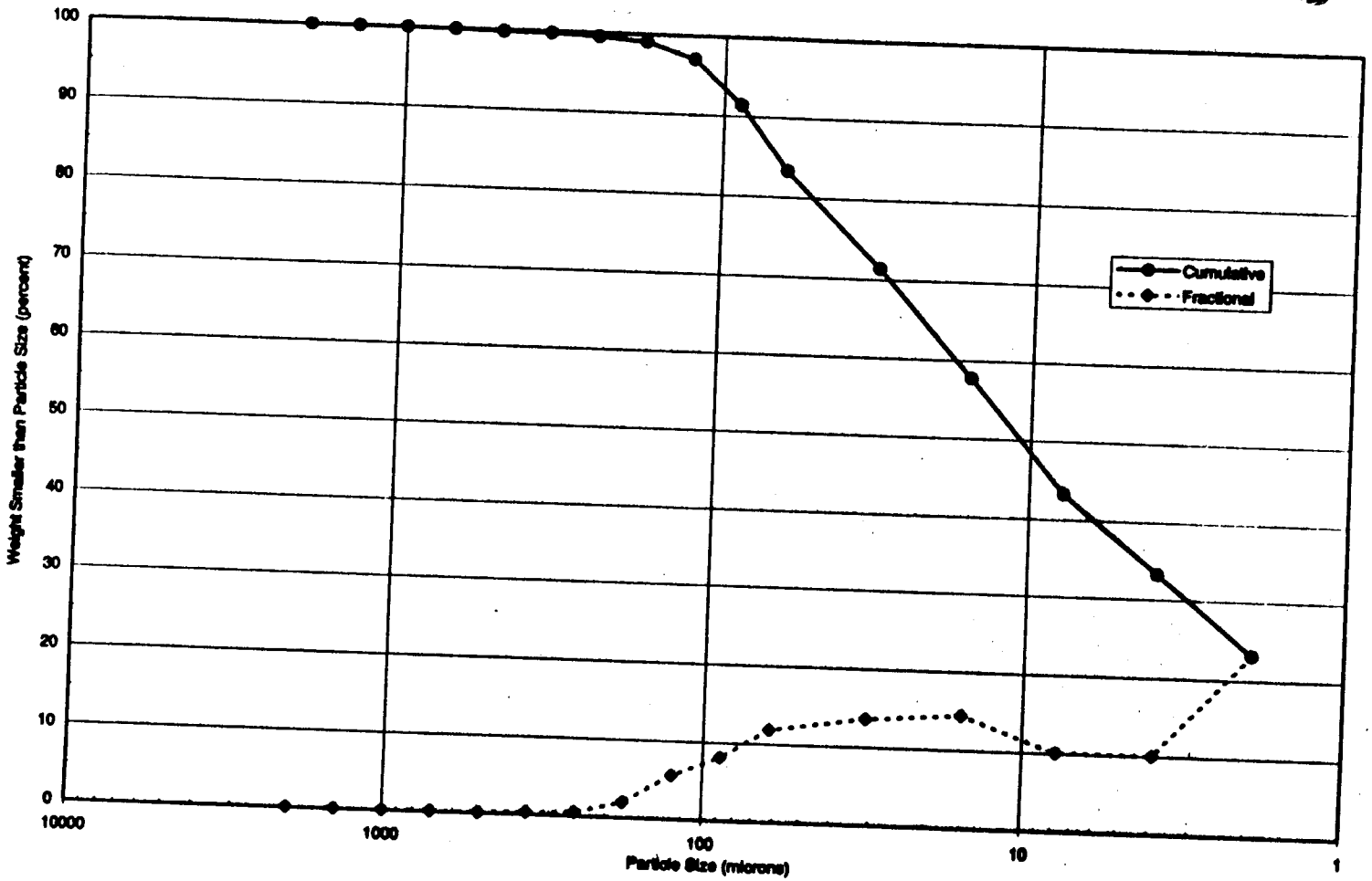


**Figure R-18**
**Particle Size Distribution**
**West Basin Station 18**

11/16/95 2:14 PM L:\CTO39\RAWV_DRFT\APPENDIX\95_PSD.XLS\E Chart 6

R0063406

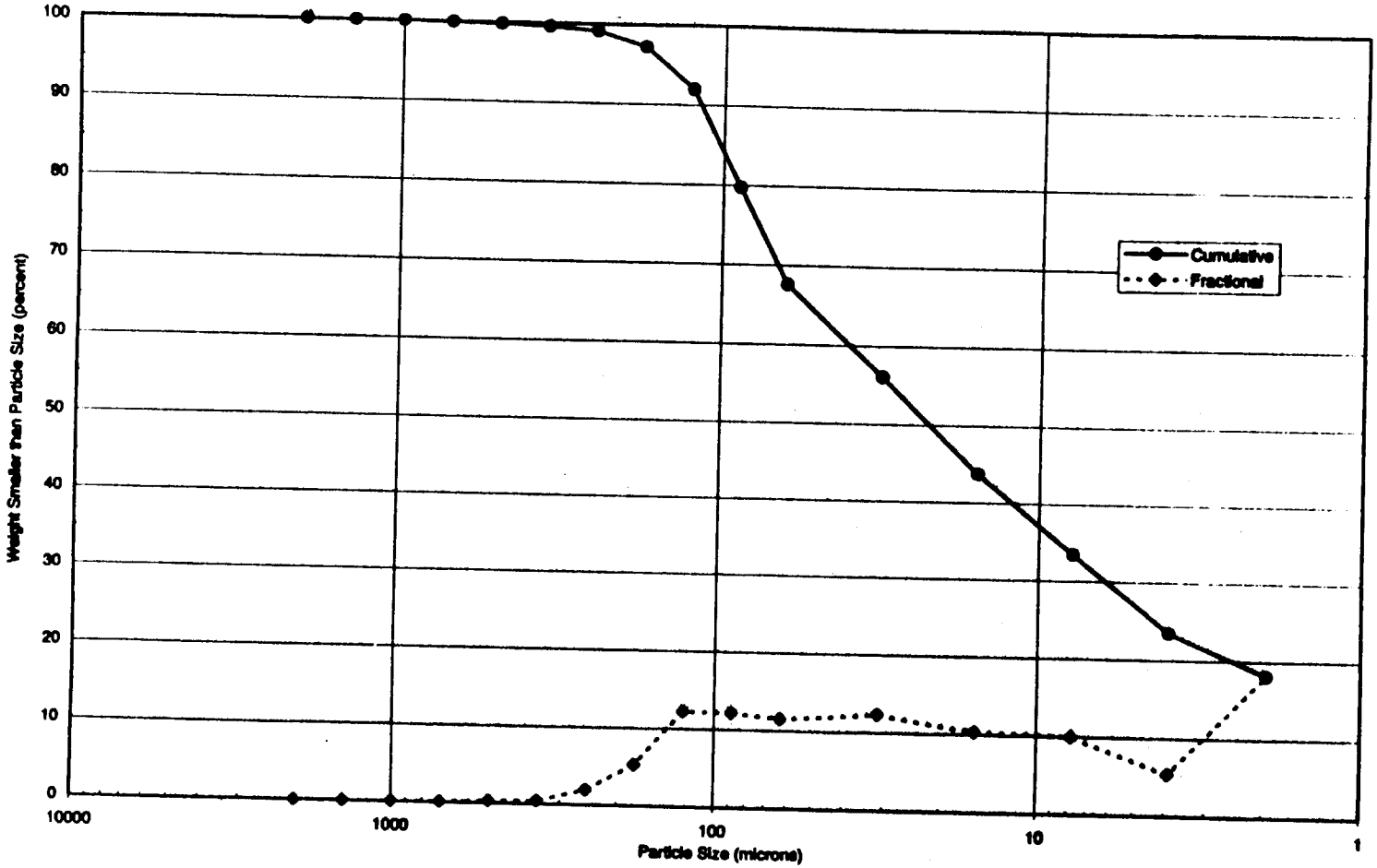


**Figure R-19**
**Particle Size Distribution**
**West Basin Station 19**

11/18/96 11 11 AM L:\CTO26\RWRV_DRFT\APPENDIX\96_PSD.XLS\C Chart 13-3

17 AM

R0063407

VOL 18

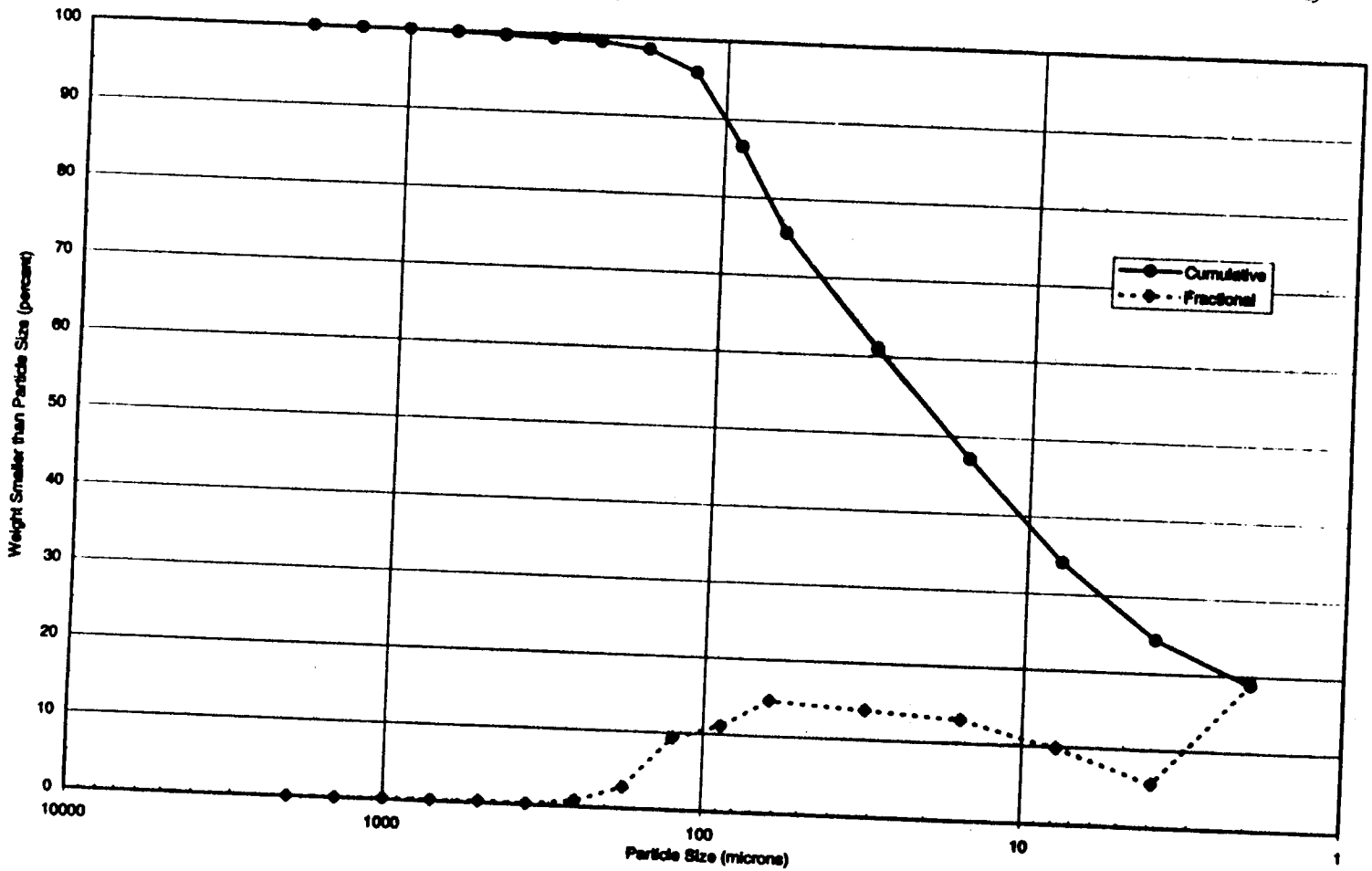


**Figure R-20**
**Particle Size Distribution**
**West Basin Station 20**

11/18/96 11:17 AM L:\CTO26\WRRV_DRFT\APPEND0128_PSD.XLS\C Chart 13-4

R0063408

NOV 18

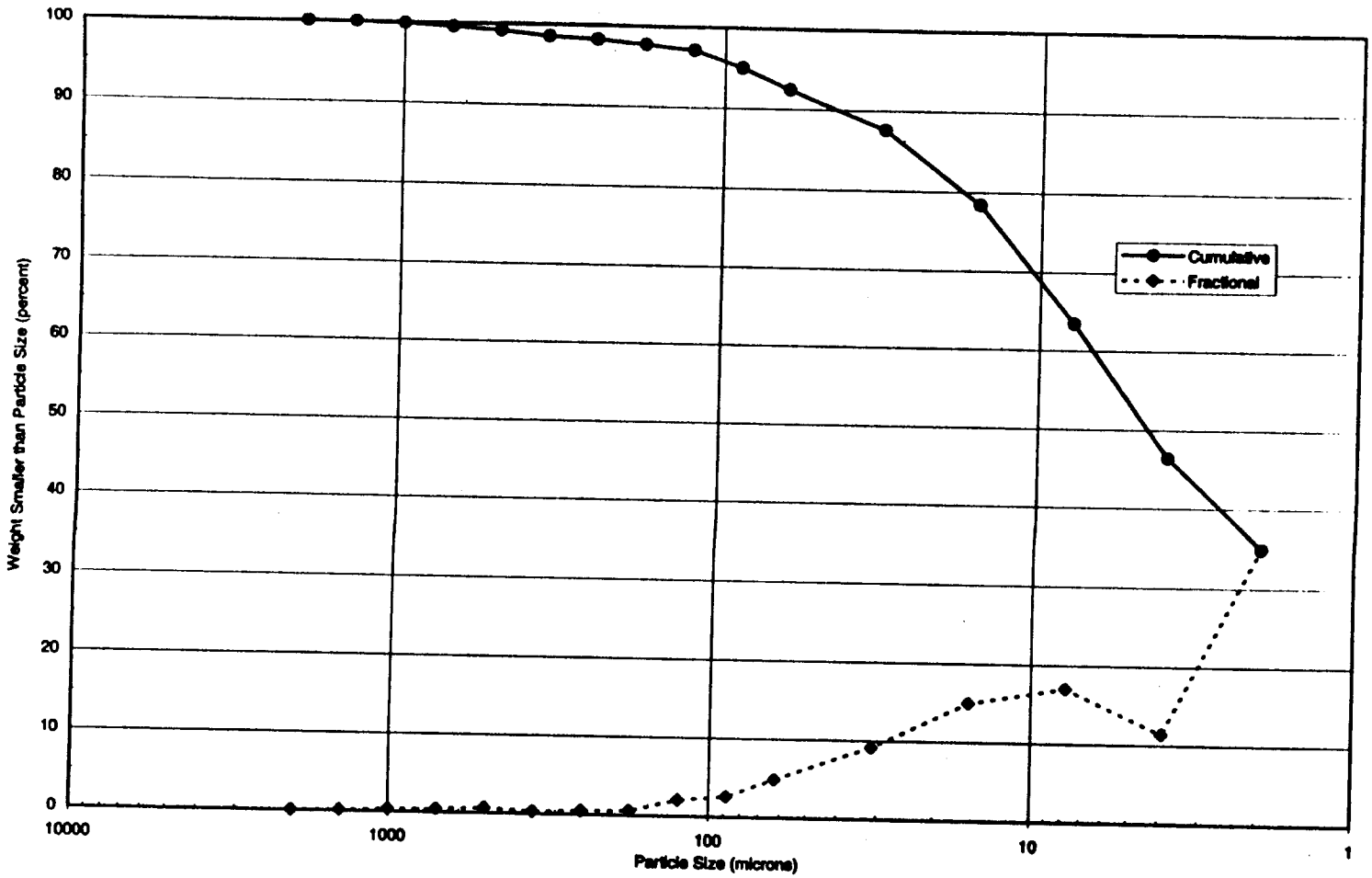


**Figure R-21**
**Particle Size Distribution**
**West Basin Station 21**

11/16/95 2 43 PM L:\CTO26\RI\RV_DRFT\APPENDIX\26_PSD.XLS\F Chart 5-1
2 18 P

R0063409

VOL 18

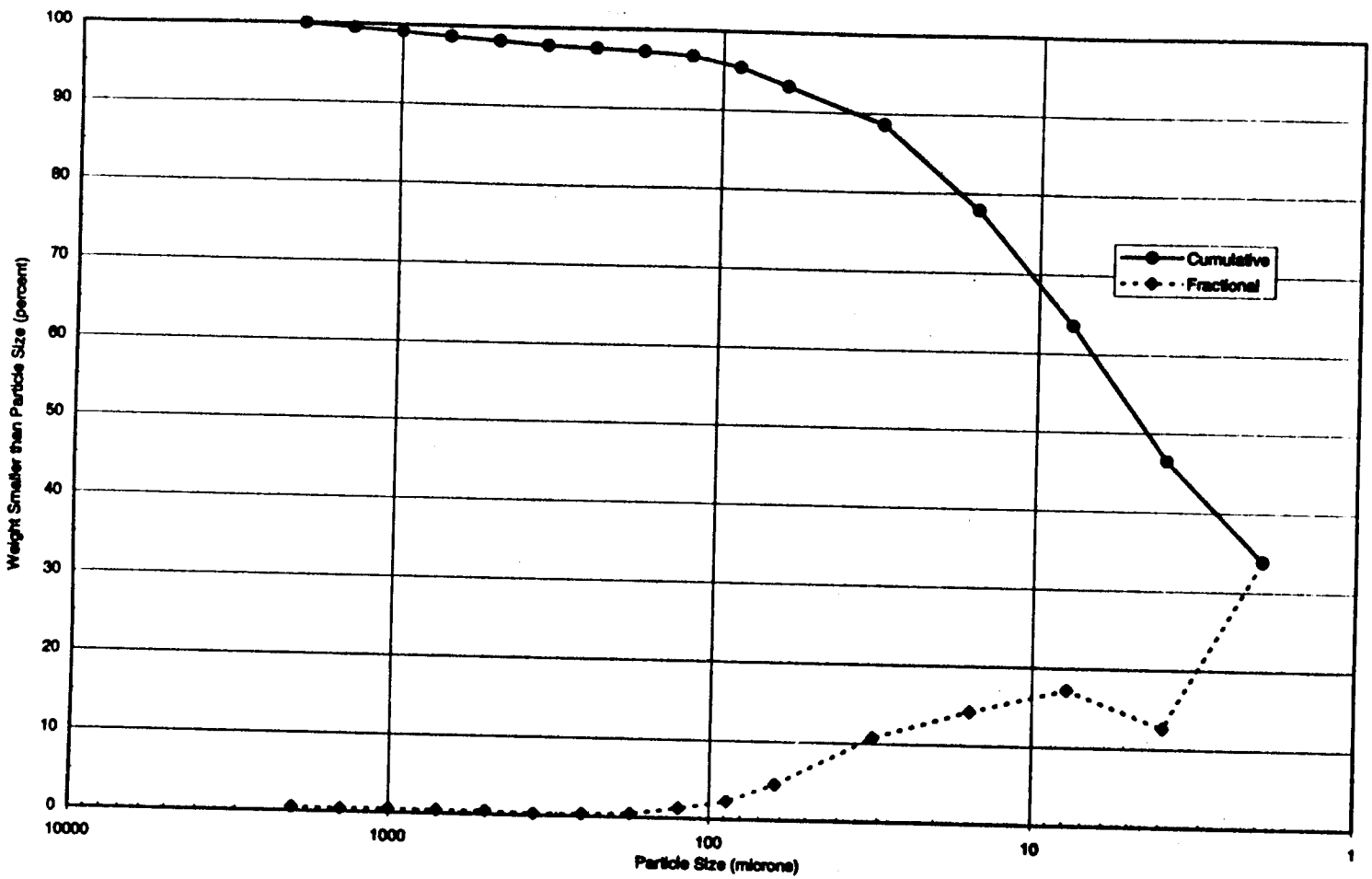


**Figure R-22**
**Particle Size Distribution**
**West Basin Station 22**

11/16/95 2:18 PM L:\CTO26\WWRV_DRFT\APPENDIX\26_PSD.XLS\E Chart 8-1

R0063410

VOL 18

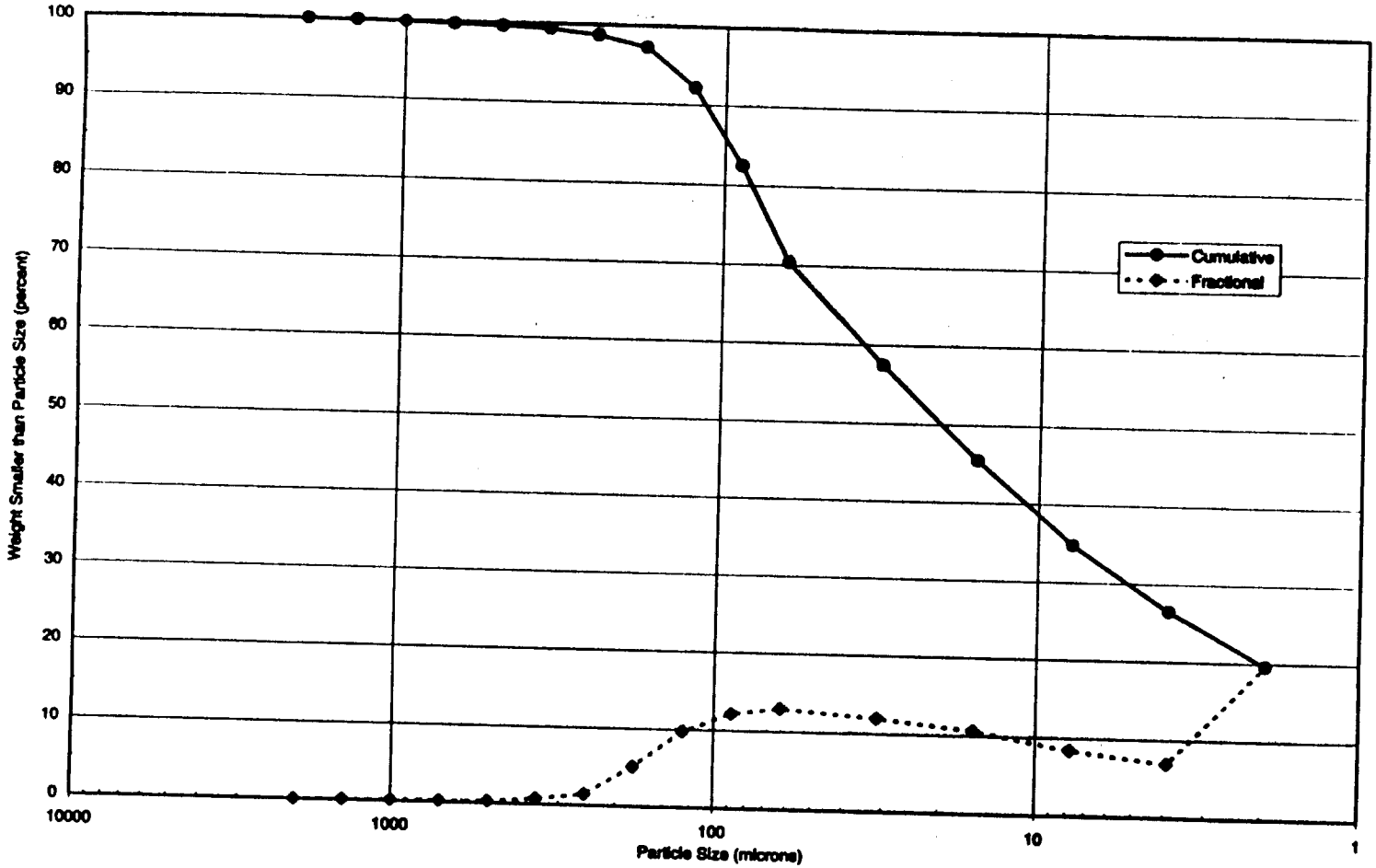


**Figure R-23**
**Particle Size Distribution**
**West Basin Station 23**

11/16/95 2:20 PM L:\CTO28\RWRV_DRFT\APPEND0126_PSD.XLS\E Chart 8-2

R0063411

VOL 18

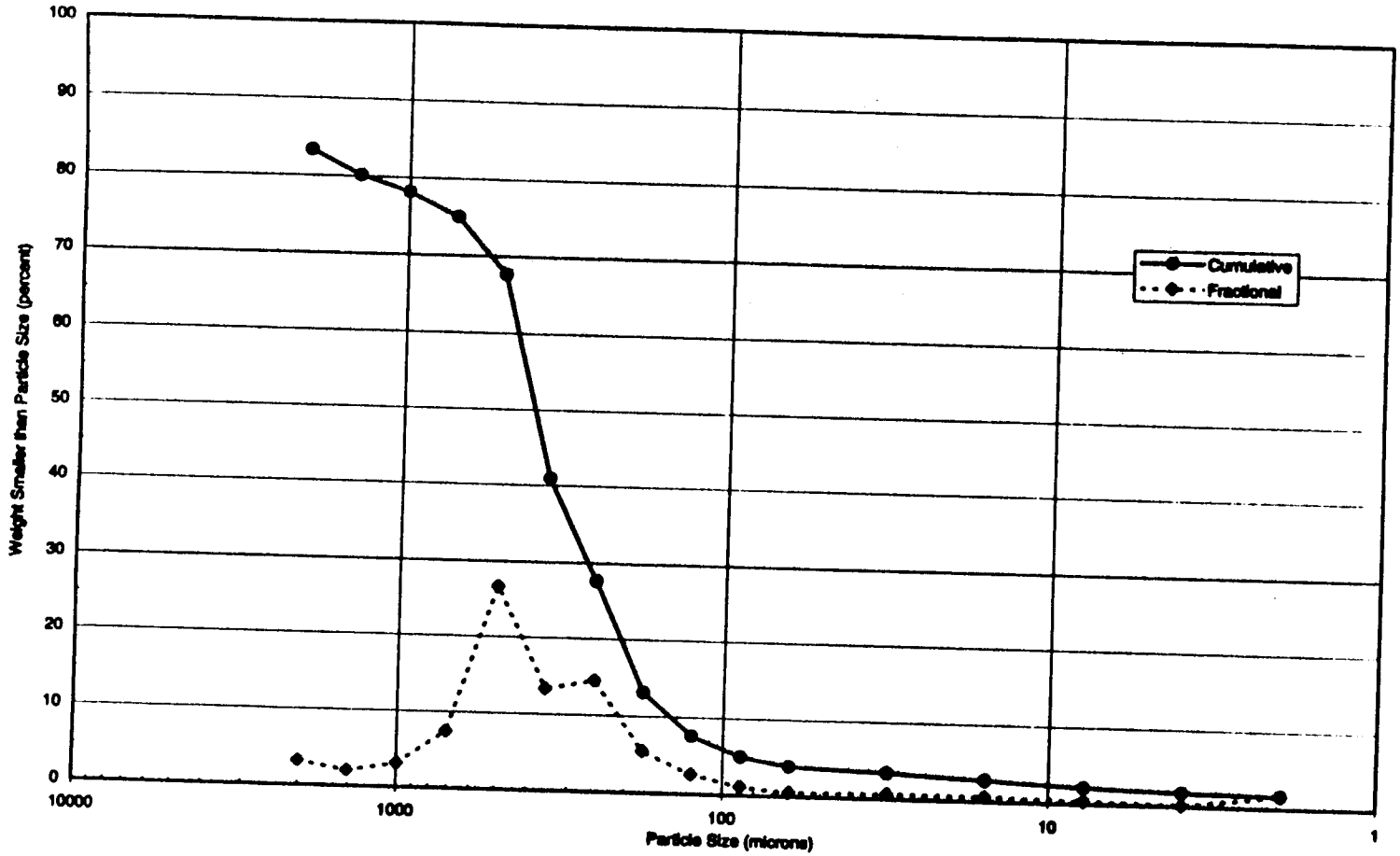


**Figure R-24**
**Particle Size Distribution**
**West Basin Station 24**

11/16/95 9:21 AM L:\CTO26\RWRV_DRFT\APPENDIX\26_PSD.XLS\24 Chart 3

R0063412

VOL 18

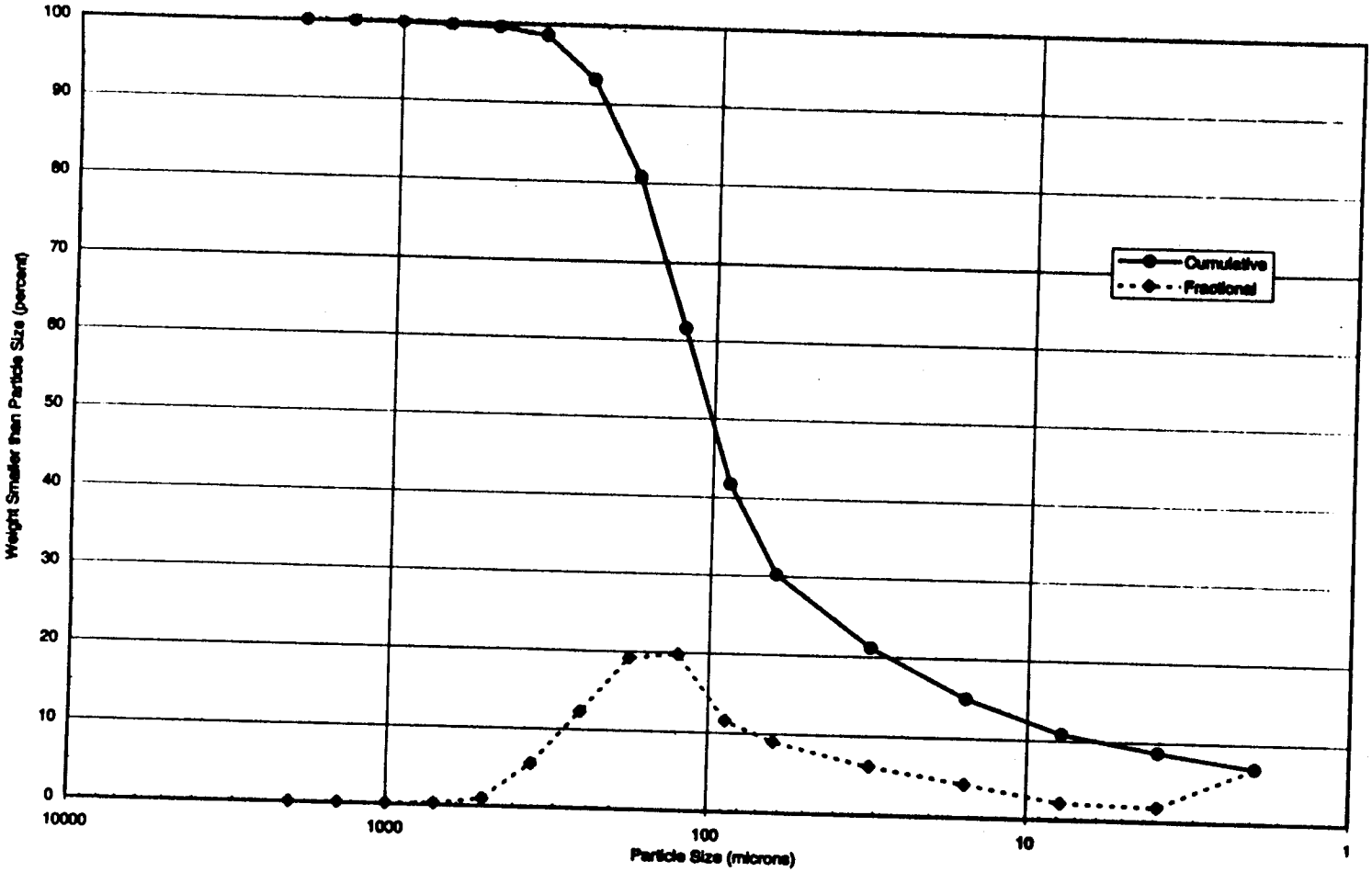


**Figure R-25**
**Particle Size Distribution**
**West Basin Station 25**

11/18/95 9:37 AM L:\CTO26\RNRV_DRFT\APPENDIX\25_PSD.XLS\A Chart 3
11 18

R0063413

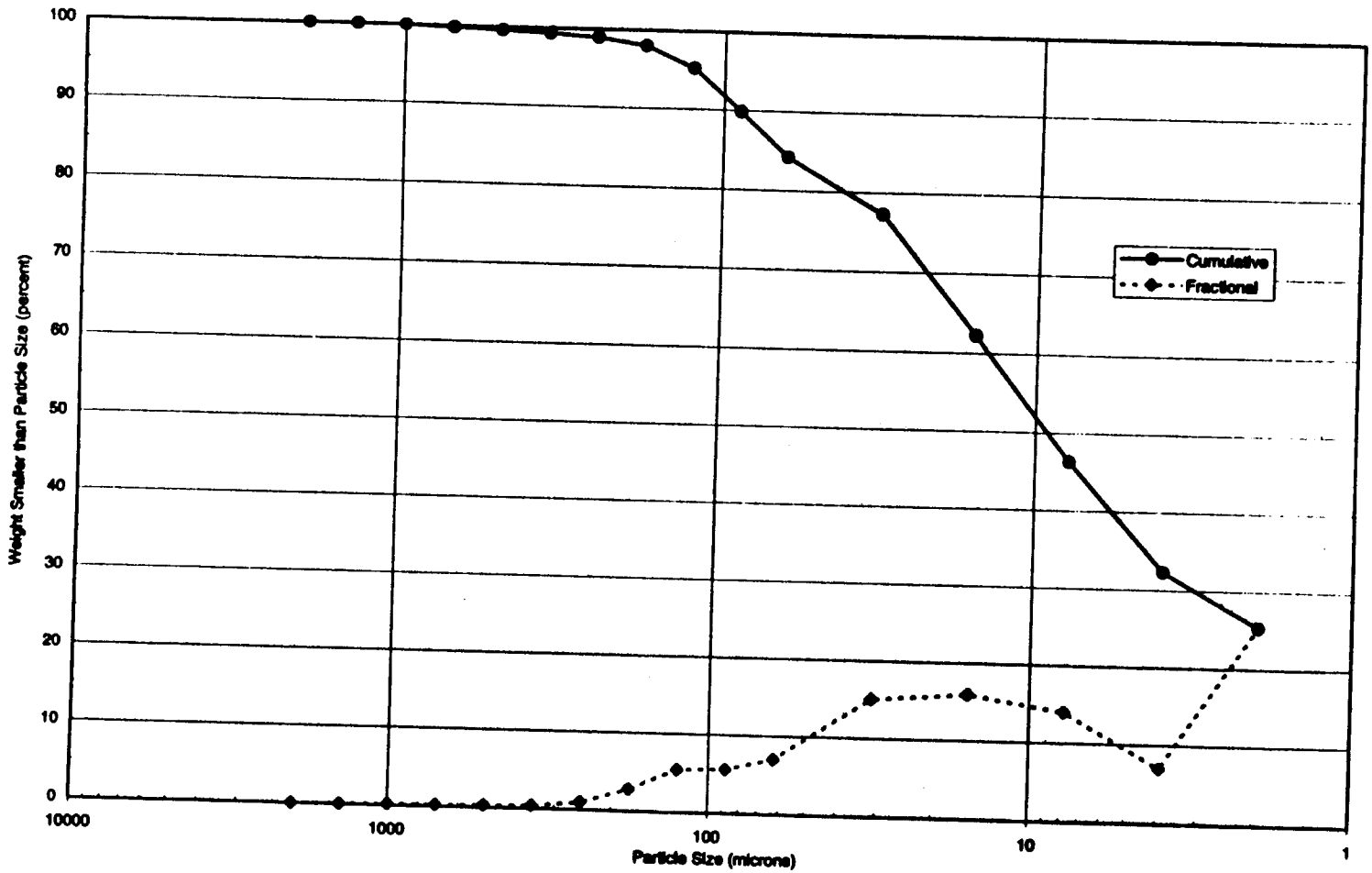


**Figure R-26**
**Particle Size Distribution**
**West Basin Station 26**

11/16/96 11:19 AM L:\CTO26\RIRV_DRFT\APPENDIX\26_PSD.XLS\C Chart 13-6

R0063414

VOL 18

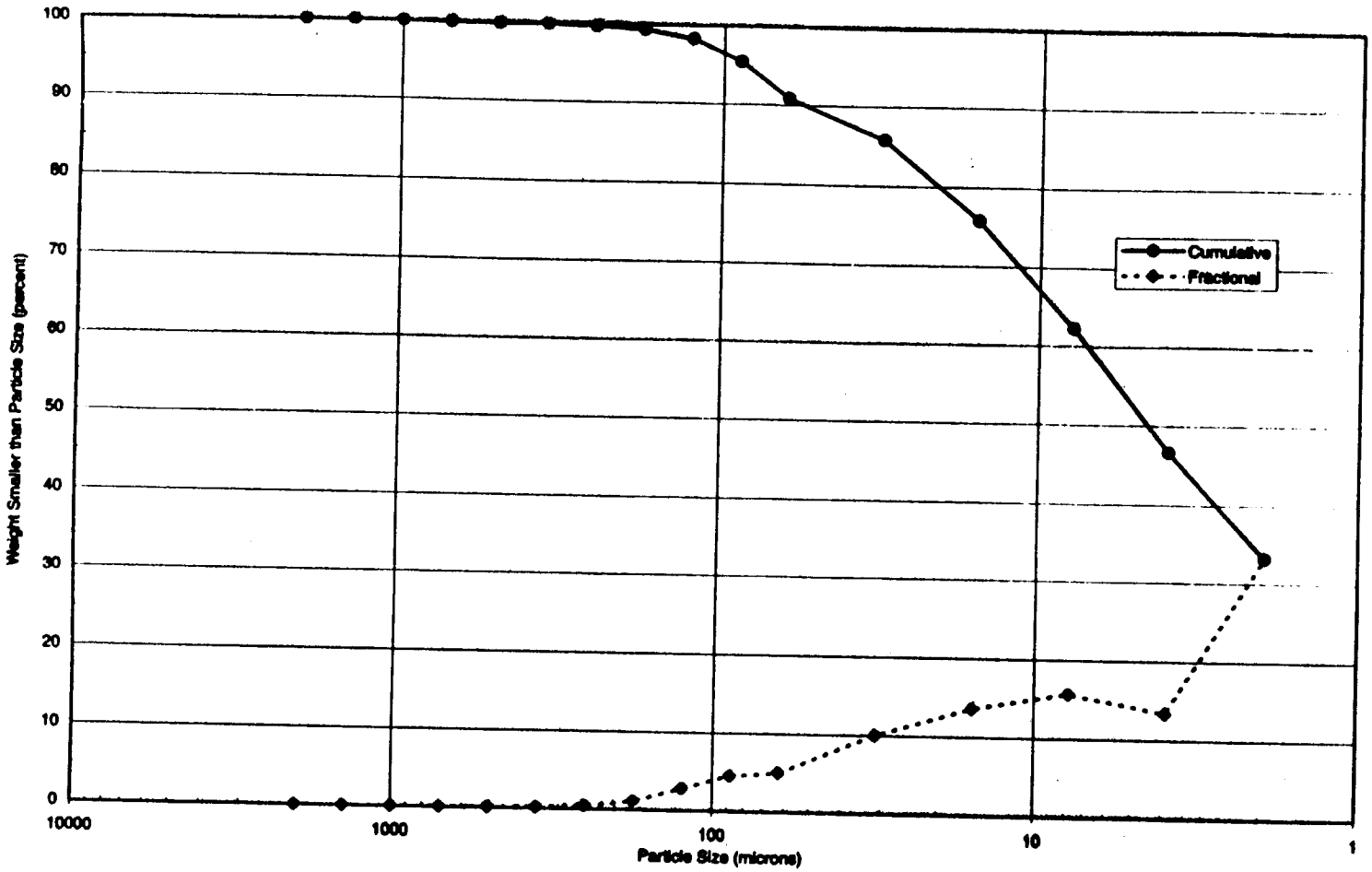


**Figure R-27**
**Particle Size Distribution**
**West Basin Station 27**

11/16/95 11:22 AM L:\CTO26\RRRV_DRFT\APPEND0\26_PSD.XLS\C Chart 13-6

1:24 A

R0063415

VOL 18

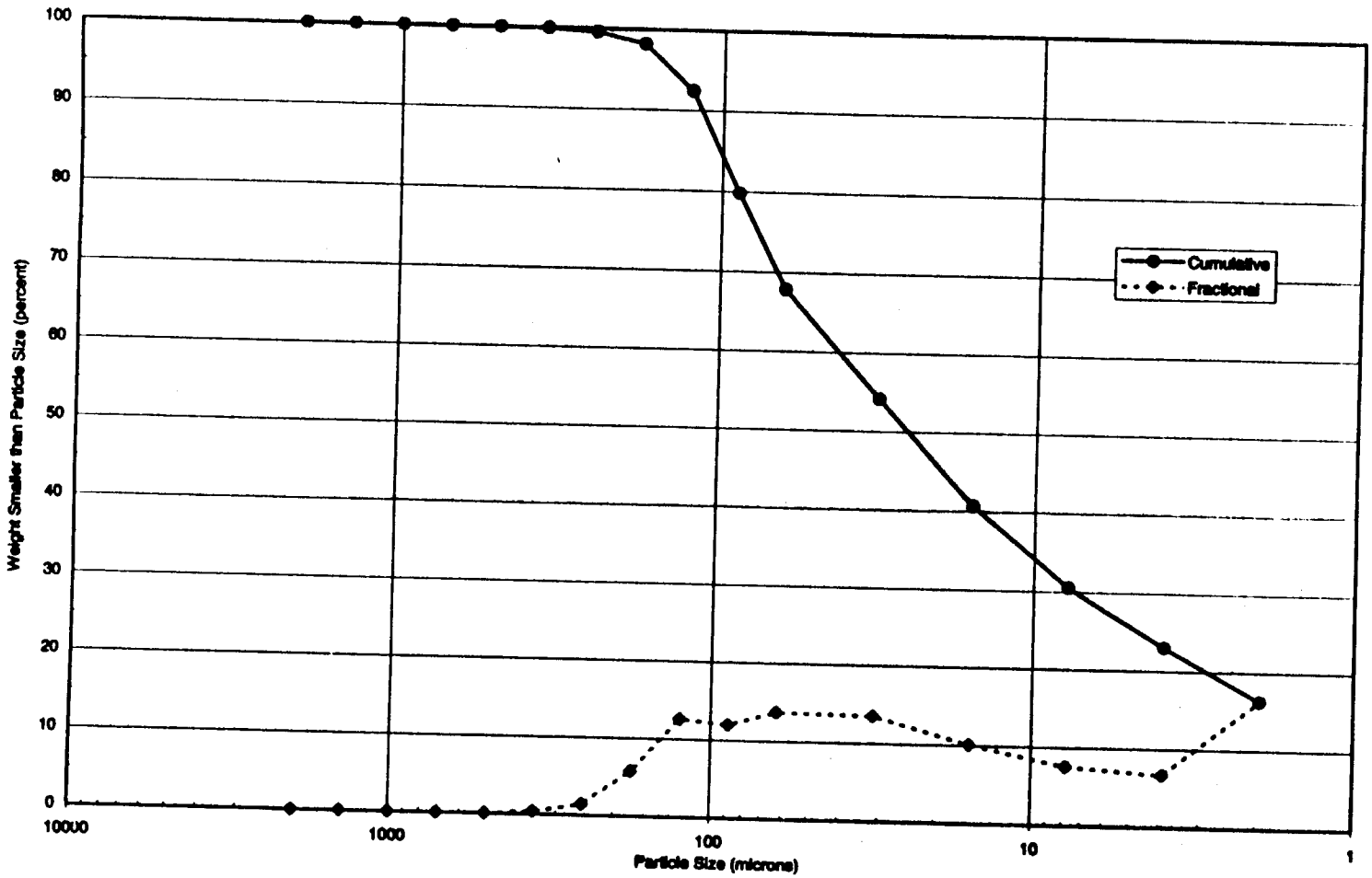


**Figure R-28**
**Particle Size Distribution**
**West Basin Station 28**

11/16/95 11:24 AM L:\CTO28\RIWV_DRFT\APPENDIX28_PSD.XLS\C Chart 13-7

R0063416

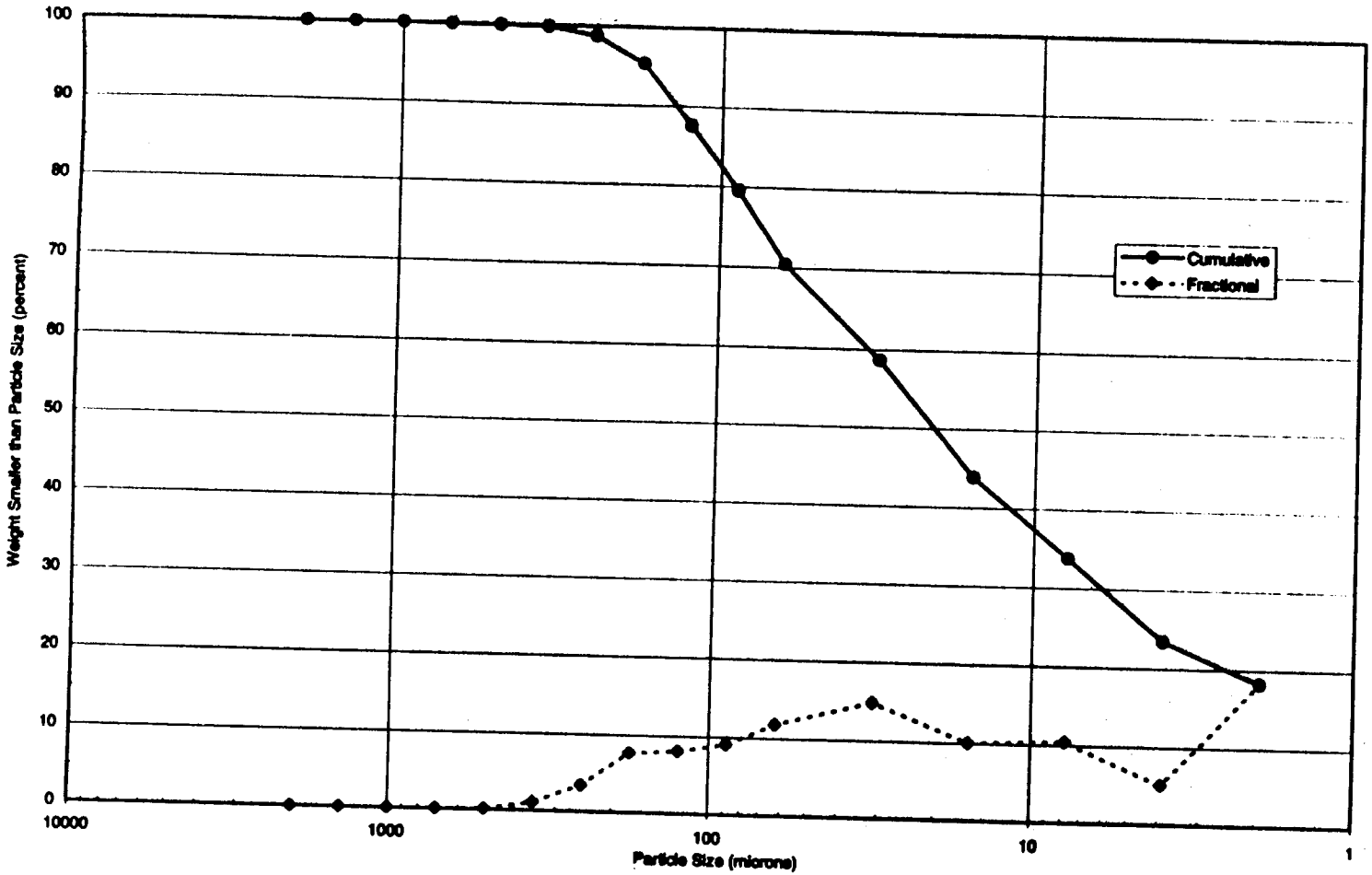


**Figure R-29**
**Particle Size Distribution**
**West Basin Station 29**

11/18/95 9:42 AM L:\CTO26\WWRV_DRFT\APPENDIX\26_PSD.XLS\A Chart 12

R0063417

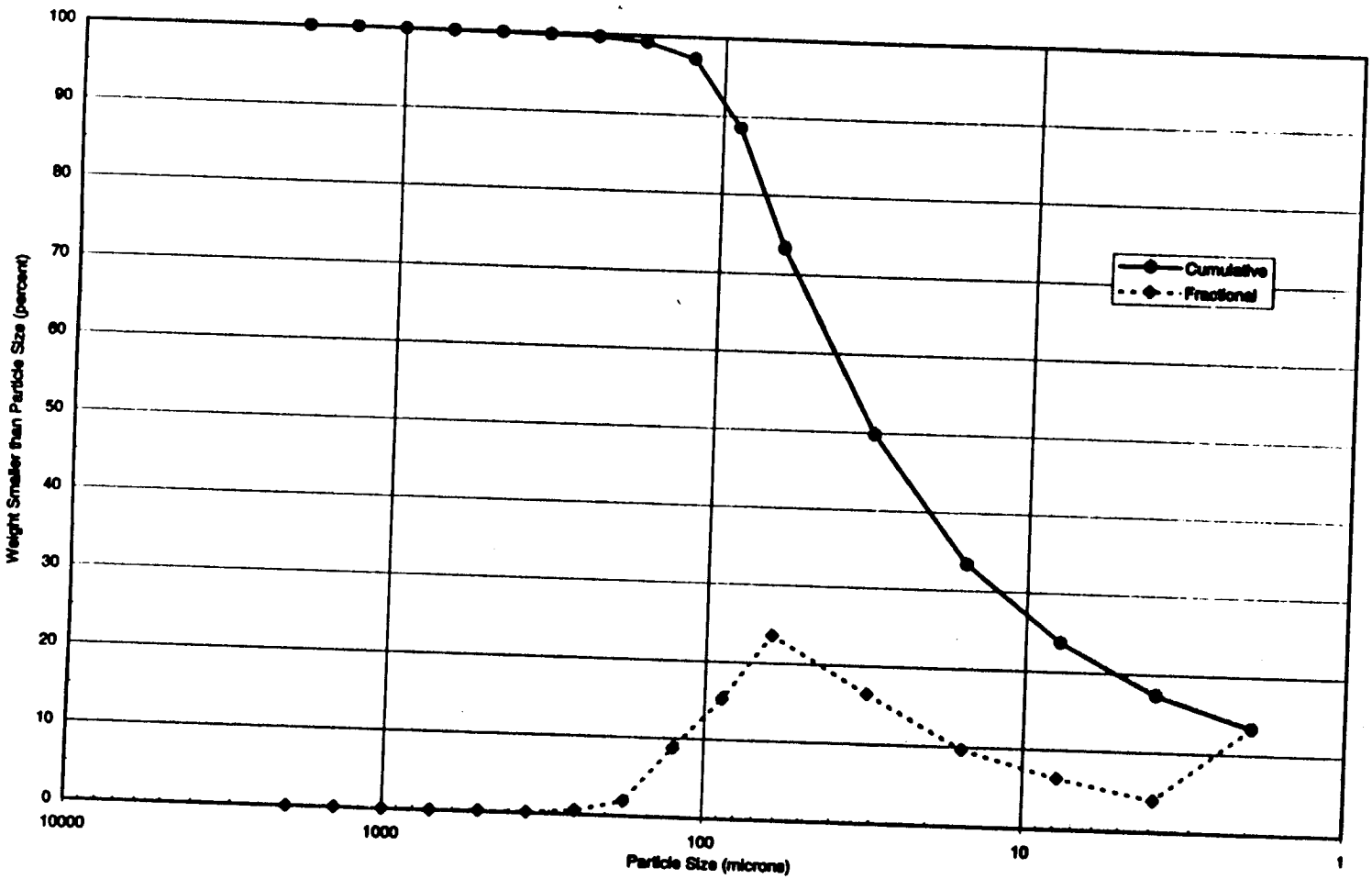


**Figure R-30**
**Particle Size Distribution**
**West Basin Station 30**

11/19/96 9:46 AM L:\CTO2\WWRV_DRFT\APPENDIX\30_PSD.XLS\A Chart 12-1

R0063418

VOL 18

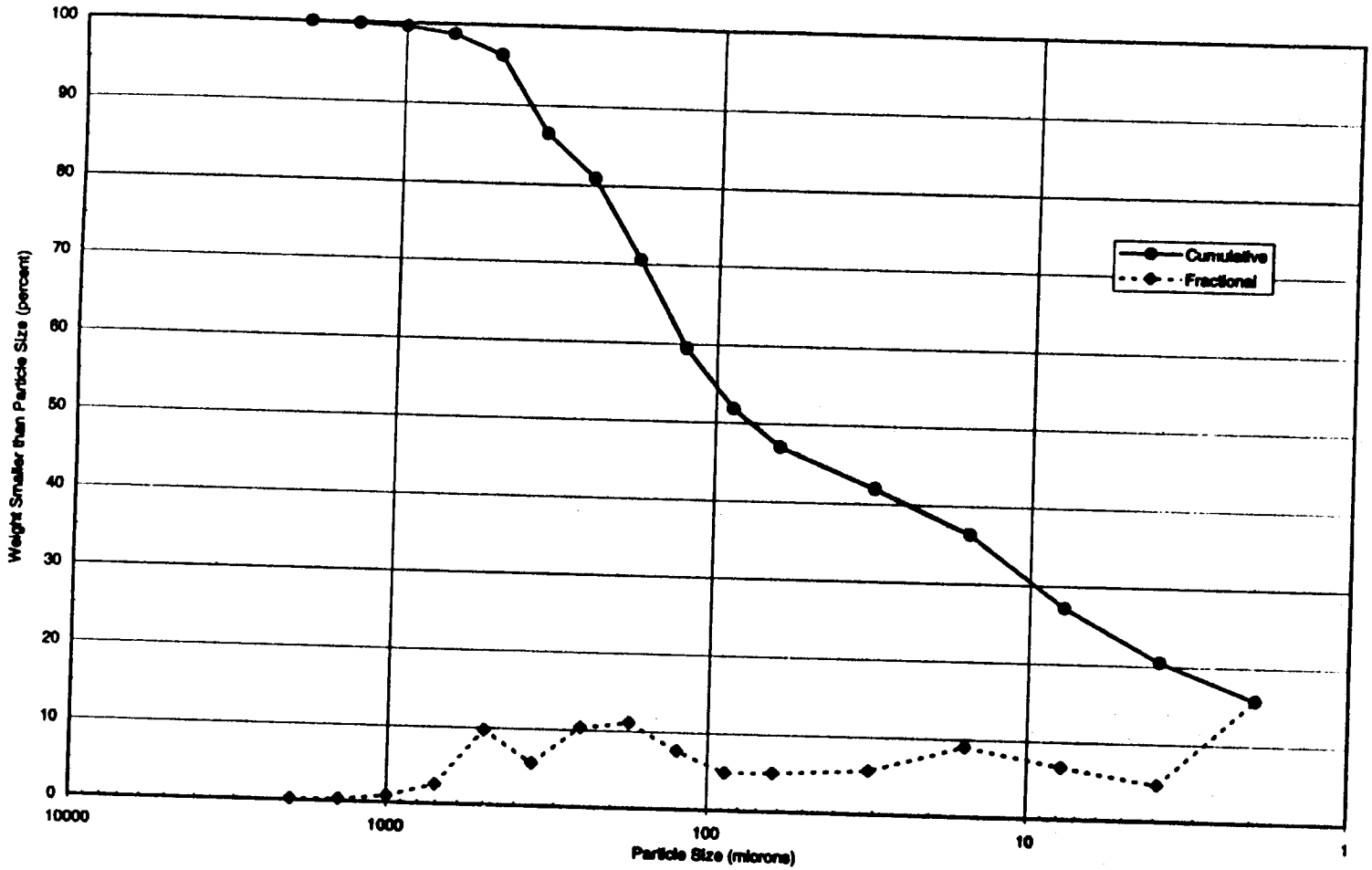


**Figure R-31**
**Particle Size Distribution**
**West Basin Station 31**

11/18/95 9:53 AM L:\CTO26\RWRV_DRFT\APPENDIX\26_PSD.XLS\A Chart 14

9:50 A

R0063419

VOL 18

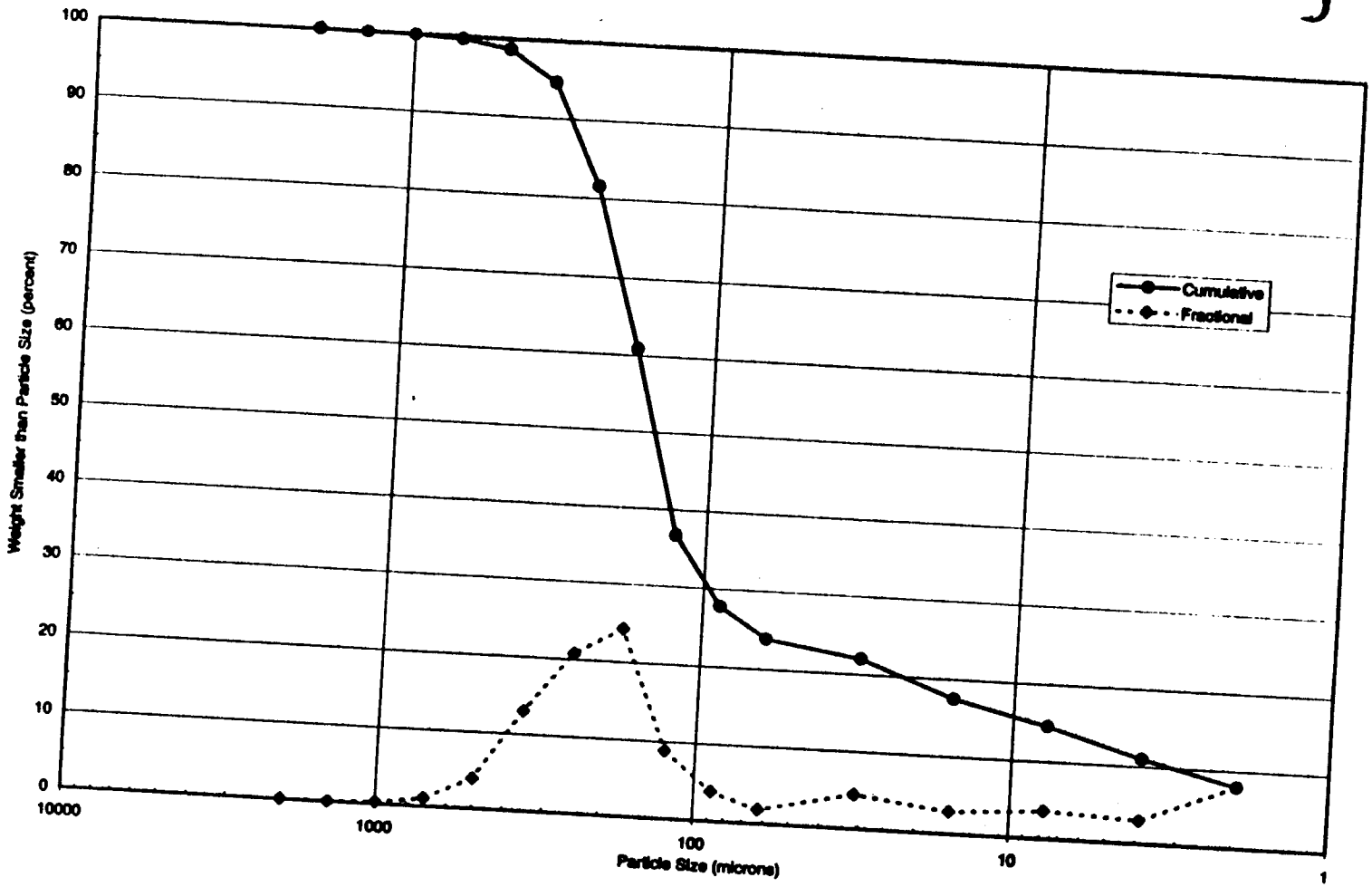


**Figure R-32**
**Particle Size Distribution**
**West Basin Station 32**

11/18/98 9:59 AM L:\CTO26\RRV_DRFT\APPENDIX\98_PSD.XLS\A Chart 12-2

R0063420

VOL 18

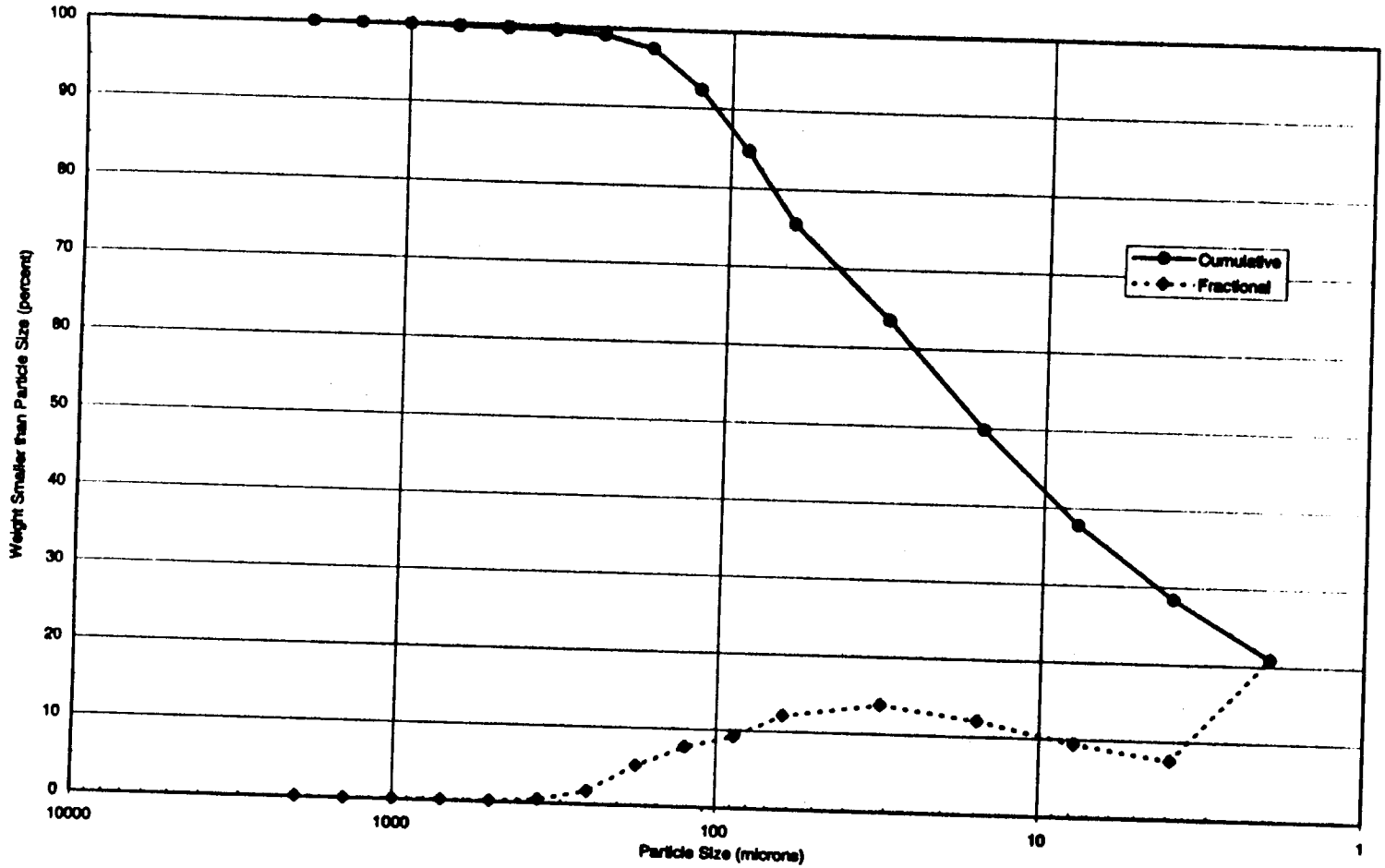


**Figure R-33**
**Particle Size Distribution**
**West Basin Station 33**

11/16/98 10:04 AM L:\CTO26\RIV_DRFT\APPENDIX\26_PSD.XLS\A Chart 12-3

R0063421

VOL 18

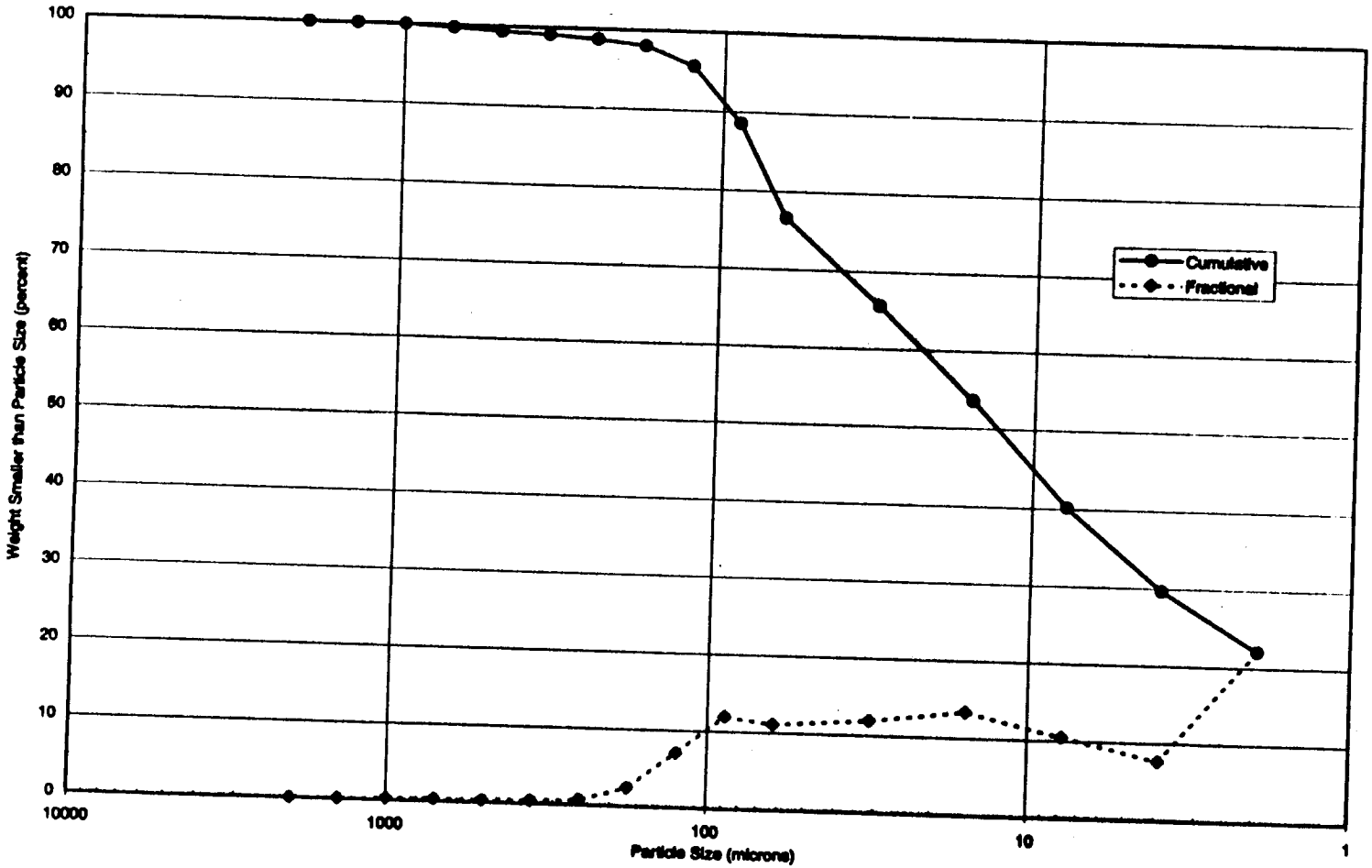


**Figure R-41**
**Particle Size Distribution**
**West Basin Station 41**

11/16/95 2:22 PM L:\CTO26\RNRV_DRFT\APPENDIX\26_PSD.XLS\E Chart 8-3

R0063422

VOL 18

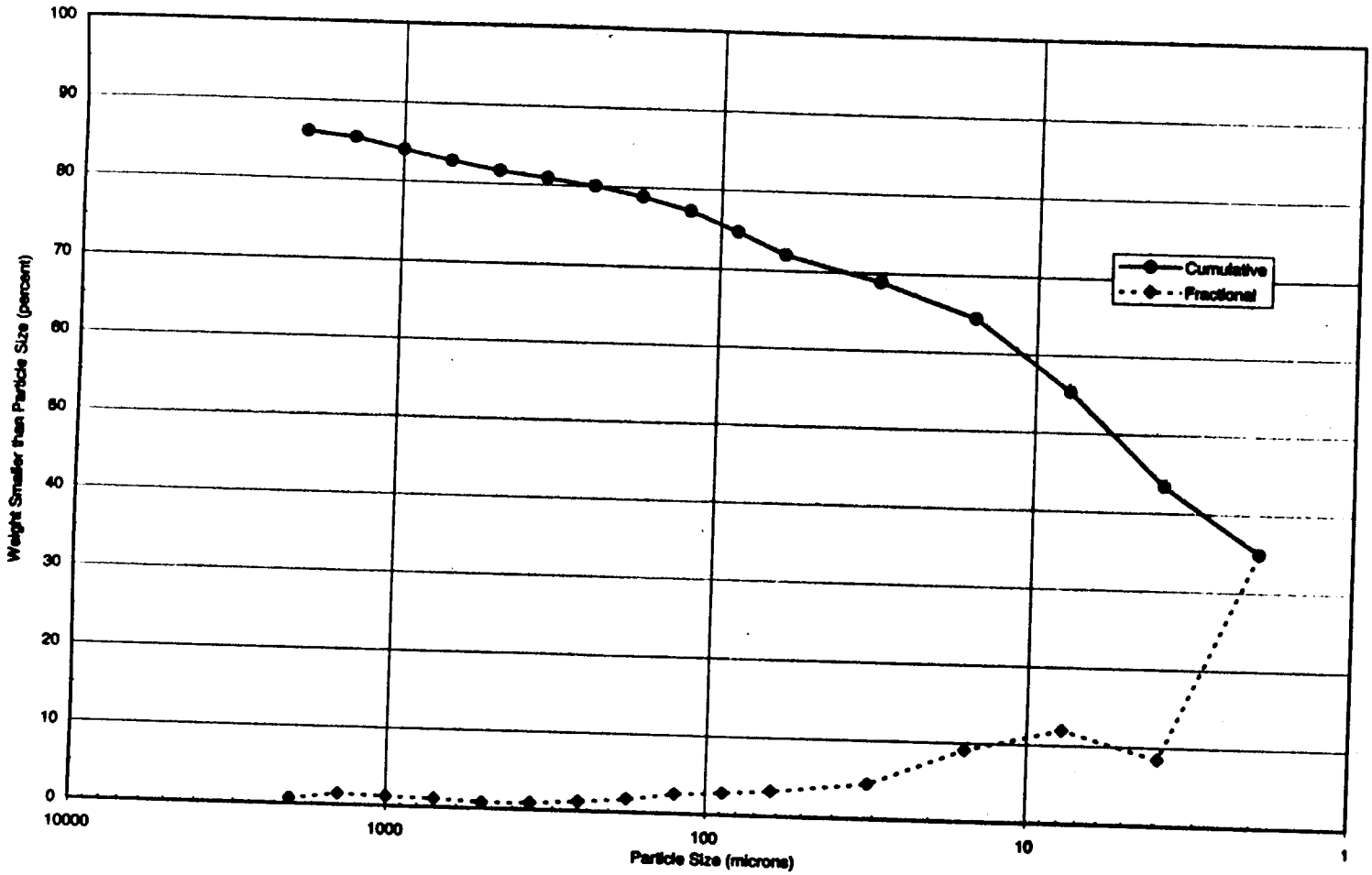


**Figure R-42**
**Particle Size Distribution**
**West Basin Station 42**

11/16/95 2 49 PM L \CTO26\RI\RV_DRFT\APPENDIX\26_PSD XLS\G Chart 3

3:12 P

R0063423

VOL 18

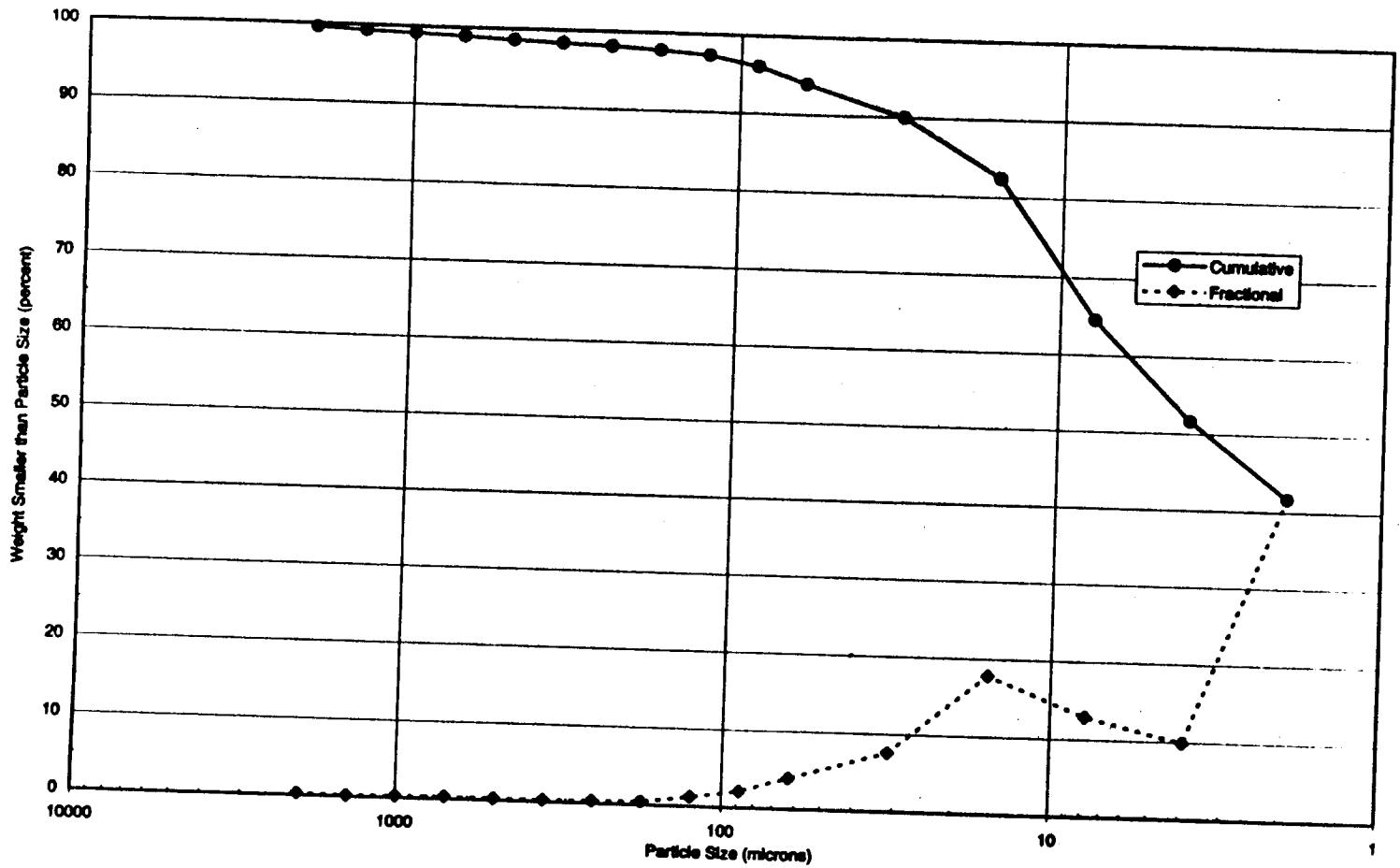


**Figure R-43**
**Particle Size Distribution**
**West Basin Station 43**

11/16/96 3:12 PM L:\CTO\NRRV_DRFT\APPENDIX\98_PSD.XLS\H Chart 3

R0063424

VOL 18

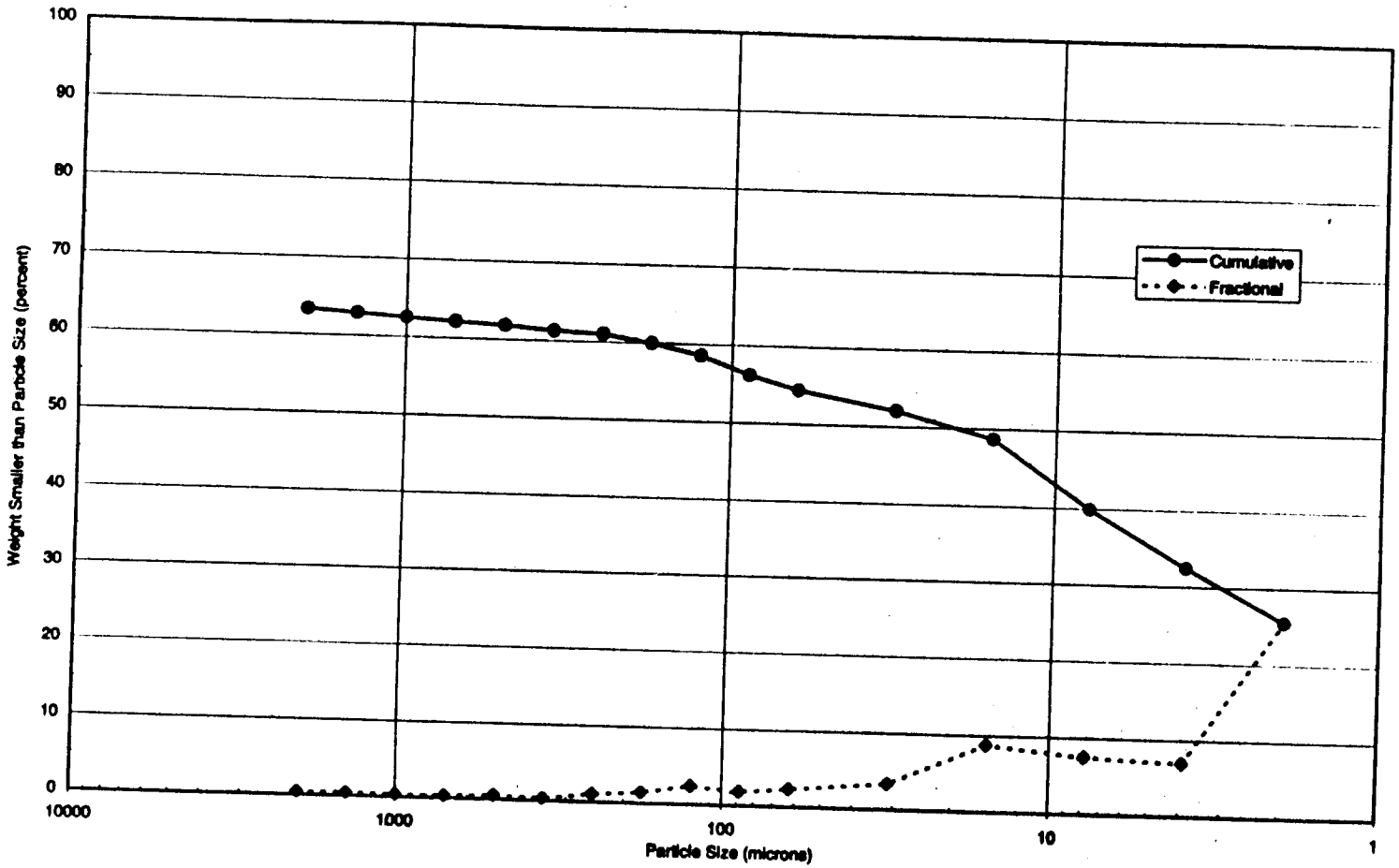


**Figure R-44**
**Particle Size Distribution**
**West Basin Station 44**

11/18/95 2:52 PM L:\CTO26\RMV_DRFT\APPENDIX\26_PSD.XLS\G Chart 8

R0063425

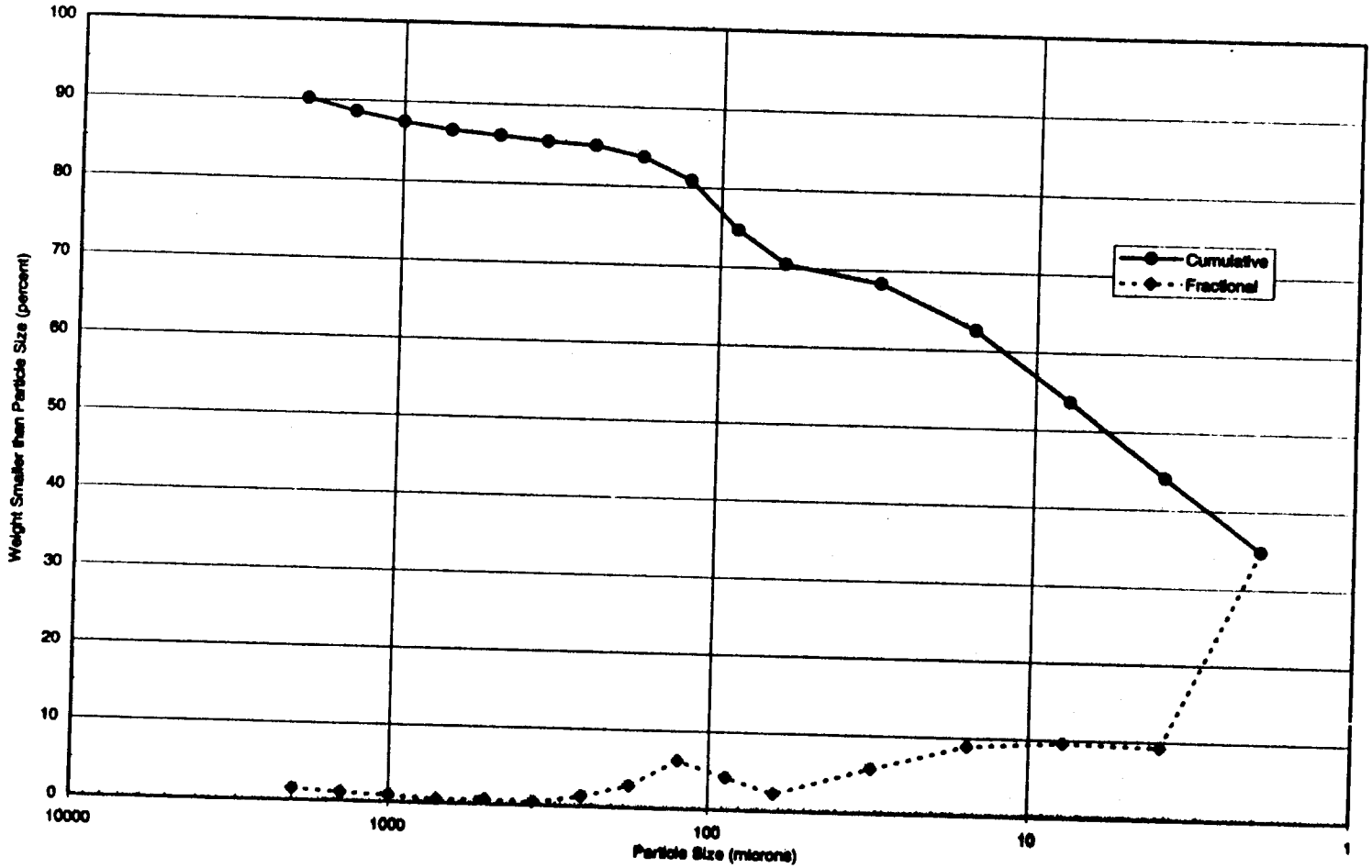


**Figure R-45**
**Particle Size Distribution**
**West Basin Station 45**

11/16/95 3:02 PM L:\CTO28\RI\RV_DRFT\APPEND0\26_PSD.XLS\G Chart 8-1

R0063426

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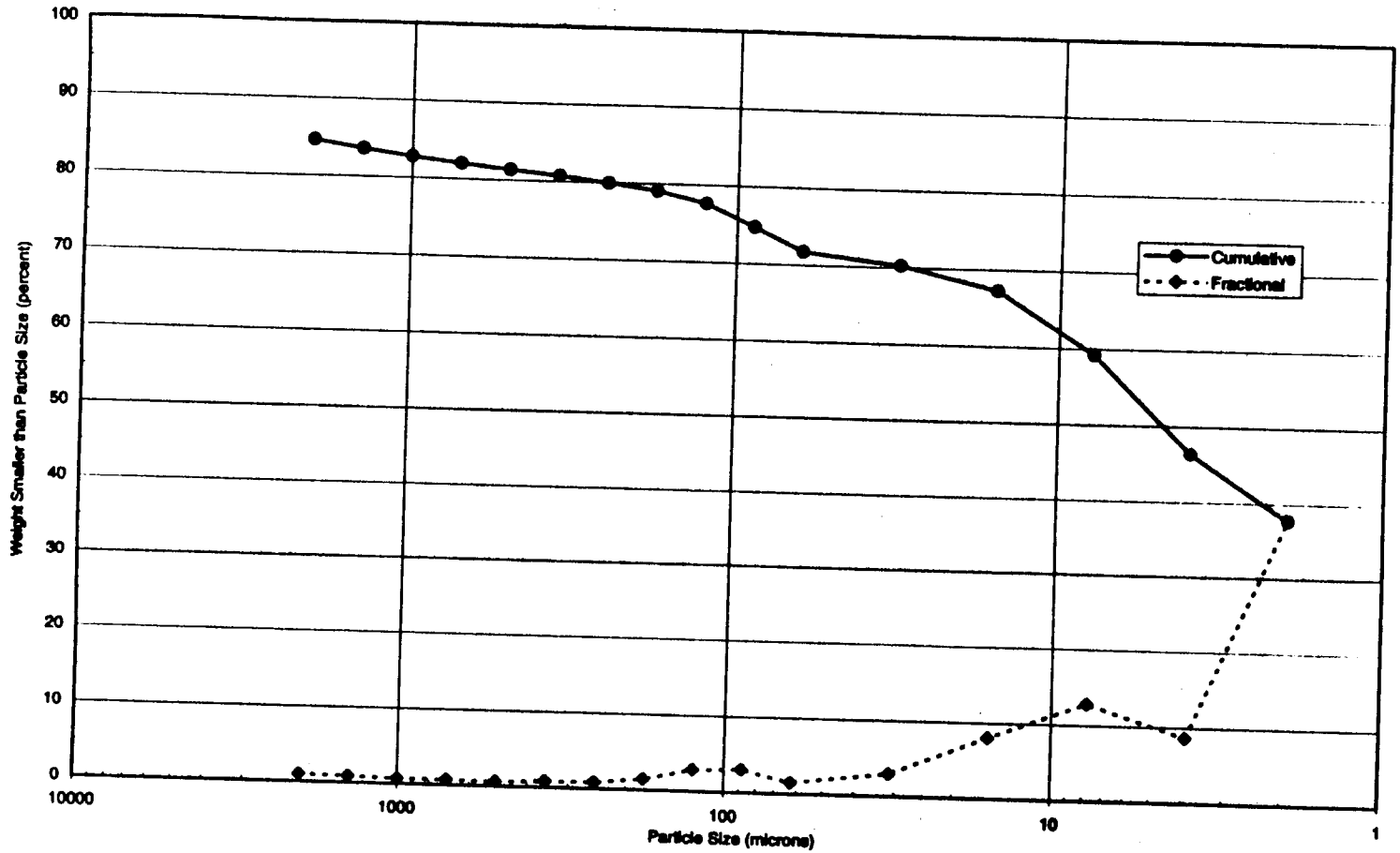


**Figure R-46**
**Particle Size Distribution**
**West Basin Station 46**

11/16/95 3:05 PM L:\CTO26\RI\RV_DRFT\APPENDIX\26_PSD.XLS\G Chart 8-2

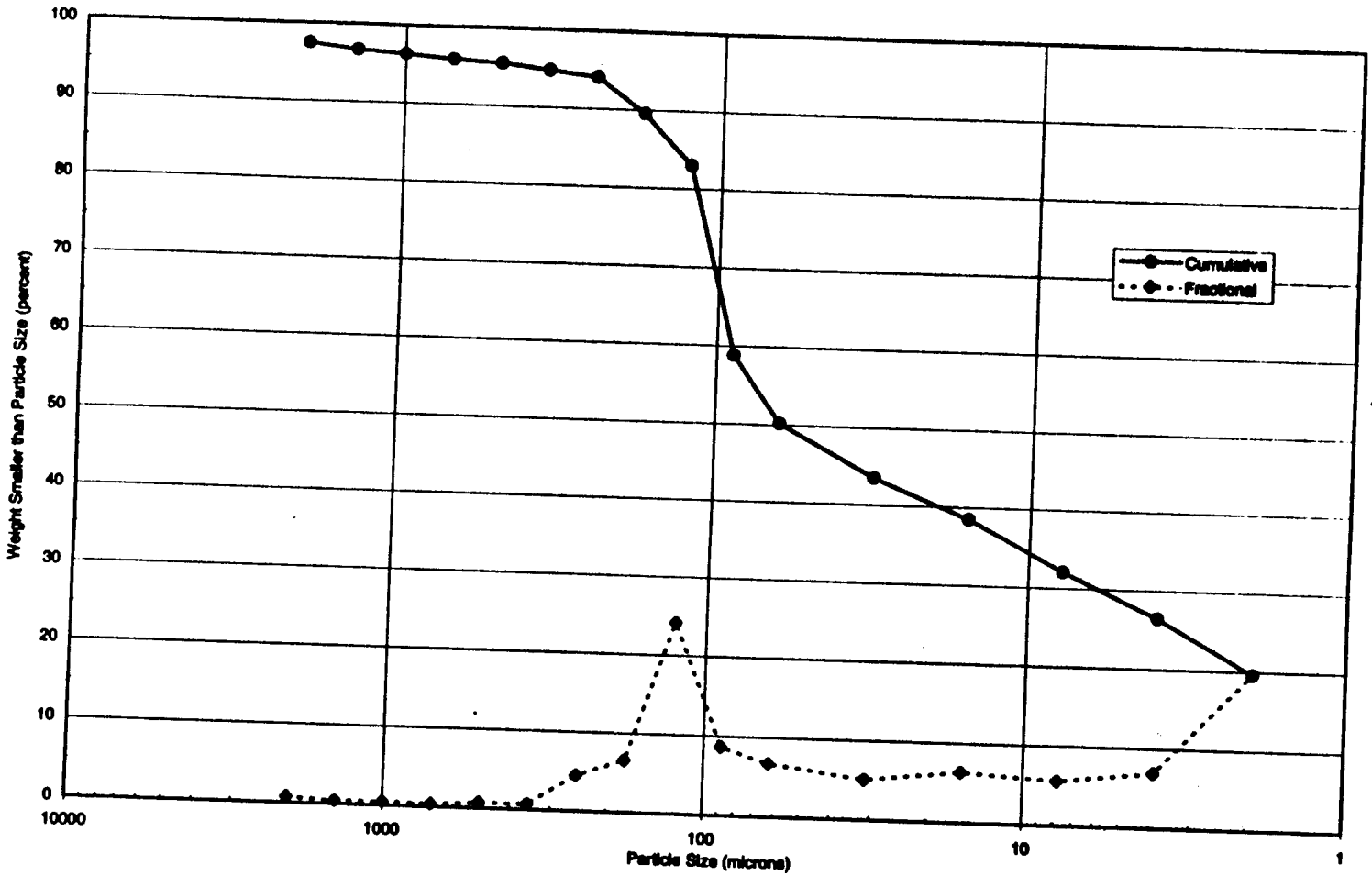


**Figure R-47**
**Particle Size Distribution**
**West Basin Station 47**

11/16/95 2:24 PM L:\CTO28\RWRV_DRFT\APPEND01\28_PSD.XLS\NE Chart 8-4

R0063428

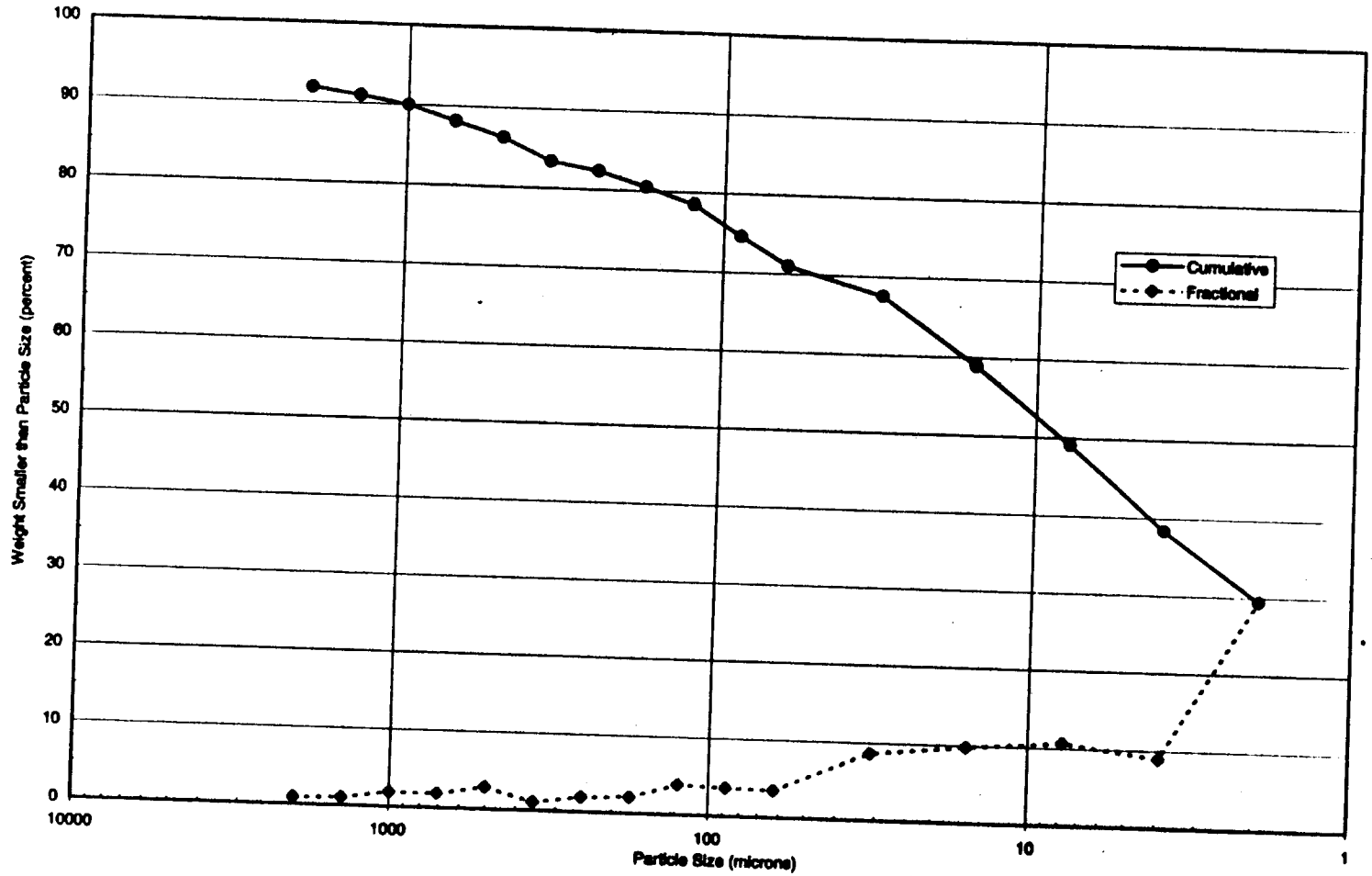


**Figure R-48**
**Particle Size Distribution**
**West Basin Station 48**

11/16/95 3:18 PM L:\CTO26\RIV_DRFT\APPENDIX\26_PSD.XLS\H Chart 6

95 3.3

R0063429

VOL 18

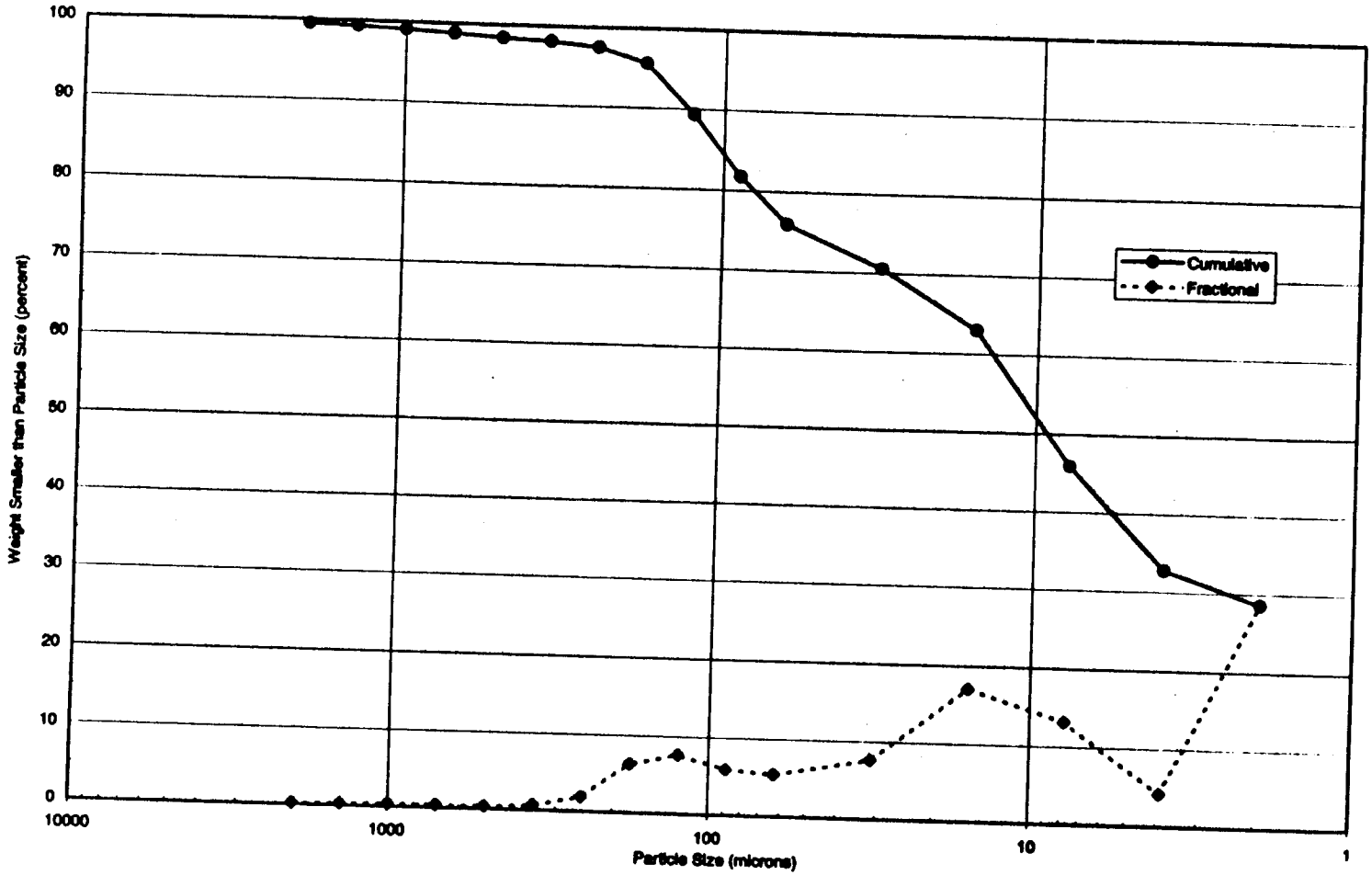


**Figure R-49**
**Particle Size Distribution**
**West Basin Station 49**

11/16/95 3:20 PM L:\CTO26\RNRV_DRFT\APPENDIX\28_PSD.XLS\H Chart 6-1

R0063430

VOL 18

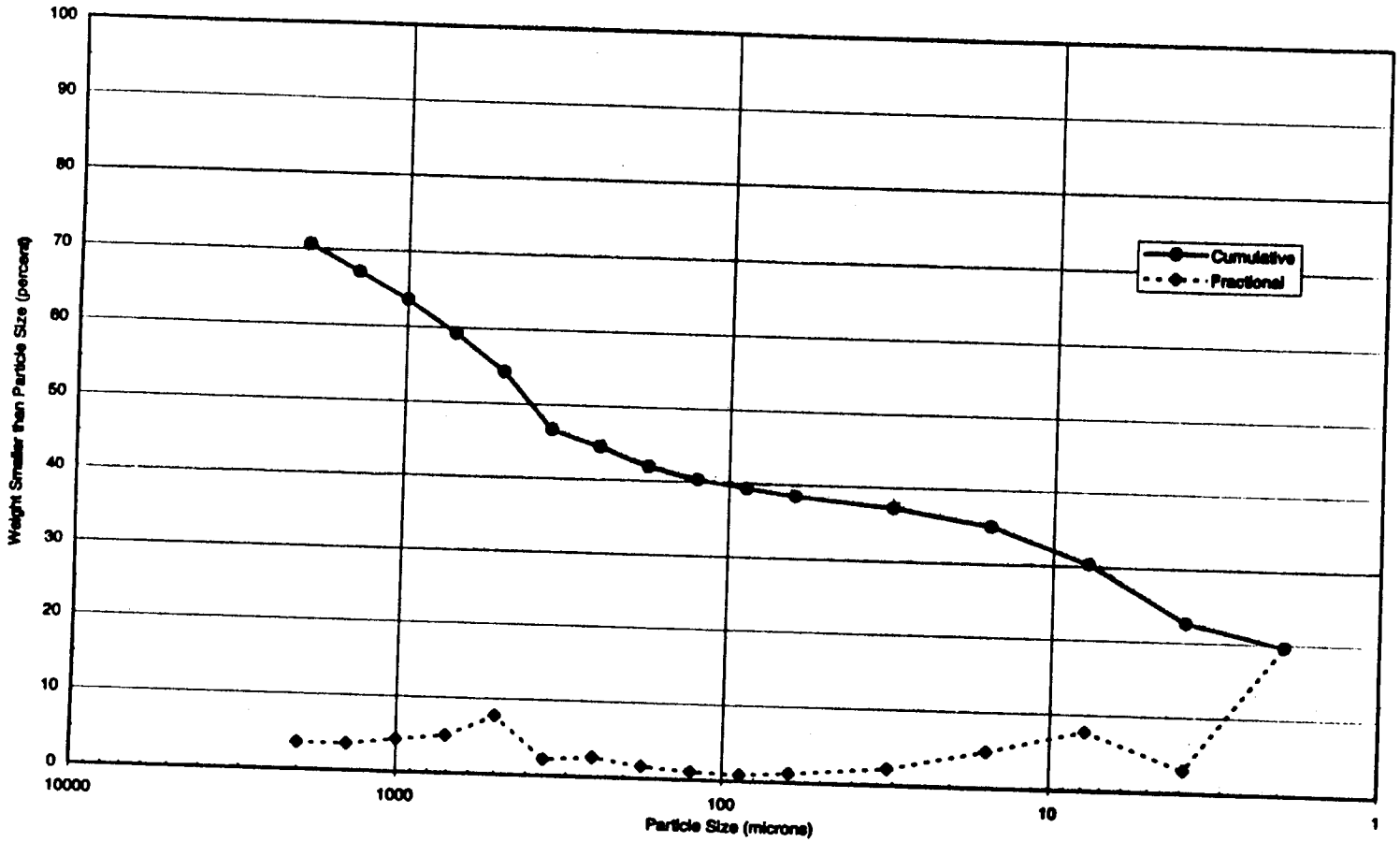


**Figure R-50**
**Particle Size Distribution**
**West Basin Station 50**

11/18/95 3:22 PM L:\CTO26\RNRV_DRFT\APPENDIX\26_PSD.XLS\H Chart 6-2
95 3:0.

R0063431

VOL 18

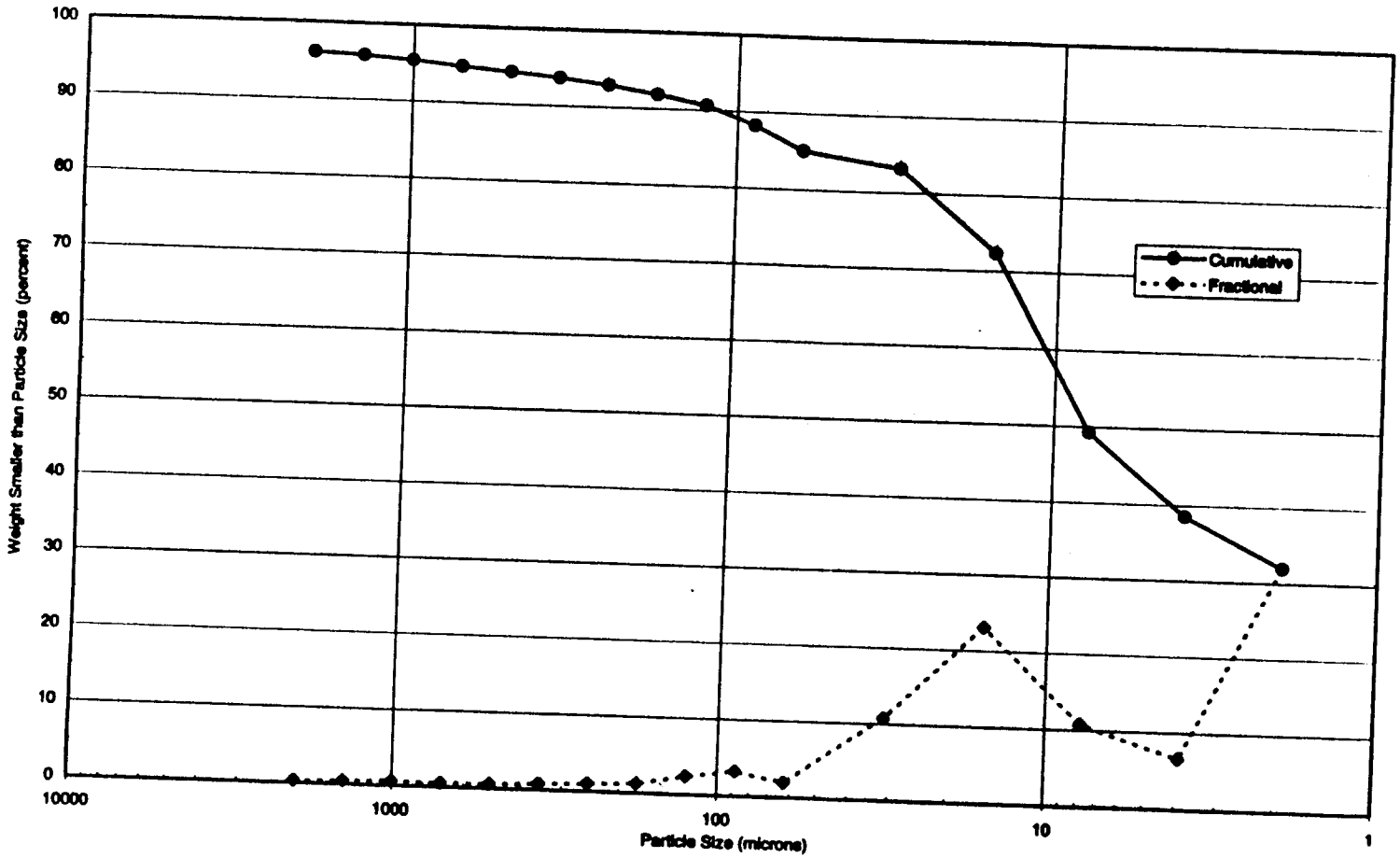


**Figure R-51**
**Particle Size Distribution**
**West Basin Station 51**

11/16/95 3:07 PM L:\CTO26\RWRV_DRFT\APPENDIX\26_PSD.XLS\G Chart 6-3

R0063432

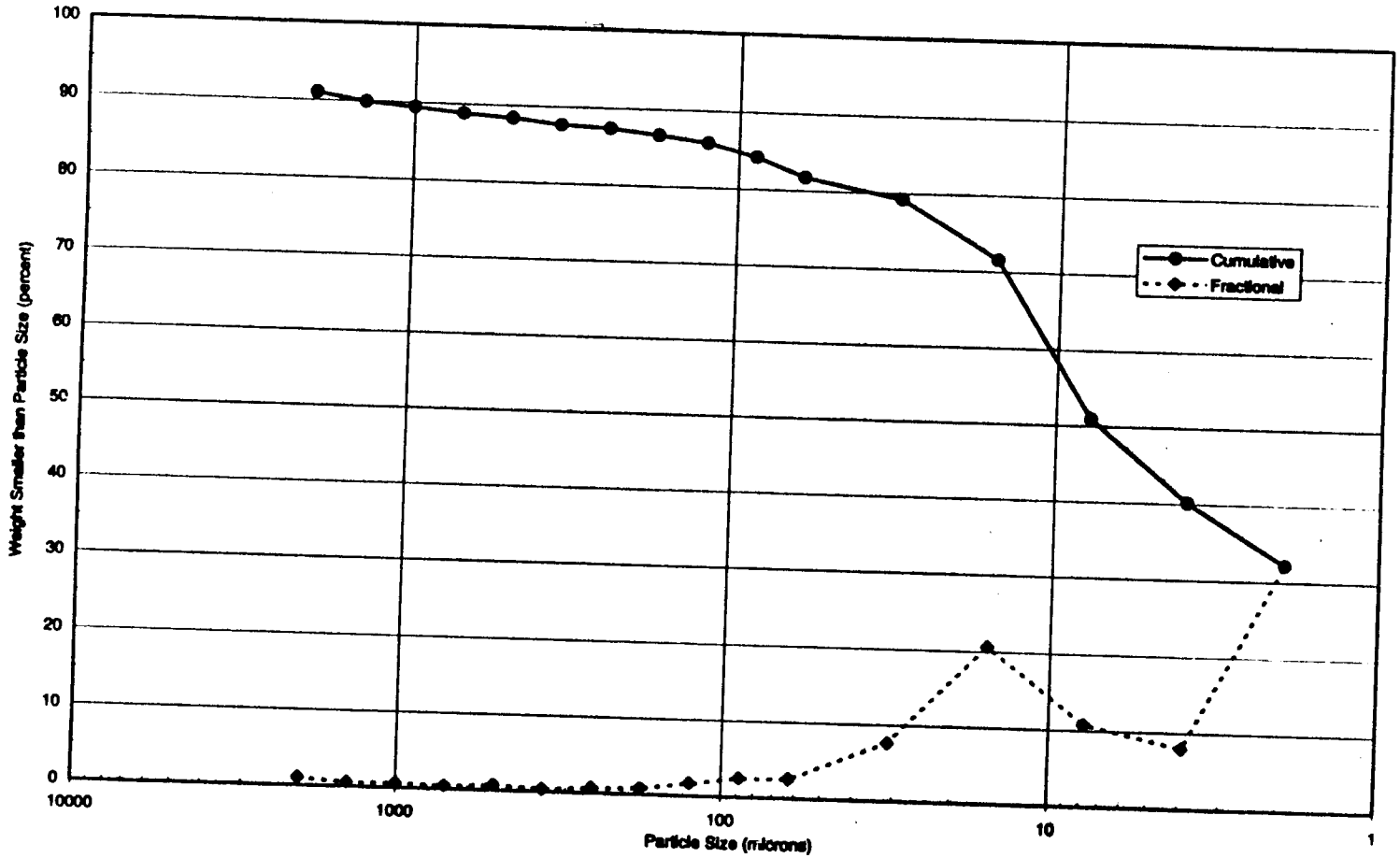


**Figure R-52**
**Particle Size Distribution**
**West Basin Station 52**

11/16/95 3:09 PM L:\CTO26\RI\RV_DRFT\APPENDIX\26_PSD.XLS\G Chart 8-4

47 PM

R0063433

VOL 18

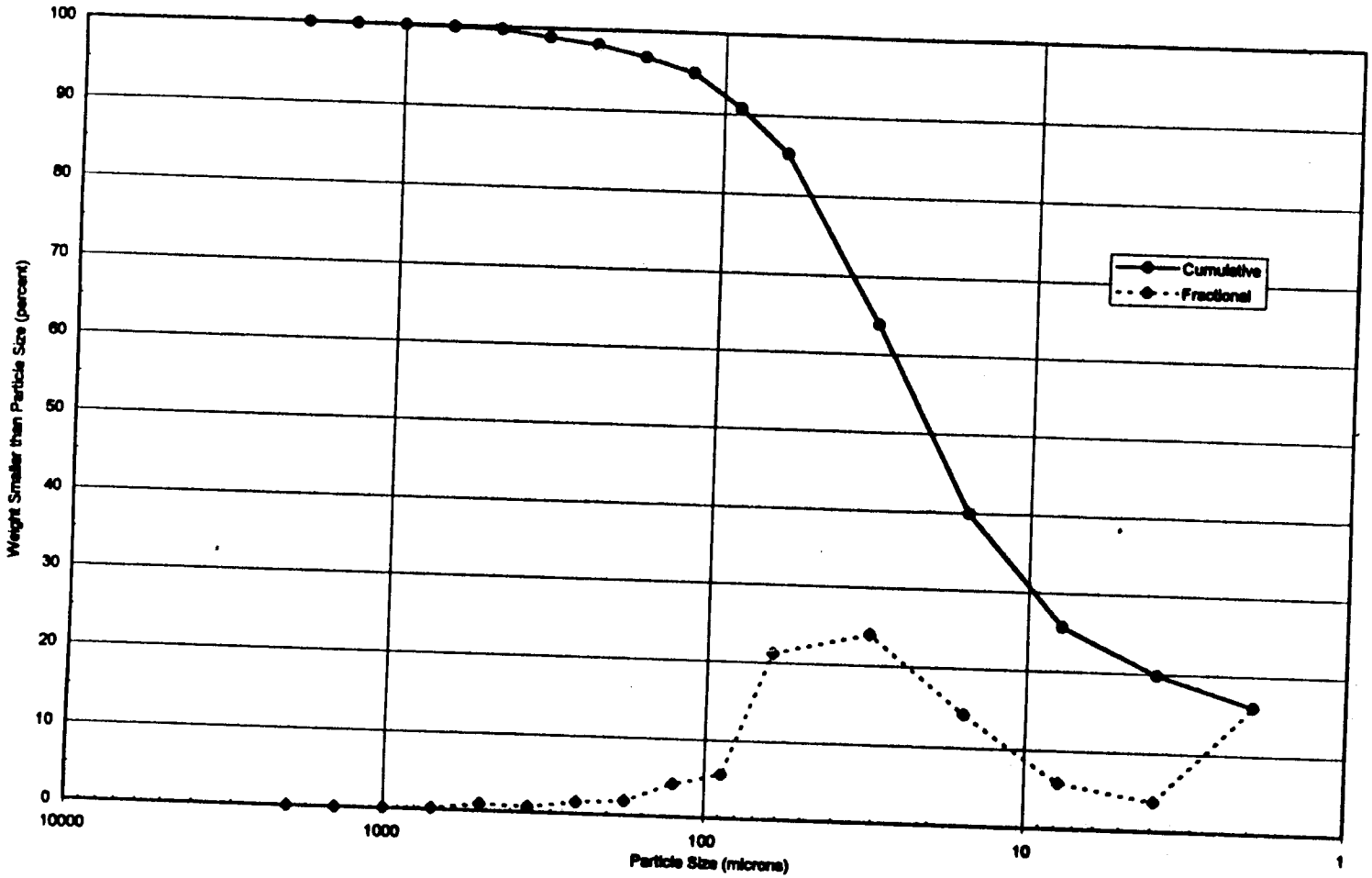


**Figure R-53**
**Particle Size Distribution**
**Reference Station 40010.1 - REP1**

11/16/95 5:47 PM L:\CTO26\RMRV_DRFT\APPEND0\38_PSD.XLS\Refs-all Chart 34

R0063434

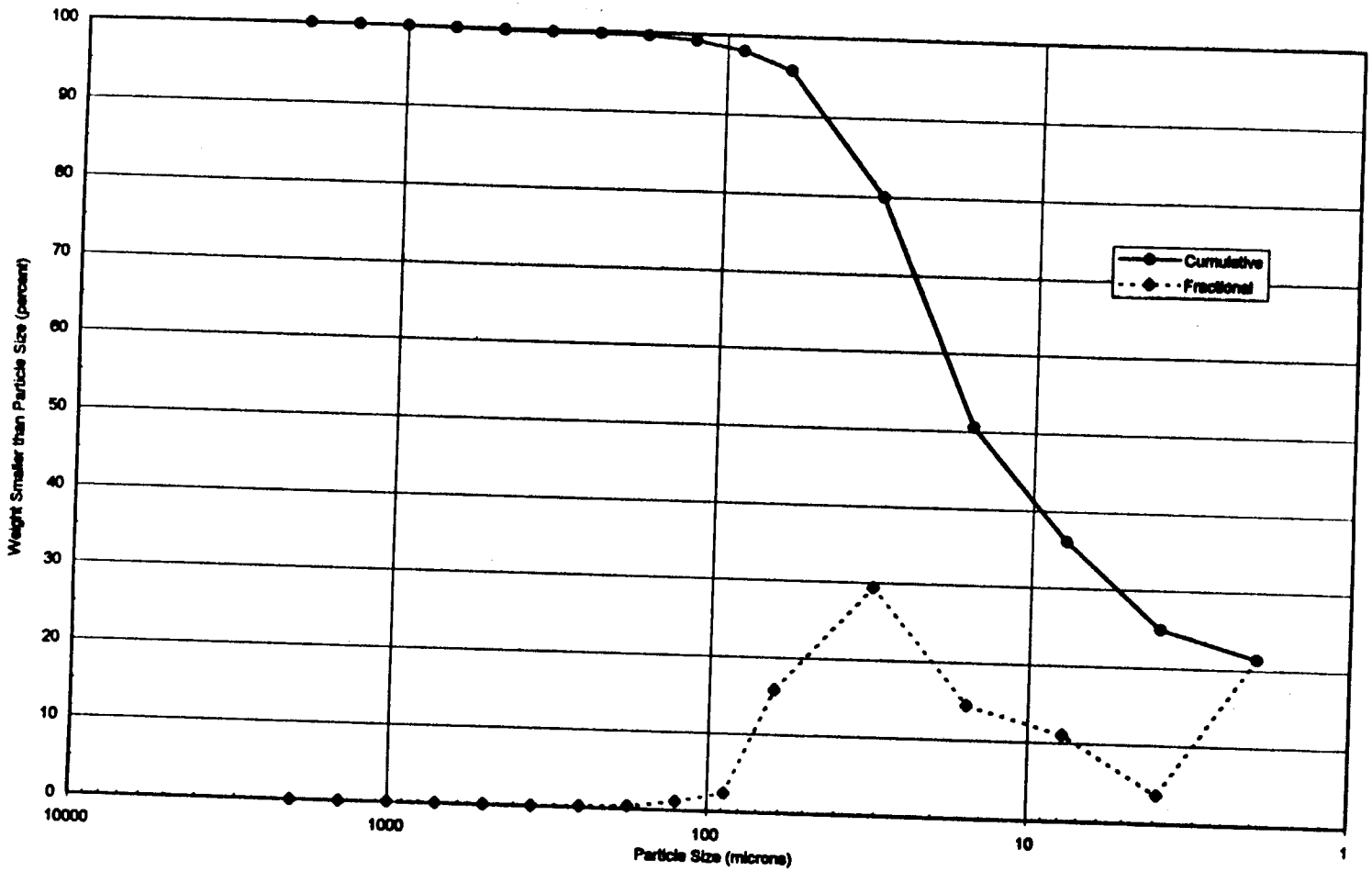


**Figure R-54**
**Particle Size Distribution**
**Reference Station 40010.2 - REP1**

11/16/95 5:52 PM L:\CTO26\RI\RV_DRFT\APPENDIX\26_PSD.XLS\Refs-all Chart 36

R0063435

VOL 18

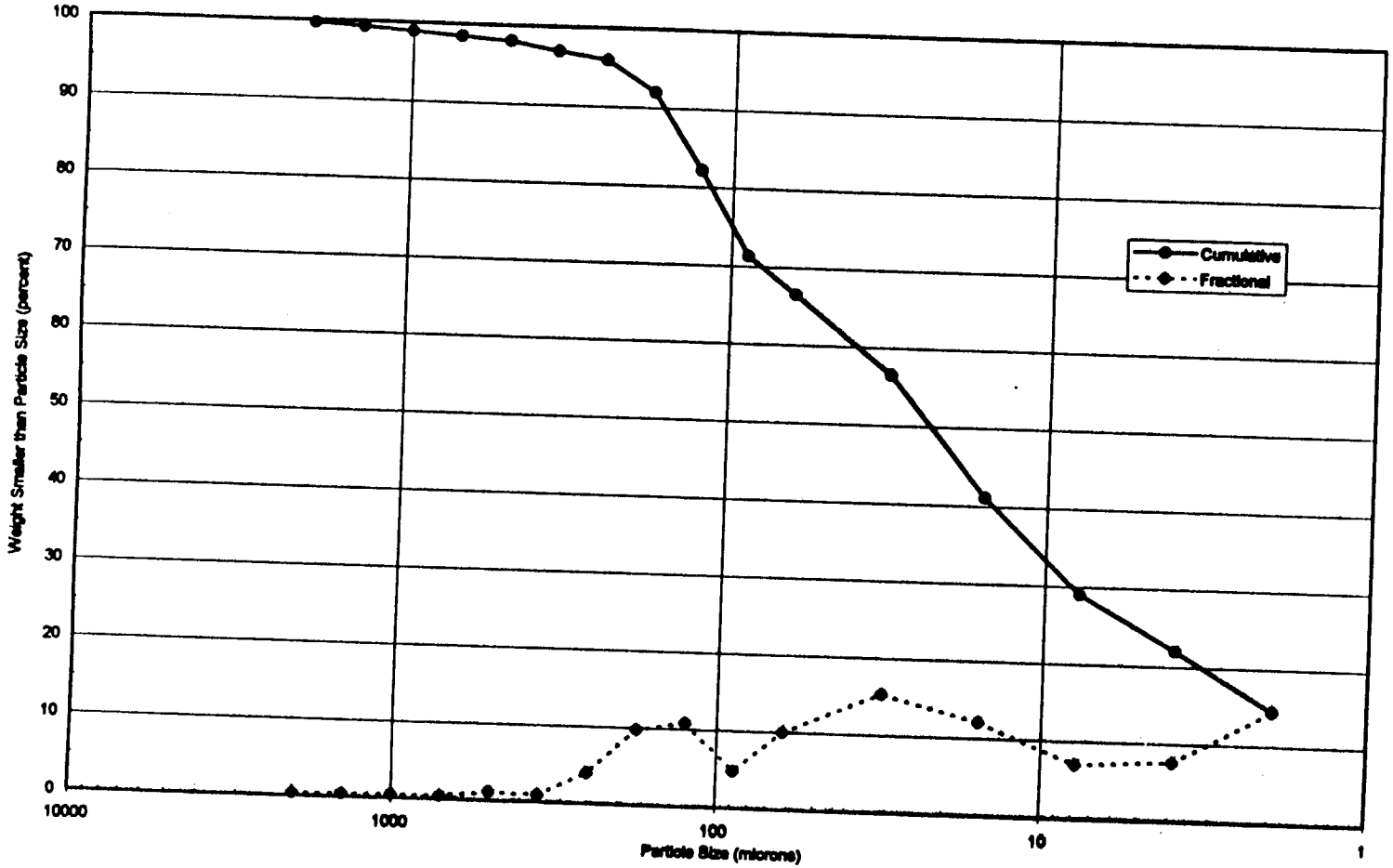


**Figure R-55.1**
**Particle Size Distribution**
**Reference Station 40010.3 - REP1**

11/16/95 6:01 PM L:\CTO26\RIVRV_DRFT\APPENDIX\26_PSD.XLS\Refs-all Chart 36

R0063436

VOL 18

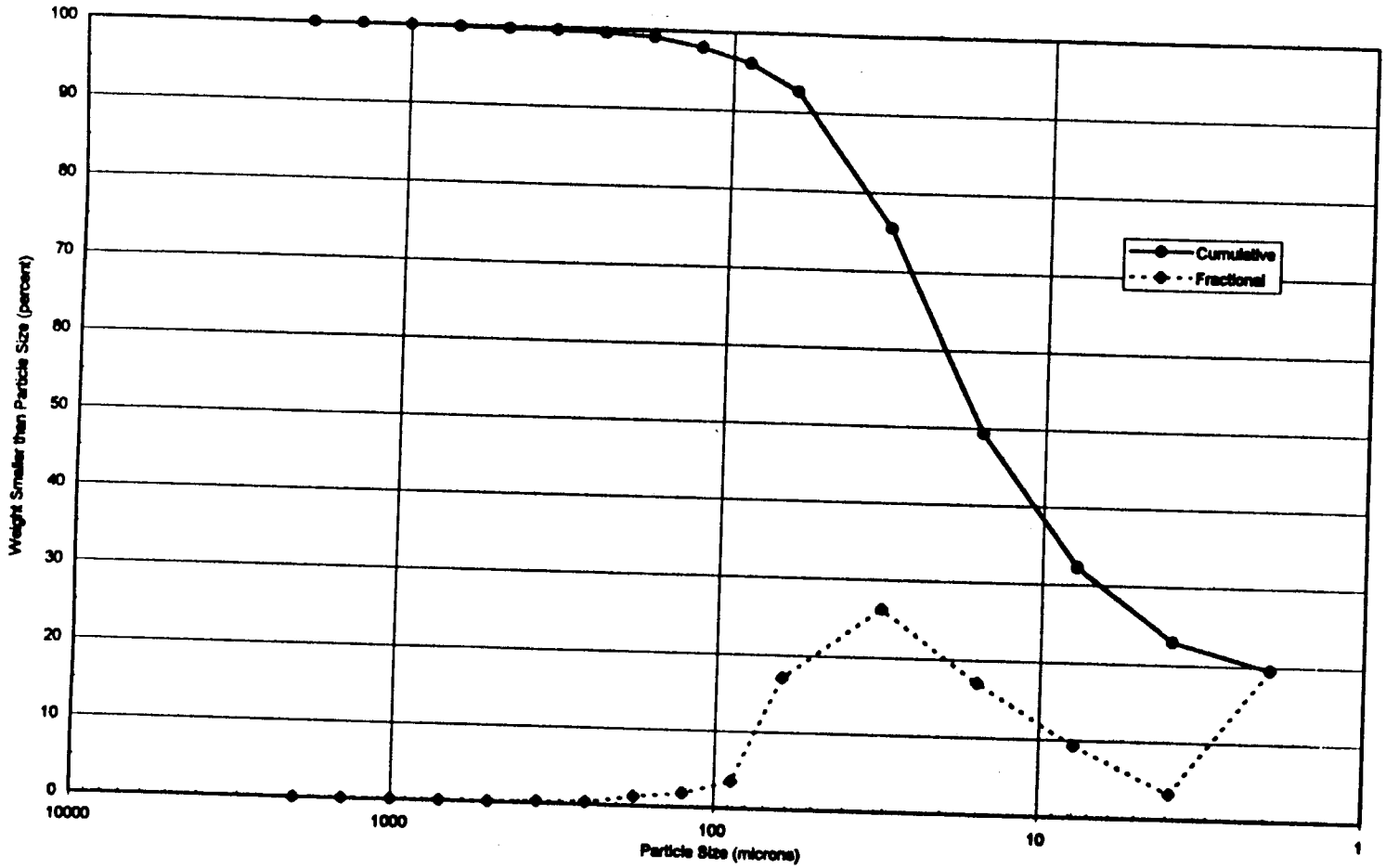


**Figure R-55.2**
**Particle Size Distribution**
**Reference Station 40010.3 - REP2**

11/16/95 6:02 PM L:\CTO26\RI\RV_DRFT\APPENDIX\26_PSD.XLS\Refs-all Chart 37

R0063437

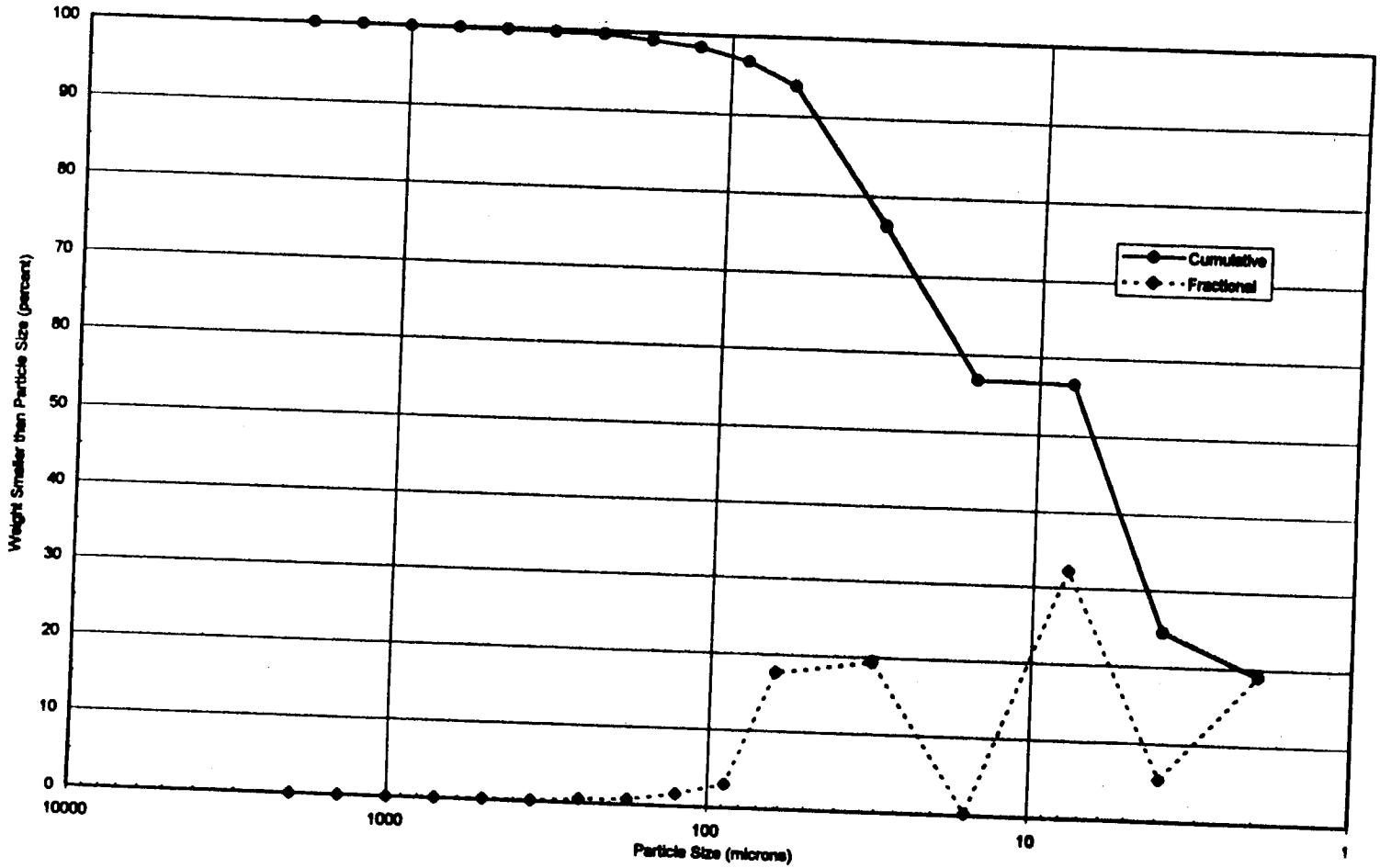


**Figure R-55.3**
**Particle Size Distribution**
**Reference Station 40010.3 - REP3**

11/16/95 8:02 PM L:\CTO26\RNRV_DRFT\APPEND0\38_PSD.XLS\Refs-all Chart 38

R0063438

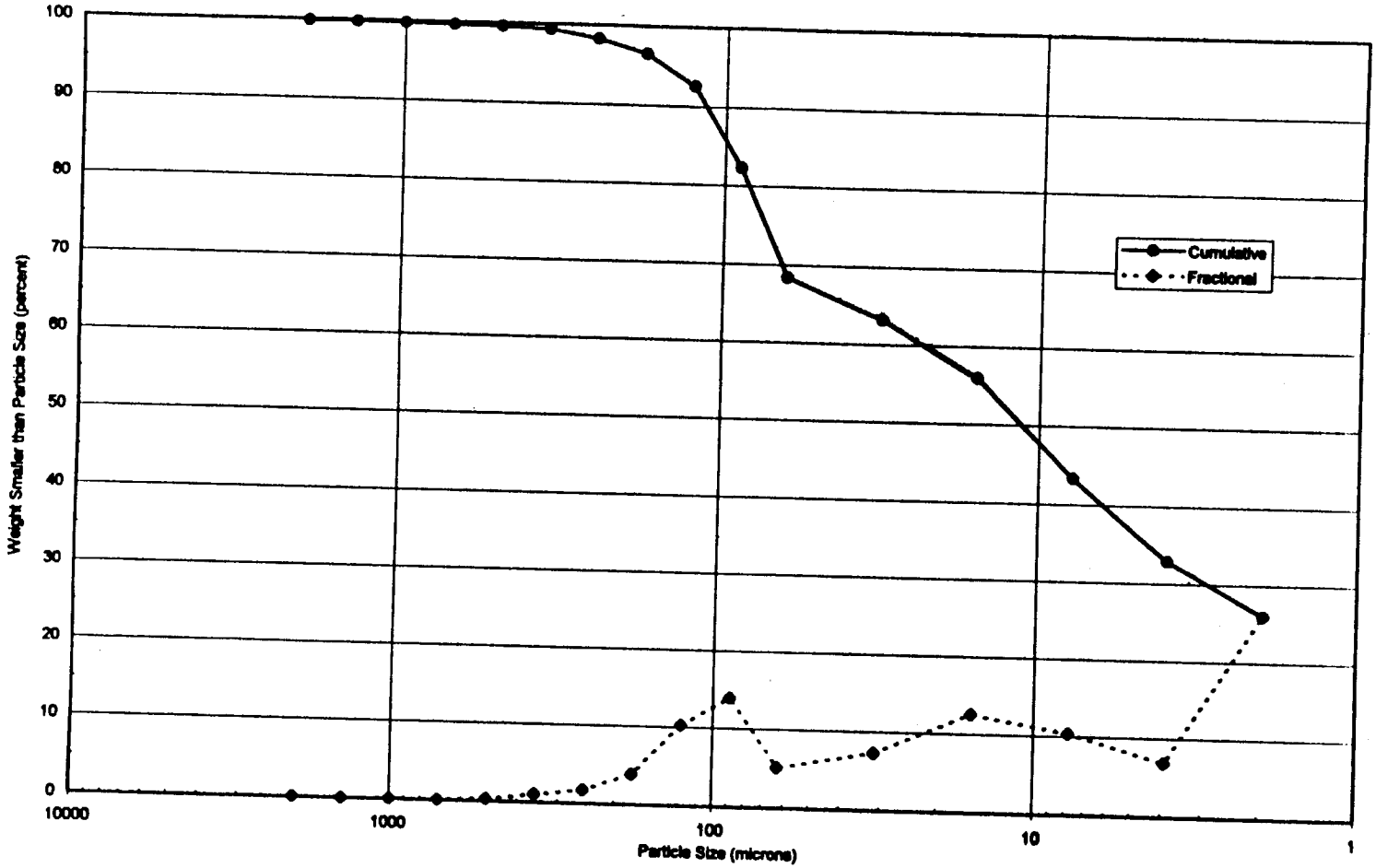


**Figure R-56**
**Particle Size Distribution**
**Reference Station 40018.1**

11/18/95 5 58 PM L:\CTO26\RNRV_DRFT\APPENDIX\26_PSD.XLS\Refs-all Chart 39
00 PM

R0063439

VOL 18

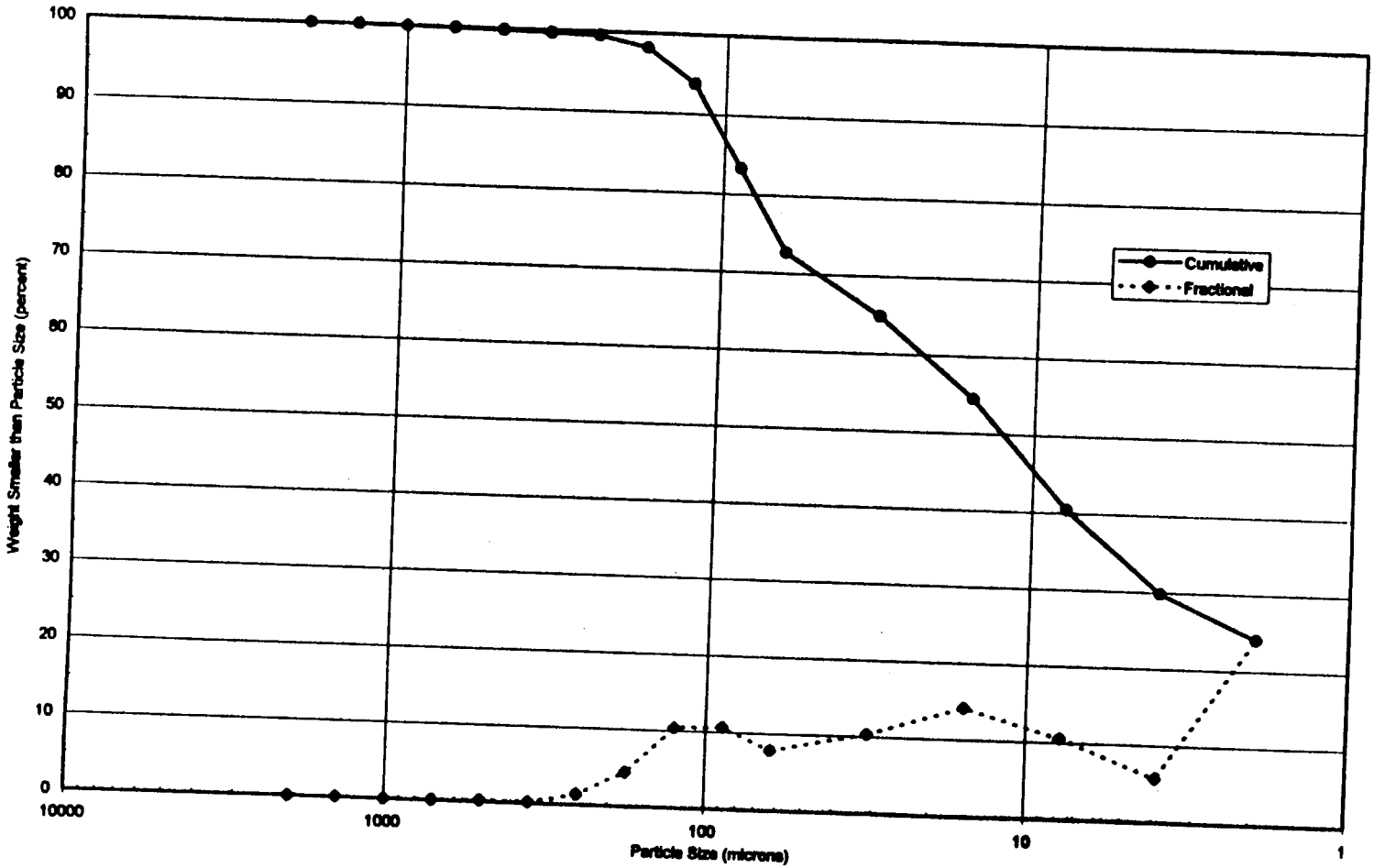


**Figure R-57**
**Particle Size Distribution**
**Reference Station 40018.2**

11/16/95 6:00 PM L:\CTO28\RIV_DRFT\APPENDIX\28_PSD.XLS\Refs-all Chart 40

R0063440

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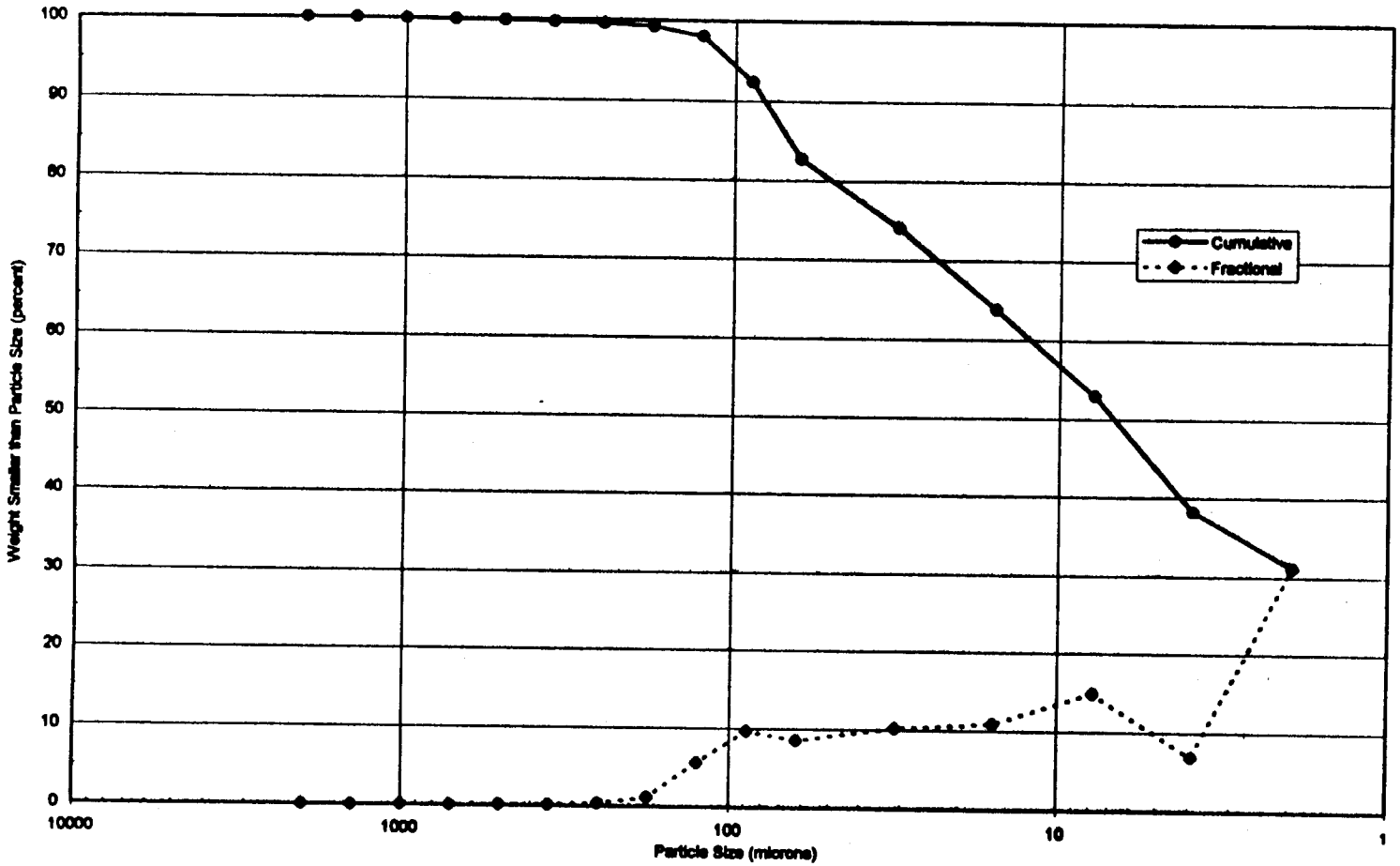


**Figure R-58**
**Particle Size Distribution**
**Reference Station 40018.3 - REP1**

11/18/95 8:04 PM L:\CTO28\RI\RV_DRFT\APPENDIX\28_PSD.XLS\Refs-all Chart 41

R0063441

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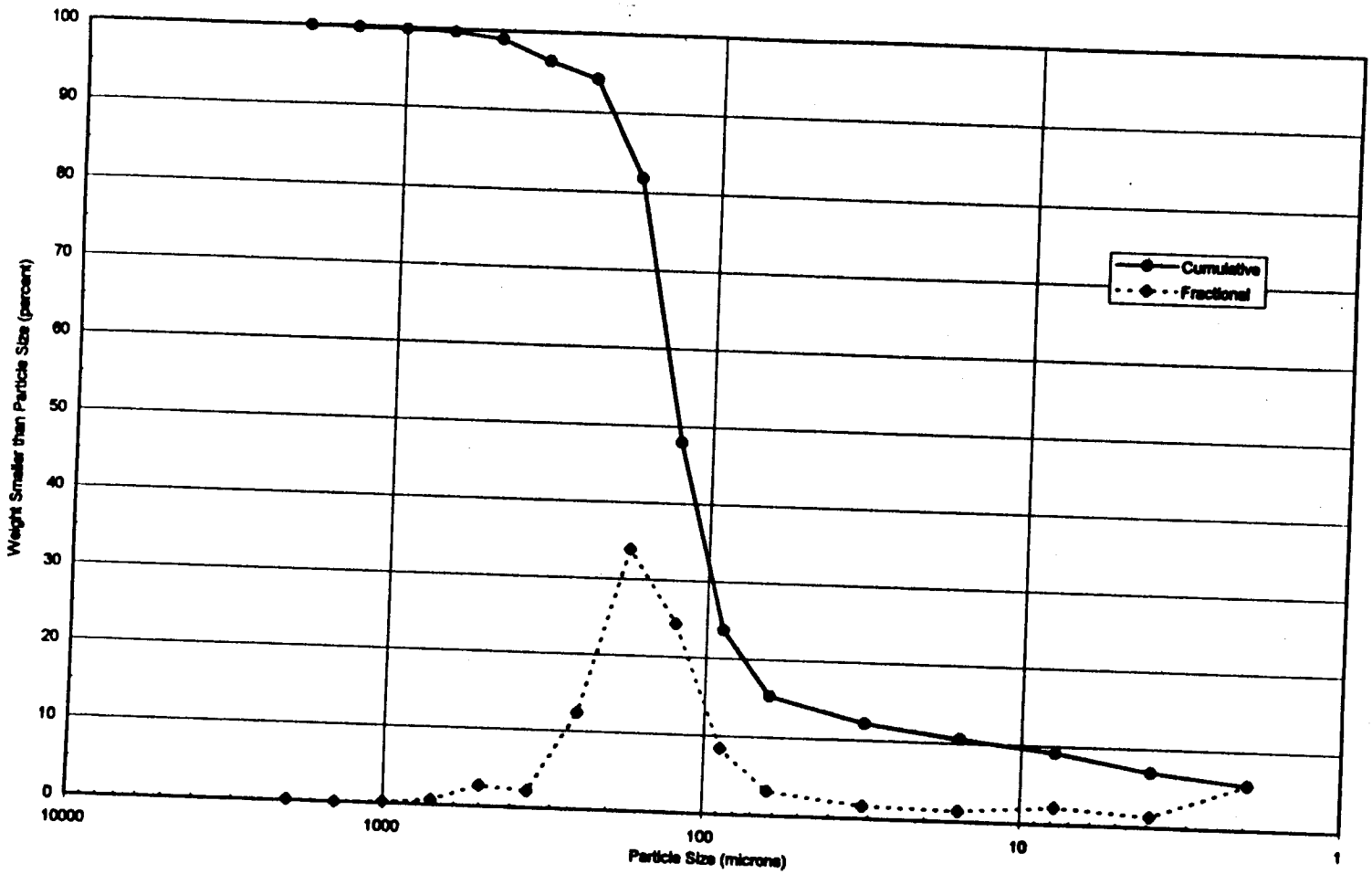


**Figure R-59**
**Particle Size Distribution**
**Reference Station 40032.1**

11/18/95 6:05 PM L:\CTO26\RIVRV_DRFT\APPENDIX\26_PSD.XLS\Refs-all Chart 42

R0063442

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## APPENDIX S

# STATISTICAL CALCULATIONS - PART 1

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1068

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Room 135
San Diego, California 92132-5187

Contract No. N68711-92-D-4570

# COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY CLEAN II

# STATISTICAL DATA PACKAGE FOR WEST BASIN (SITE 7) NAVAL COMPLEX LONG BEACH LONG BEACH, CALIFORNIA CTO 0026

November 1995

Prepared by:
MEC Analytical Systems, Inc.

Submitted by:
BECHTEL NATIONAL, INC.
401 West A Street, Suite 1000
San Diego, CA 92101

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R0063444

## Data package includes:


Section 1. General Descriptive Statistics

Section 2. Descriptive Statistics for Reference Stations

Section 3. Results of Cluster Analyses

Section 4. Comparison of West Basin Station Data to Project Reference Data

- Section 4-1. Comparison of West Basin Data by Station to Project Reference Values
- Section 4-2. Comparison of Clam Tissue Data to Project Reference Values
- Section 4-3. Comparison of Surfece Sediment Toxicity Data to Project Reference Values
- Section 4-4. Comparison of Fish Tissue Data to Project Reference Values
- Section 4-5. Comparison of Surface Sediment Data to Project Reference Values

Section 5. Correlation Analysis

- Section 5-1. Summary of Correlation Analysis for Biological Parameters
- Section 5-2. Detail Results of Correlation Analysis for All Parameters
- Section 5-3. Principal Component Analysis
- Section 5-4. Multiple Regression Analysis


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## Section 1. General Descriptive Statistics

Listing is for all physical, chemical, and toxicity parameters that were analyzed in samples of clam tissue (bioaccumulation test), fish bile (California halibut), fish tissue (California halibut fillet, white croaker fillet, California halibut whole body, white croaker whole body), and surface sediment. Data are grouped by location: basin stations, pier stations, and reference stations. Data were included for this analysis as the detectable concentration for detectable compounds, and as one half the practical quantitation limit (PQL) when the compound was not found at detectable levels. The following descriptive statistics are presented.

| | |
|---|---|
| Analyte name | Name of analyte. |
| Units | Units associated with analyte concentration. |
| # Values | Number of data values available. A value is the concentration at which a compound was detected, or when the compound was not found at detectable levels one half of the PQL is the value. Number of data values may change from one analyte to the next due to the results of data validation (i.e. some data values were rejected). |
| # Detectable Values | Number of data values reported at a detectable concentration. |
| % Frequency of Detection | Frequency of detection for this analyte in the specific group. (# Detectable Values / # available data Values) |
| Minimum Value | Minimum concentration in the data set. Frequently, this is one half of the PQL. |
| Minimum Detectable Value | Minimum concentration in the data set where the compound was found at a detectable level. |
| Maximum Value | Maximum concentration in the data set. When the frequency of detection for this compound is 0, then this value is one half of the PQL. |
| Mean Value | Arithmetic average of available data values for this compound. |
| Median Value | Median concentration of available data values for this compound. |
| Standard Deviation | Standard deviation of the mean of available data values for this compound. |
| Upper 95% Confidence Limit | Upper 95 percent confidence limit of available data values for this compound, using a 2-tail *t* statistic ($t_{(0.05,n-1)}$). |

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Station type=Basin Type of Result=Clam Bioaccumulation

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ALPHA-BHC (HCH) | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| BETA-BHC (HCH) | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHLORDANE | UG/KG | 5 | 0 | 0 | 1.00 | . | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| DELTA-BHC (HCH) | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| DIELDRIN | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN I | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN II | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN SULFATE | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDRIN | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDRIN ALDEHYDE | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| HEPTACHLOR | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| HEPTACHLOR EPOXIDE | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| LINDANE (GAMMA-BHC) | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| METHOXYCHLOR | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| TOXAPHENE | UG/KG | 5 | 0 | 0 | 1.00 | . | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| 4,4'-DDD | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| 4,4'-DDE | UG/KG | 5 | 5 | 100 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| 4,4'-DDT | UG/KG | 5 | 0 | 0 | 17.00 | 17.00 | 36.00 | 27.40 | 26.00 | 8.08 | 37.43 |
| TOTAL DDT | UG/KG | 5 | 5 | 100 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| PCB-1016 | UG/KG | 5 | 0 | 0 | 17.50 | 17.00 | 36.50 | 27.90 | 26.50 | 8.08 | 37.93 |
| PCB-1221 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1232 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1242 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1248 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1254 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1260 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| TOTAL PCB | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| LIPIDS | MG/KG | 5 | 5 | 100 | 35.00 | . | 35.00 | 35.00 | 35.00 | 0.00 | 35.00 |
| DIBUTYLTIN | UG/KG | 5 | 0 | 0 | 430.00 | 430.00 | 1700.00 | 1002.00 | 1000.00 | 458.02 | 1571.71 |
| MONOBUTYLTIN | UG/KG | 5 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 5 | 5 | 100 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| BENZO(A)ANTHRACENE | UG/KG | 5 | 0 | 0 | 1.50 | 1.50 | 3.40 | 2.66 | 2.80 | 0.71 | 3.54 |
| BENZO(A)PYRENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| BENZO(B)FLUORANTHENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| BENZO(GHI)PERYLENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| BENZO(K)FLUORANTHENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| CHRYSENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| FLUORANTHENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| PYRENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| TOTAL HPAH | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| ACENAPHTHENE | UG/KG | 5 | 0 | 0 | 50.00 | . | 250.00 | 120.00 | 100.00 | 75.83 | 214.15 |
| ACENAPHTHYLENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| ANTHRACENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| FLUORENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| METHYLNAPHTHALENES | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| NAPHTHALENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |
| PHENANTHRENE | UG/KG | 5 | 0 | 0 | 10.00 | . | 50.00 | 24.00 | 20.00 | 15.17 | 42.83 |
| | | | | | 5.00 | . | 25.00 | 12.00 | 10.00 | 7.58 | 21.42 |

R0063447

Station type=Basin Type of Result=Clam Bioaccumulation (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL LPAH | UG/KG | 5 | 0 | 0 | 40.00 | . | 200.00 | 96.00 | 80.00 | 60.66 | 171.32 |
| TOTAL PAH | UG/KG | 5 | 0 | 0 | 90.00 | . | 450.00 | 216.00 | 180.00 | 136.49 | 385.48 |
| ANTIMONY, TOTAL | MG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 5 | 5 | 100 | 2.80 | 2.80 | 3.30 | 3.00 | 2.90 | 0.23 | 3.29 |
| BERYLLIUM, TOTAL | MG/KG | 5 | 0 | 0 | 0.03 | . | 0.03 | 0.03 | 0.03 | 0.00 | 0.03 |
| CADMIUM, TOTAL | MG/KG | 5 | 0 | 0 | 0.10 | . | 0.10 | 0.10 | 0.10 | 0.00 | 0.10 |
| CHROMIUM, TOTAL | MG/KG | 5 | 1 | 20 | 0.20 | 0.40 | 0.40 | 0.24 | 0.20 | 0.09 | 0.35 |
| COPPER, TOTAL | MG/KG | 5 | 5 | 100 | 1.10 | 1.10 | 1.70 | 1.40 | 1.40 | 0.22 | 1.68 |
| LEAD, TOTAL | MG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| MERCURY, TOTAL | MG/KG | 5 | 2 | 40 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 |
| NICKEL, TOTAL | MG/KG | 5 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| SELENIUM, TOTAL | MG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| SILVER, TOTAL | MG/KG | 5 | 0 | 0 | 0.15 | . | 0.15 | 0.15 | 0.15 | 0.00 | 0.15 |
| THALLIUM, TOTAL | MG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 5 | 5 | 100 | 11.00 | 11.00 | 16.00 | 12.60 | 12.00 | 1.95 | 15.02 |

Station type=Basin Type of Result=Halibut Bile

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BENZO(A)PYRENE, EQUIV | MG/L | 12 | 12 | 100 | 2.73 | 2.73 | 50.80 | 15.61 | 9.04 | 16.39 | 26.02 |
| NAPHTHALENE, EQUIV | MG/L | 12 | 12 | 100 | 58.40 | 58.40 | 655.00 | 238.45 | 164.00 | 182.50 | 351.61 |
| PHENANTHRENE, EQUIV | MG/L | 12 | 12 | 100 | 43.60 | 43.60 | 536.00 | 107.90 | 110.50 | 142.84 | 258.66 |
| PYRENE, EQUIV | MG/L | 12 | 12 | 100 | 21.40 | 21.40 | 469.00 | 115.85 | 72.70 | 126.58 | 196.27 |

R0063448

Station type=Basin Type of Result=Halibut Fillet

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| CHLORDANE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| DIELDRIN | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN I | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN II | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN SULFATE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| METHOXYCHLOR | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| TOXAPHENE | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| 4,4'-DDD | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| 4,4'-DDE | UG/KG | 6 | 6 | 100.000 | 17.00 | 17.00 | 200.00 | 57.50 | 28.00 | 70.91 | 131.92 |
| 4,4'-DDT | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| TOTAL DDT | UG/KG | 6 | 6 | 100.000 | 22.00 | 17.00 | 205.00 | 62.50 | 33.00 | 70.91 | 136.92 |
| PCB-1016 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1221 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1232 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1242 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1248 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1254 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1260 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| TOTAL PCB | UG/KG | 6 | 0 | 0.000 | 350.00 | . | 350.00 | 350.00 | 350.00 | 0.00 | 350.00 |
| LIPIDS | MG/KG | 6 | 6 | 100.000 | 657.00 | 657.00 | 2880.00 | 1350.83 | 1210.00 | 811.78 | 2202.75 |
| DIBUTYLTIN | UG/KG | 6 | 1 | 16.667 | 0.50 | 1.40 | 1.40 | 0.65 | 0.50 | 0.37 | 1.04 |
| MONOBUTYLTIN | UG/KG | 1 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | . | . |
| TRIBUTYLTIN | UG/KG | 6 | 1 | 16.667 | 0.50 | 1.40 | 1.40 | 0.65 | 0.50 | 0.37 | 1.04 |
| BENZO(A)ANTHRACENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| BENZO(A)PYRENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| BENZO(B)FLUORANTHENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| BENZO(GHI)PERYLENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| BENZO(K)FLUORANTHENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| CHRYSENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| FLUORANTHENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| PYRENE | UG/KG | 5 | 0 | 0.000 | 5.00 | . | 20.00 | 11.00 | 10.00 | 6.52 | 19.09 |
| TOTAL HPAH | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 200.00 | 106.67 | 95.00 | 58.88 | 168.46 |
| ACENAPHTHENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| ACENAPHTHYLENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| ANTHRACENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| FLUORENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| NAPHTHALENE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 40.00 | 21.67 | 20.00 | 11.69 | 33.94 |
| PHENANTHRENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 20.00 | 10.83 | 10.00 | 5.85 | 16.97 |
| TOTAL LPAH | UG/KG | 6 | 0 | 0.000 | 35.00 | . | 140.00 | 75.83 | 70.00 | 40.92 | 118.77 |

R0063449

Station type=Basin Type of Result=Halibut Fillet (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL PAH | UG/KG | 6 | 0 | 0.000 | 85.00 | . | 340.00 | 182.50 | 165.00 | 99.74 | 287.17 |
| ANTIMONY, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 6 | 1 | 16.667 | 0.25 | 0.60 | 0.60 | 0.31 | 0.25 | 0.14 | 0.46 |
| BERYLLIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.05 | . | 0.05 | 0.05 | 0.05 | 0.00 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| COPPER, TOTAL | MG/KG | 6 | 2 | 33.333 | 0.50 | 1.00 | 2.00 | 0.83 | 0.50 | 0.61 | 1.47 |
| LEAD, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| MERCURY, TOTAL | MG/KG | 6 | 6 | 100.000 | 0.03 | 0.03 | 0.17 | 0.08 | 0.06 | 0.06 | 0.16 |
| NICKEL, TOTAL | MG/KG | 6 | 0 | 0.000 | 1.50 | . | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| SILVER, TOTAL | MG/KG | 5 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 6 | 5 | 83.333 | 5.00 | 5.00 | 18.00 | 7.90 | 5.90 | 3.99 | 11.60 |

Station type=Basin Type of Result=White Croaker Fillet

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| BETA BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| CHLORDANE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| DIELDRIN | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN I | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN II | UG/KG | 6 | 5 | 83.333 | 2.50 | 15.00 | 85.00 | 28.25 | 16.50 | 29.16 | 58.86 |
| ENDOSULFAN SULFATE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN | UG/KG | 6 | 3 | 50.000 | 2.50 | 7.40 | 8.50 | 5.30 | 4.95 | 3.09 | 8.54 |
| ENDRIN ALDEHYDE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| METHOXYCHLOR | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| TOXAPHENE | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| 4,4'-DDD | UG/KG | 6 | 6 | 100.000 | 11.00 | 11.00 | 81.00 | 34.33 | 20.50 | 28.13 | 63.85 |
| 4,4'-DDE | UG/KG | 6 | 6 | 100.000 | 63.00 | 63.00 | 860.00 | 335.67 | 225.00 | 320.37 | 671.87 |
| 4,4'-DDT | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| TOTAL DDT | UG/KG | 6 | 6 | 100.000 | 84.50 | 82.00 | 919.50 | 372.50 | 246.00 | 325.25 | 713.83 |
| PCB-1016 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1221 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1232 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1242 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1248 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1254 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |

R0063450

Station type=Basin Type of Result=White Croaker Fillet (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1260 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| TOTAL PCB | UG/KG | 6 | 0 | 0.000 | 350.00 | . | 350.00 | 350.00 | 350.00 | 0.00 | 350.00 |
| LIPIDS | MG/KG | 6 | 6 | 100.000 | 33800.00 | 33800.00 | 69200.00 | 47550.00 | 46200.00 | 13427.40 | 61641.19 |
| DIBUTYLTIN | UG/KG | 6 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| MONOBUTYLTIN | UG/KG | 2 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 6 | 6 | 100.000 | 2.90 | 2.90 | 6.50 | 4.95 | 5.20 | 1.34 | 6.36 |
| BENZO(A)ANTHRACENE | UG/KG | 5 | 0 | 0.000 | 10.00 | . | 25.00 | 18.00 | 15.00 | 6.71 | 26.33 |
| BENZO(A)PYRENE | UG/KG | 4 | 0 | 0.000 | 10.00 | . | 25.00 | 16.25 | 15.00 | 6.29 | 26.26 |
| BENZO(B)FLUORANTHENE | UG/KG | 4 | 0 | 0.000 | 10.00 | . | 25.00 | 16.25 | 15.00 | 6.29 | 26.26 |
| BENZO(GHI)PERYLENE | UG/KG | 4 | 0 | 0.000 | 10.00 | . | 25.00 | 16.25 | 15.00 | 6.29 | 26.26 |
| BENZO(K)FLUORANTHENE | UG/KG | 4 | 0 | 0.000 | 10.00 | . | 25.00 | 16.25 | 15.00 | 6.29 | 26.26 |
| CHRYSENE | UG/KG | 5 | 0 | 0.000 | 10.00 | . | 25.00 | 18.00 | 15.00 | 6.71 | 26.33 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 4 | 0 | 0.000 | 10.00 | . | 25.00 | 16.25 | 15.00 | 6.29 | 26.26 |
| FLUORANTHENE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 25.00 | 17.50 | 15.00 | 6.12 | 23.93 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 4 | 0 | 0.000 | 10.00 | . | 25.00 | 16.25 | 15.00 | 6.29 | 26.26 |
| PYRENE | UG/KG | 2 | 0 | 0.000 | 10.00 | . | 25.00 | 17.50 | 17.50 | 10.61 | 112.80 |
| TOTAL HPAH | UG/KG | 6 | 0 | 0.000 | 15.00 | . | 225.00 | 118.33 | 117.50 | 68.24 | 189.95 |
| ACENAPHTHENE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 25.00 | 17.50 | 15.00 | 6.12 | 23.93 |
| ACENAPHTHYLENE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 25.00 | 17.50 | 15.00 | 6.12 | 23.93 |
| ANTHRACENE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 25.00 | 17.50 | 15.00 | 6.12 | 23.93 |
| FLUORENE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 25.00 | 17.50 | 15.00 | 6.12 | 23.93 |
| NAPHTHALENE | UG/KG | 6 | 0 | 0.000 | 20.00 | . | 50.00 | 38.00 | 30.00 | 12.25 | 47.85 |
| PHENANTHRENE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 25.00 | 17.50 | 15.00 | 6.12 | 23.93 |
| TOTAL LPAH | UG/KG | 6 | 0 | 0.000 | 70.00 | . | 175.00 | 122.50 | 105.00 | 42.87 | 167.49 |
| TOTAL PAH | UG/KG | 6 | 0 | 0.000 | 120.00 | . | 400.00 | 248.83 | 240.00 | 96.04 | 341.62 |
| ANTIMONY, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 6 | 5 | 83.333 | 0.25 | 0.60 | 1.40 | 0.83 | 0.85 | 0.39 | 1.23 |
| BERYLLIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.05 | . | 0.05 | 0.05 | 0.05 | 0.00 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| COPPER, TOTAL | MG/KG | 6 | 3 | 50.000 | 0.50 | 1.00 | 2.00 | 0.92 | 0.75 | 0.58 | 1.53 |
| LEAD, TOTAL | MG/KG | 6 | 1 | 16.667 | 0.25 | 4.20 | 4.20 | 0.91 | 0.25 | 1.61 | 2.60 |
| MERCURY, TOTAL | MG/KG | 6 | 6 | 100.000 | 0.03 | 0.03 | 0.07 | 0.06 | 0.07 | 0.02 | 0.08 |
| NICKEL, TOTAL | MG/KG | 6 | 0 | 0.000 | 1.50 | . | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 6 | 1 | 16.667 | 0.25 | 0.60 | 0.60 | 0.31 | 0.25 | 0.14 | 0.46 |
| SILVER, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 6 | 6 | 100.000 | 6.00 | 6.00 | 10.00 | 7.67 | 7.50 | 1.63 | 9.38 |

R0063451

Station type=Basin Type of Result=Halibut Whole Body

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| CHLORDANE | UG/KG | 15 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| DIELDRIN | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN I | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN II | UG/KG | 15 | 2 | 13.333 | 2.50 | 13.00 | 20.00 | 4.37 | 2.50 | 5.10 | 7.19 |
| ENDOSULFAN SULFATE | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| METHOXYCHLOR | UG/KG | 15 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| TOXAPHENE | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| 4,4'-DDD | UG/KG | 15 | 1 | 6.667 | 2.50 | 8.60 | 8.60 | 2.91 | 2.50 | 1.58 | 3.78 |
| 4,4'-DDE | UG/KG | 15 | 15 | 100.000 | 15.00 | 15.00 | 380.00 | 101.53 | 65.00 | 108.06 | 161.37 |
| 4,4'-DDT | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| TOTAL DDT | UG/KG | 15 | 15 | 100.000 | 20.00 | 15.00 | 385.00 | 106.94 | 72.00 | 107.91 | 166.70 |
| PCB-1016 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB 1221 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1232 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1242 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1248 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1254 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1260 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| TOTAL PCB | UG/KG | 15 | 0 | 0.000 | 350.00 | . | 350.00 | 350.00 | 350.00 | 0.00 | 350.00 |
| LIPIDS | MG/KG | 15 | 15 | 100.000 | 680.00 | 680.00 | 24500.00 | 7987.33 | 7140.00 | 5733.46 | 11142.53 |
| DIBUTYLTIN | UG/KG | 15 | 14 | 93.333 | 0.50 | 1.40 | 4.00 | 2.24 | 2.10 | 0.88 | 2.72 |
| MONOBUTYLTIN | UG/KG | 12 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 15 | 15 | 100.000 | 1.10 | 1.10 | 20.00 | 6.95 | 7.60 | 4.41 | 9.40 |
| BENZO(A)ANTHRACENE | UG/KG | 8 | 0 | 0.000 | 5.00 | . | 10.00 | 5.63 | 5.00 | 1.77 | 7.10 |
| BENZO(A)PYRENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| BENZO(B)FLUORANTHENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| BENZO(GHI)PERYLENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| BENZO(K)FLUORANTHENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| CHRYSENE | UG/KG | 8 | 0 | 0.000 | 5.00 | . | 10.00 | 5.63 | 5.00 | 1.77 | 7.10 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| FLUORANTHENE | UG/KG | 12 | 0 | 0.000 | 5.00 | . | 10.00 | 5.42 | 5.00 | 1.44 | 6.33 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| PYRENE | UG/KG | 4 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| TOTAL HPAH | UG/KG | 12 | 0 | 0.000 | 5.00 | . | 90.00 | 39.58 | 45.00 | 23.50 | 54.51 |
| ACENAPHTHENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 10.00 | 5.67 | 5.00 | 1.76 | 6.64 |
| ACENAPHTHYLENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 10.00 | 5.67 | 5.00 | 1.76 | 6.64 |
| ANTHRACENE | UG/KG | 12 | 0 | 0.000 | 5.00 | . | 10.00 | 5.42 | 5.00 | 1.44 | 6.33 |
| FLUORENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 10.00 | 5.67 | 5.00 | 1.76 | 6.64 |
| NAPHTHALENE | UG/KG | 15 | 0 | 0.000 | 10.00 | . | 20.00 | 11.33 | 10.00 | 3.52 | 13.28 |
| PHENANTHRENE | UG/KG | 12 | 0 | 0.000 | 5.00 | . | 10.00 | 5.42 | 5.00 | 1.44 | 6.33 |
| TOTAL LPAH | UG/KG | 15 | 0 | 0.000 | 25.00 | . | 70.00 | 37.00 | 35.00 | 10.66 | 42.90 |

R0063452

Station type=Basin Type of Result=Halibut Whole Body (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL PAH | UG/KG | 15 | 0 | 0.000 | 25.00 | . | 160.00 | 68.67 | 70.00 | 33.62 | 87.28 |
| ANTIMONY, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 15 | 4 | 26.667 | 0.25 | 0.50 | 0.70 | 0.34 | 0.25 | 0.16 | 0.43 |
| BERYLLIUM, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.05 | . | 0.05 | 0.05 | 0.05 | 0.00 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| COPPER, TOTAL | MG/KG | 15 | 9 | 60.000 | 0.50 | 1.00 | 37.00 | 3.33 | 1.00 | 9.33 | 8.50 |
| LEAD, TOTAL | MG/KG | 15 | 1 | 6.667 | 0.25 | 1.70 | 1.70 | 0.35 | 0.25 | 0.37 | 0.55 |
| MERCURY, TOTAL | MG/KG | 15 | 15 | 100.000 | 0.01 | 0.01 | 0.05 | 0.03 | 0.03 | 0.01 | 0.04 |
| NICKEL, TOTAL | MG/KG | 15 | 0 | 0.000 | 1.50 | . | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 15 | 1 | 6.667 | 0.25 | 0.90 | 0.90 | 0.29 | 0.25 | 0.17 | 0.39 |
| SILVER, TOTAL | MG/KG | 8 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 15 | 11 | 73.333 | 8.00 | 8.00 | 33.00 | 14.73 | 15.00 | 5.76 | 17.92 |

Station type=Basin Type of Result=White Croaker Whole Body

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 15 | 1 | 6.667 | 2.50 | 5.70 | 5.70 | 2.71 | 2.50 | 0.83 | 3.17 |
| BETA-BHC (HCH) | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| CHLORDANE | UG/KG | 15 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| DIELDRIN | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN I | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN II | UG/KG | 15 | 5 | 33.333 | 2.50 | 24.00 | 35.00 | 11.13 | 2.50 | 12.87 | 18.26 |
| ENDOSULFAN SULFATE | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN | UG/KG | 15 | 3 | 20.000 | 2.50 | 5.40 | 33.00 | 5.06 | 2.50 | 7.86 | 9.41 |
| ENDRIN ALDEHYDE | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| METHOXYCHLOR | UG/KG | 15 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| TOXAPHENE | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| 4,4'-DDD | UG/KG | 15 | 9 | 60.000 | 2.50 | 15.00 | 72.00 | 21.60 | 19.00 | 20.54 | 32.97 |
| 4,4'-DDE | UG/KG | 15 | 15 | 100.000 | 65.00 | 65.00 | 1000.00 | 385.67 | 360.00 | 228.87 | 512.41 |
| 4,4'-DDT | UG/KG | 15 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| TOTAL DDT | UG/KG | 15 | 15 | 100.000 | 70.00 | 65.00 | 1005.00 | 409.77 | 395.00 | 234.07 | 539.39 |
| PCB-1016 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1221 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1232 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1242 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1248 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1254 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |

R0063453

Station type=Basin Type of Result=White Croaker Whole Body (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1260 | UG/KG | 15 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| TOTAL PCB | UG/KG | 15 | 0 | 0.000 | 350.00 | . | 350.00 | 350.00 | 350.00 | 0.00 | 350.00 |
| LIPIDS | MG/KG | 15 | 15 | 100.000 | 5510.00 | 5510.00 | 74800.00 | 46147.33 | 51000.00 | 17793.91 | 56001.27 |
| DIBUTYLTIN | UG/KG | 15 | 10 | 66.667 | 0.50 | 1.00 | 4.10 | 1.57 | 1.40 | 1.22 | 2.25 |
| MONOBUTYLTIN | UG/KG | 6 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 15 | 15 | 100.000 | 3.10 | 3.10 | 17.00 | 9.70 | 11.00 | 4.16 | 12.00 |
| BENZO(A)ANTHRACENE | UG/KG | 10 | 0 | 0.000 | 5.00 | . | 25.00 | 11.50 | 5.00 | 9.44 | 18.25 |
| BENZO(A)PYRENE | UG/KG | 10 | 0 | 0.000 | 5.00 | . | 25.00 | 11.50 | 5.00 | 9.44 | 18.25 |
| BENZO(B)FLUORANTHENE | UG/KG | 10 | 0 | 0.000 | 5.00 | . | 25.00 | 11.50 | 5.00 | 9.44 | 18.25 |
| BENZO(GHI)PERYLENE | UG/KG | 10 | 0 | 0.000 | 5.00 | . | 25.00 | 11.50 | 5.00 | 9.44 | 18.25 |
| BENZO(K)FLUORANTHENE | UG/KG | 10 | 0 | 0.000 | 5.00 | . | 25.00 | 11.50 | 5.00 | 9.44 | 18.25 |
| CHRYSENE | UG/KG | 10 | 0 | 0.000 | 5.00 | . | 25.00 | 11.50 | 5.00 | 9.44 | 18.25 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 10 | 0 | 0.000 | 5.00 | . | 25.00 | 11.50 | 5.00 | 9.44 | 18.25 |
| FLUORANTHENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 25.00 | 10.33 | 5.00 | 8.12 | 14.83 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 10 | 0 | 0.000 | 5.00 | . | 25.00 | 11.50 | 5.00 | 9.44 | 18.25 |
| PYRENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| TOTAL HPAH | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 225.00 | 74.33 | 50.00 | 82.11 | 119.81 |
| ACENAPHTHENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 25.00 | 10.33 | 5.00 | 8.12 | 14.83 |
| ACENAPHTHYLENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 25.00 | 10.33 | 5.00 | 8.12 | 14.83 |
| ANTHRACENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 25.00 | 10.33 | 5.00 | 8.12 | 14.83 |
| FLUORENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 25.00 | 10.33 | 5.00 | 8.12 | 14.83 |
| NAPHTHALENE | UG/KG | 15 | 0 | 0.000 | 10.00 | . | 50.00 | 20.67 | 10.00 | 16.24 | 29.66 |
| PHENANTHRENE | UG/KG | 15 | 0 | 0.000 | 5.00 | . | 25.00 | 10.33 | 5.00 | 8.12 | 14.83 |
| TOTAL LPAH | UG/KG | 15 | 0 | 0.000 | 35.00 | . | 175.00 | 72.33 | 35.00 | 56.85 | 103.81 |
| TOTAL PAH | UG/KG | 15 | 0 | 0.000 | 40.00 | . | 400.00 | 146.67 | 85.00 | 135.01 | 221.43 |
| ANTIMONY, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 15 | 15 | 100.000 | 0.80 | 0.80 | 1.80 | 1.21 | 1.10 | 0.28 | 1.37 |
| BERYLLIUM, TOTAL | MG/KG | 15 | 1 | 6.667 | 0.05 | 0.10 | 0.10 | 0.05 | 0.05 | 0.01 | 0.06 |
| CADMIUM, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 15 | 3 | 20.000 | 0.25 | 0.50 | 0.70 | 0.33 | 0.25 | 0.16 | 0.42 |
| COPPER, TOTAL | MG/KG | 15 | 15 | 100.000 | 1.00 | 1.00 | 4.00 | 2.53 | 2.00 | 0.99 | 3.08 |
| LEAD, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| MERCURY, TOTAL | MG/KG | 15 | 15 | 100.000 | 0.02 | 0.02 | 0.14 | 0.06 | 0.05 | 0.03 | 0.07 |
| NICKEL, TOTAL | MG/KG | 15 | 0 | 0.000 | 1.50 | . | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 15 | 12 | 80.000 | 0.25 | 0.60 | 1.30 | 0.73 | 0.80 | 0.31 | 0.90 |
| SILVER, TOTAL | MG/KG | 10 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 15 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 15 | 15 | 100.000 | 10.00 | 10.00 | 14.00 | 11.93 | 12.00 | 1.25 | 12.22 |

R0063454

Station type=Basin Type of Result=Sediment

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 34 | 1 | 2.941 | 0.35 | 2.30 | 2.30 | 0.49 | 0.45 | 0.32 | 0.61 |
| ALPHA-BHC (HCH) | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| BETA-BHC (HCH) | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| CHLORDANE | UG/KG | 34 | 0 | 0.000 | 1.50 | . | 2.50 | 1.84 | 2.00 | 0.36 | 1.97 |
| DELTA-BHC (HCH) | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| DIELDRIN | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| ENDOSULFAN I | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| ENDOSULFAN II | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| ENDOSULFAN SULFATE | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| ENDRIN | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| ENDRIN ALDEHYDE | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| HEPTACHLOR | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| HEPTACHLOR EPOXIDE | UG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| LINDANE (GAMMA-BHC) | UG/KG | 34 | 3 | 8.824 | 0.35 | 0.63 | 6.80 | 0.69 | 0.45 | 1.14 | 1.09 |
| METHOXYCHLOR | UG/KG | 34 | 0 | 0.000 | 1.50 | . | 2.50 | 1.84 | 2.00 | 0.36 | 1.97 |
| TOXAPHENE | UG/KG | 34 | 0 | 0.000 | 5.00 | . | 15.00 | 9.85 | 10.00 | 1.94 | 10.53 |
| 4,4'-DDD | UG/KG | 34 | 28 | 82.353 | 0.35 | 1.90 | 42.00 | 9.36 | 7.05 | 9.24 | 12.59 |
| 4,4'-DDE | UG/KG | 34 | 34 | 100.000 | 6.00 | 6.00 | 180.00 | 53.78 | 44.50 | 36.04 | 66.36 |
| 4,4'-DDT | UG/KG | 34 | 1 | 2.941 | 0.35 | 34.00 | 34.00 | 1.42 | 0.45 | 5.76 | 3.43 |
| TOTAL DDT | UG/KG | 34 | 34 | 100.000 | 6.70 | 6.00 | 213.50 | 64.57 | 54.08 | 43.96 | 79.91 |
| PCB-1016 | UG/KG | 34 | 0 | 0.000 | 5.00 | . | 15.00 | 9.85 | 10.00 | 1.94 | 10.53 |
| PCB-1221 | UG/KG | 34 | 0 | 0.000 | 5.00 | . | 15.00 | 9.85 | 10.00 | 1.94 | 10.53 |
| PCB-1232 | UG/KG | 34 | 0 | 0.000 | 5.00 | . | 15.00 | 9.85 | 10.00 | 1.94 | 10.53 |
| PCB 1242 | UG/KG | 34 | 0 | 0.000 | 5.00 | . | 15.00 | 9.85 | 10.00 | 1.94 | 10.53 |
| PCB-1248 | UG/KG | 34 | 0 | 0.000 | 5.00 | . | 15.00 | 9.85 | 10.00 | 1.94 | 10.53 |
| PCB-1254 | UG/KG | 34 | 0 | 0.000 | 5.00 | . | 15.00 | 9.85 | 10.00 | 1.94 | 10.53 |
| PCB-1260 | UG/KG | 34 | 29 | 85.294 | 5.00 | 31.00 | 880.00 | 183.53 | 145.00 | 180.90 | 246.65 |
| TOTAL PCB | UG/KG | 34 | 29 | 85.294 | 35.00 | 31.00 | 970.00 | 242.65 | 205.00 | 188.15 | 308.29 |
| 1,2,4-TRICHLOROBENZENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 1,2-DICHLOROBENZENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 1,3-DICHLOROBENZENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 1,4-DICHLOROBENZENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 2,4-DINITROTOLUENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 2,6-DINITROTOLUENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 2-CHLORONAPHTHALENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 3,3-DICHLOROBENZIDINE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 4-BROMOPHENYLPHENYLETHER | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| 4-CHLOROPHENYLPHENYLETHER | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| BENZIDINE | UG/KG | 6 | 0 | 0.000 | 35.00 | . | 50.00 | 41.67 | 40.00 | 5.16 | 47.09 |
| BIS(2-CHLOROETHOXY)METHANE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| BIS(2-CHLOROETHYL)ETHER | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| BIS(2-CHLOROISOPROPYL)ETHER | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| HEXACHLOROBENZENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| HEXACHLOROBUTADIENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| HEXACHLOROCYCLOPENTADIENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| HEXACHLOROETHANE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| ISOPHORONE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| N-NITROSODI-N-PROPYLAMINE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| N-NITROSODIMETHYLAMINE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| N-NITROSODIPHENYLAMINE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |

R0063455

Station type=Basin Type of Result=Sediment (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NITROBENZENE | UG/KG | 26 | 0 | 0.000 | 10.00 | . | 150.00 | 38.27 | 17.50 | 40.91 | 54.79 |
| BENZO(A)ANTHRACENE | UG/KG | 33 | 18 | 54.545 | 5.00 | 16.00 | 280.00 | 56.53 | 36.00 | 64.26 | 79.31 |
| BENZO(A)PYRENE | UG/KG | 34 | 28 | 82.353 | 5.00 | 19.00 | 540.00 | 144.39 | 98.00 | 143.01 | 194.29 |
| BENZO(B)FLUORANTHENE | UG/KG | 34 | 27 | 79.412 | 5.00 | 19.00 | 680.00 | 172.29 | 130.00 | 171.98 | 232.30 |
| BENZO(GHI)PERYLENE | UG/KG | 33 | 20 | 60.606 | 5.00 | 36.00 | 380.00 | 90.27 | 49.00 | 99.45 | 125.54 |
| BENZO(K)FLUORANTHENE | UG/KG | 34 | 28 | 82.353 | 5.00 | 33.00 | 660.00 | 179.66 | 139.00 | 166.38 | 237.71 |
| CHRYSENE | UG/KG | 33 | 22 | 66.667 | 5.00 | 32.00 | 550.00 | 107.71 | 93.00 | 131.32 | 154.29 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 26 | 4 | 15.385 | 5.00 | 16.00 | 120.00 | 28.38 | 10.00 | 28.97 | 36.28 |
| FLUORANTHENE | UG/KG | 32 | 19 | 59.375 | 5.00 | 16.00 | 320.00 | 58.00 | 29.00 | 67.24 | 79.24 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 33 | 19 | 57.576 | 5.00 | 32.00 | 400.00 | 88.66 | 46.00 | 104.07 | 125.56 |
| PYRENE | UG/KG | 32 | 19 | 59.375 | 5.00 | 18.00 | 350.00 | 67.42 | 34.00 | 87.36 | 98.92 |
| TOTAL HPAH | UG/KG | 34 | 28 | 82.353 | 50.00 | 75.00 | 3450.00 | 964.06 | 637.50 | 996.70 | 1311.83 |
| ACENAPHTHENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| ACENAPHTHYLENE | UG/KG | 32 | 9 | 28.125 | 5.00 | 15.00 | 68.00 | 23.75 | 15.00 | 17.10 | 29.92 |
| ANTHRACENE | UG/KG | 33 | 15 | 45.455 | 5.00 | 18.00 | 180.00 | 40.27 | 35.00 | 39.51 | 54.28 |
| FLUORENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| METHYLNAPHTHALENES | UG/KG | 24 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| NAPHTHALENE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.06 | 26.10 |
| PHENANTHRENE | UG/KG | 33 | 14 | 42.424 | 5.00 | 16.00 | 160.00 | 34.96 | 10.00 | 16.03 | 26.28 |
| TOTAL LPAH | UG/KG | 34 | 16 | 47.059 | 18.00 | 18.00 | 590.00 | 155.23 | 98.50 | 126.72 | 199.44 |
| TOTAL PAH | UG/KG | 34 | 28 | 82.353 | 85.00 | 75.00 | 4240.00 | 1119.29 | 800.50 | 1101.66 | 1503.68 |
| 2,4,6-TRICHLOROPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| 2,4-DICHLOROPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| 2,4-DIMETHYLPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| 2,4-DINITROPHENOL | UG/KG | 27 | 0 | 0.000 | 5.00 | . | 50.00 | 19.07 | 10.00 | 15.93 | 25.38 |
| 2-CHLOROPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| 2-METHYL-4,6-DINITROPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| 2-METHYLPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| 2-NITROPHENOL | UG/KG | 27 | 0 | 0.000 | 5.00 | . | 50.00 | 19.07 | 10.00 | 15.93 | 25.38 |
| 3- AND 4 METHYLPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 200.00 | 58.33 | 25.00 | 57.18 | 80.95 |
| 4-CHLORO-3-METHYLPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| 4 NITROPHENOL | UG/KG | 27 | 0 | 0.000 | 15.00 | . | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| PENTACHLOROPHENOL | UG/KG | 27 | 1 | 3.704 | 15.00 | 94.00 | 150.00 | 39.07 | 20.00 | 39.37 | 54.65 |
| PHENOL | UG/KG | 26 | 1 | 3.846 | 45.00 | 380.00 | 480.00 | 134.42 | 80.00 | 134.87 | 188.90 |
| BIS(2-ETHYLHEXYL)PHTHALATE | UG/KG | 26 | 0 | 0.000 | 15.00 | . | 150.00 | 39.62 | 20.00 | 40.05 | 55.79 |
| BUTYLBENZYLPHTHALATE | UG/KG | 26 | 0 | 0.000 | 15.00 | . | 150.00 | 39.62 | 20.00 | 40.05 | 55.79 |
| DI-N-BUTYLPHTHALATE | UG/KG | 32 | 12 | 37.500 | 15.00 | 30.00 | 150.00 | 47.03 | 34.00 | 35.97 | 60.80 |
| DI-N-OCTYLPHTHALATE | UG/KG | 26 | 0 | 0.000 | 5.00 | . | 50.00 | 19.42 | 10.00 | 16.14 | 25.94 |
| DIETHYLPHTHALATE | MG/KG | 34 | 34 | 100.000 | 1.10 | 1.10 | 400.00 | 81.91 | 45.50 | 88.92 | 112.93 |
| DIMETHYLPHTHALATE | MG/KG | 34 | 34 | 100.000 | 4.30 | 4.30 | 590.00 | 115.69 | 93.50 | 112.29 | 154.87 |
| SULFIDE, TOTAL | MG/KG | 34 | 14 | 41.176 | 0.20 | 0.39 | 1.30 | 0.45 | 0.30 | 0.27 | 0.54 |
| ACID VOLATILE SULFIDE | MG/KG | 34 | 14 | 41.176 | 0.00 | 0.00 | 0.06 | 0.01 | 0.01 | 0.01 | 0.01 |
| CADMIUM, EXTRACTABLE | MG/KG | 34 | 34 | 100.000 | 14.00 | 14.00 | 330.00 | 78.16 | 48.50 | 98.15 | 98.45 |
| CADMIUM, EXTRACTABLE / AVS | MG/KG | 34 | 34 | 100.000 | 0.19 | 0.19 | 22.09 | 1.72 | 0.77 | 3.78 | 3.04 |
| COPPER, EXTRACTABLE | MG/KG | 34 | 34 | 100.000 | 2.60 | 2.60 | 190.00 | 43.27 | 37.50 | 31.75 | 54.35 |
| COPPER, EXTRACTABLE / AVS | MG/KG | 34 | 34 | 100.000 | 0.10 | 0.10 | 10.47 | 0.84 | 0.43 | 1.76 | 1.45 |
| LEAD, EXTRACTABLE | MG/KG | 34 | 34 | 100.000 | 0.10 | 0.02 | 0.11 | 0.04 | 0.03 | 0.03 | 0.05 |
| LEAD, EXTRACTABLE / AVS | MG/KG | 34 | 34 | 100.000 | 0.01 | | | | | | |
| MERCURY, EXTRACTABLE | MG/KG | 34 | 20 | 58.824 | | | | | | | |

R0063456

Station type=Basin Type of Result=Sediment (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MERCURY, EXTRACTABLE / AVS | | 34 | 20 | 58.824 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| ZINC, EXTRACTABLE | MG/KG | 34 | 34 | 100.000 | 20.00 | 20.00 | 580.00 | 123.70 | 110.33 | 94.37 | 156.62 |
| ZINC, EXTRACTABLE / AVS | | 34 | 34 | 100.000 | 0.31 | 0.31 | 30.23 | 2.45 | 1.19 | 5.09 | 4.23 |
| DIBUTYLTIN | UG/KG | 34 | 0 | 0.000 | 0.50 | . | 6.08 | 1.13 | 1.00 | 0.90 | 1.45 |
| MONOBUTYLTIN | UG/KG | 34 | 0 | 0.000 | 0.50 | . | 1.50 | 0.99 | 1.00 | 0.19 | 1.05 |
| TRIBUTYLTIN | UG/KG | 34 | 0 | 0.000 | 1.00 | . | 22.50 | 10.90 | 15.75 | 7.89 | 13.66 |
| TOTAL ORGANIC CARBON | PERCENT | 34 | 34 | 100.000 | 0.07 | 0.07 | 1.82 | 0.84 | 0.70 | 0.42 | 0.99 |
| ANTIMONY, TOTAL | MG/KG | 5 | 0 | 0.000 | 0.35 | . | 0.45 | 0.40 | 0.40 | 0.04 | 0.44 |
| ARSENIC, TOTAL | MG/KG | 34 | 34 | 100.000 | 1.60 | 1.60 | 19.00 | 9.19 | 8.65 | 3.86 | 10.54 |
| BERYLLIUM, TOTAL | MG/KG | 34 | 34 | 100.000 | 0.13 | 0.13 | 1.00 | 0.52 | 0.54 | 0.18 | 0.58 |
| CADMIUM, TOTAL | MG/KG | 34 | 34 | 100.000 | 0.08 | 0.08 | 1.00 | 0.38 | 0.35 | 0.23 | 0.46 |
| CHROMIUM, TOTAL | MG/KG | 34 | 34 | 100.000 | 9.80 | 9.80 | 88.00 | 38.92 | 39.00 | 15.70 | 44.39 |
| COPPER, TOTAL | MG/KG | 34 | 34 | 100.000 | 13.00 | 13.00 | 930.00 | 109.77 | 90.00 | 92.56 | 142.07 |
| LEAD, TOTAL | MG/KG | 34 | 34 | 100.000 | 5.20 | 5.20 | 180.00 | 47.52 | 43.00 | 30.59 | 58.19 |
| MERCURY, TOTAL | MG/KG | 34 | 33 | 97.059 | 0.02 | 0.11 | 1.80 | 0.48 | 0.45 | 0.34 | 0.60 |
| NICKEL, TOTAL | MG/KG | 34 | 34 | 100.000 | 7.80 | 7.80 | 41.00 | 23.29 | 22.50 | 7.27 | 25.82 |
| SELENIUM, TOTAL | MG/KG | 34 | 1 | 2.941 | 0.38 | 1.60 | 1.60 | 0.47 | 0.45 | 0.20 | 0.54 |
| SILVER, TOTAL | MG/KG | 34 | 33 | 97.059 | 0.35 | 1.30 | 19.00 | 2.80 | 2.30 | 2.99 | 3.85 |
| THALLIUM, TOTAL | MG/KG | 34 | 0 | 0.000 | 0.35 | . | 0.50 | 0.44 | 0.45 | 0.05 | 0.46 |
| ZINC, TOTAL | MG/KG | 34 | 34 | 100.000 | 33.00 | 33.00 | 480.00 | 159.90 | 156.67 | 83.57 | 189.14 |
| CLAY | PERCENT | 34 | 34 | 100.000 | 1.76 | 1.76 | 47.96 | 24.67 | 23.91 | 11.76 | 28.78 |
| FINES | PERCENT | 34 | 34 | 100.000 | 3.88 | 3.88 | 93.14 | 64.15 | 69.99 | 20.77 | 71.40 |
| GRAVEL | PERCENT | 34 | 34 | 100.000 | 0.00 | 0.00 | 16.65 | 0.50 | 0.00 | 3.85 | 1.49 |
| MEAN GRAIN SIZE | UM | 34 | 34 | 100.000 | 4.03 | 4.03 | 637.84 | 35.04 | 12.13 | 107.27 | 72.47 |
| MEDIAN GRAIN SIZE | UM | 34 | 34 | 100.000 | 6.32 | 6.32 | 397.77 | 46.18 | 21.54 | 70.35 | 70.73 |
| SAND | PERCENT | 34 | 34 | 100.000 | 6.81 | 6.81 | 79.67 | 35.35 | 30.00 | 19.67 | 62.16 |
| SILT | PERCENT | 34 | 34 | 100.000 | 2.12 | 2.12 | 55.97 | 39.69 | 63.39 | 11.55 | 43.52 |

R0063457



VOL 18

Station type=Pier Type of Result=Clam Bioaccumulation

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ALPHA-BHC (HCH) | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| BETA-BHC (HCH) | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHLORDANE | UG/KG | 4 | 0 | 0 | 1.00 | . | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| DELTA-BHC (HCH) | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| DIELDRIN | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN I | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN II | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN SULFATE | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDRIN | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDRIN ALDEHYDE | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| HEPTACHLOR | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| HEPTACHLOR EPOXIDE | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| LINDANE (GAMMA-BHC) | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| METHOXYCHLOR | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| TOXAPHENE | UG/KG | 4 | 0 | 0 | 1.00 | . | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| 4,4'-DDD | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| 4,4'-DDE | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| 4,4'-DDT | UG/KG | 4 | 4 | 100 | 5.40 | 5.40 | 88.00 | 39.60 | 32.50 | 34.90 | 95.13 |
| TOTAL DDT | UG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| PCB-1016 | UG/KG | 4 | 4 | 100 | 5.90 | 5.40 | 88.50 | 40.10 | 33.00 | 34.90 | 95.63 |
| PCB-1221 | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1232 | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1242 | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1248 | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1254 | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1260 | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| TOTAL PCB | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| LIPIDS | MG/KG | 4 | 4 | 100 | 35.00 | . | 35.00 | 35.00 | 35.00 | 0.00 | 35.00 |
| DIBUTYLTIN | UG/KG | 4 | 4 | 100 | 415.00 | 415.00 | 1240.00 | 898.00 | 968.50 | 380.15 | 1502.90 |
| MONOBUTYLTIN | UG/KG | 4 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 4 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| BENZO(A)ANTHRACENE | UG/KG | 4 | 4 | 100 | 1.50 | 1.50 | 1.80 | 1.68 | 1.70 | 0.15 | 1.91 |
| BENZO(A)PYRENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| BENZO(B)FLUORANTHENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| BENZO(GHI)PERYLENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| BENZO(K)FLUORANTHENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| CHRYSENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| FLUORANTHENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PYRENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| TOTAL HPAH | UG/KG | 4 | 3 | 75 | 5.00 | 20.00 | 30.00 | 18.75 | 20.00 | 10.31 | 35.15 |
| ACENAPHTHENE | UG/KG | 4 | 3 | 75 | 50.00 | 20.00 | 75.00 | 61.75 | 65.00 | 10.31 | 80.15 |
| ACENAPHTHYLENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| ANTHRACENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| FLUORENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| METHYLNAPHTHALENES | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| NAPHTHALENE | UG/KG | 4 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PHENANTHRENE | UG/KG | 4 | 0 | 0 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| | | | | | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |

R0063458

Station type=Pier Type of Result=Clam Bioaccumulation (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL LPAH | UG/KG | 4 | 0 | 0 | 40.00 | . | 40.00 | 40.00 | 40.00 | 0.00 | 40.00 |
| TOTAL PAH | UG/KG | 4 | 3 | 75 | 90.00 | 20.00 | 115.00 | 103.75 | 105.00 | 10.31 | 120.15 |
| ANTIMONY, TOTAL | MG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 4 | 4 | 100 | 2.60 | 2.60 | 3.20 | 2.85 | 2.80 | 0.26 | 3.27 |
| BERYLLIUM, TOTAL | MG/KG | 4 | 0 | 0 | 0.03 | . | 0.03 | 0.03 | 0.03 | 0.00 | 0.03 |
| CADMIUM, TOTAL | MG/KG | 4 | 0 | 0 | 0.10 | . | 0.10 | 0.10 | 0.10 | 0.00 | 0.10 |
| CHROMIUM, TOTAL | MG/KG | 4 | 0 | 0 | 0.20 | . | 0.20 | 0.20 | 0.20 | 0.00 | 0.20 |
| COPPER, TOTAL | MG/KG | 4 | 4 | 100 | 1.30 | 1.30 | 2.40 | 1.65 | 1.45 | 0.51 | 2.46 |
| LEAD, TOTAL | MG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| MERCURY, TOTAL | MG/KG | 4 | 1 | 25 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 |
| NICKEL, TOTAL | MG/KG | 4 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| SELENIUM, TOTAL | MG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| SILVER, TOTAL | MG/KG | 4 | 0 | 0 | 0.15 | . | 0.15 | 0.15 | 0.15 | 0.00 | 0.15 |
| THALLIUM, TOTAL | MG/KG | 4 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 4 | 4 | 100 | 13.00 | 13.00 | 15.00 | 13.75 | 13.50 | 0.96 | 15.27 |

Station type=Pier Type of Result=Sediment

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| ALPHA-BHC (HCH) | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| BETA-BHC (HCH) | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| CHLORDANE | UG/KG | 10 | 0 | 0.000 | 2.00 | . | 3.50 | 2.85 | 3.00 | 0.47 | 3.19 |
| DELTA-BHC (HCH) | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| DIELDRIN | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| ENDOSULFAN I | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.68 | 0.50 | 0.24 | 0.82 |
| ENDOSULFAN II | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.68 | 0.50 | 0.24 | 0.82 |
| ENDOSULFAN SULFATE | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| ENDRIN | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| ENDRIN ALDEHYDE | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| HEPTACHLOR | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| HEPTACHLOR EPOXIDE | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| LINDANE (GAMMA-BHC) | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| METHOXYCHLOR | UG/KG | 10 | 0 | 0.000 | 2.00 | . | 3.50 | 2.85 | 3.00 | 0.47 | 3.19 |
| TOXAPHENE | UG/KG | 10 | 3 | 30.000 | 0.50 | 13.00 | 36.00 | 6.90 | 1.00 | 11.63 | 15.22 |
| 4,4'-DDD | UG/KG | 11 | 11 | 100.000 | 13.00 | 13.00 | 110.00 | 89.64 | 94.00 | 28.35 | 108.68 |
| 4,4'-DDE | UG/KG | 10 | 0 | 0.000 | 0.50 | . | 1.00 | 0.65 | 0.50 | 0.24 | 0.82 |
| 4,4'-DDT | UG/KG | 11 | 11 | 100.000 | 13.00 | 13.00 | 146.50 | 96.50 | 100.00 | 33.91 | 119.28 |
| TOTAL DDT | UG/KG | 10 | 0 | 0.000 | 10.00 | . | 20.00 | 14.50 | 15.00 | 2.84 | 16.53 |
| PCB-1016 | UG/KG | 10 | 0 | 0.000 | 10.00 | . | 20.00 | 14.50 | 15.00 | 2.84 | 16.53 |
| PCB-1221 | UG/KG | 10 | 0 | 0.000 | 10.00 | . | 20.00 | 14.50 | 15.00 | 2.84 | 16.53 |
| PCB-1232 | UG/KG | 10 | 0 | 0.000 | 10.00 | . | 20.00 | 14.50 | 15.00 | 2.84 | 16.53 |
| PCB-1242 | UG/KG | 10 | 0 | 0.000 | 10.00 | . | 20.00 | 14.50 | 15.00 | 2.84 | 16.53 |
| PCB-1248 | UG/KG | 10 | 0 | 0.000 | 10.00 | . | 20.00 | 14.50 | 15.00 | 2.84 | 16.53 |

R0063459

3803-

VOL 18

Station type=Pier Type of Result=Sediment (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1254 | UG/KG | 10 | 0 | 0.0000 | 10.00 | . | 20.00 | 14.50 | 15.00 | 2.84 | 16.53 |
| PCB-1260 | UG/KG | 10 | 2 | 20.0000 | 15.00 | 340.00 | 390.00 | 85.50 | 15.00 | 147.79 | 191.22 |
| TOTAL PCB | UG/KG | 10 | 2 | 20.0000 | 105.00 | 340.00 | 450.00 | 172.50 | 105.00 | 134.04 | 268.39 |
| 1,2,4-TRICHLOROBENZENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 1,2 DICHLOROBENZENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 1,3-DICHLOROBENZENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 1,4-DICHLOROBENZENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 2,4-DINITROTOLUENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 2,6-DINITROTOLUENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 2-CHLORONAPHTHALENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 3,3-DICHLOROBENZIDINE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 4-BROMOPHENYLPHENYLETHER | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 4-CHLOROPHENYLPHENYLETHER | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| BENZIDINE | UG/KG | 7 | 0 | 0.0000 | 50.00 | . | 100.00 | 64.29 | 50.00 | 24.40 | 86.85 |
| BIS(2-CHLOROETHOXY)METHANE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| BIS(2-CHLOROETHYL)ETHER | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| BIS(2-CHLOROISOPROPYL)ETHER | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| HEXACHLOROBENZENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| HEXACHLOROBUTADIENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| HEXACHLOROCYCLOPENTADIENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| HEXACHLOROETHANE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| ISOPHORONE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| N-NITROSODI-N-PROPYLAMINE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| N-NITROSODIMETHYLAMINE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| N-NITROSODIPHENYLAMINE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| NITROBENZENE | UG/KG | 11 | 0 | 0.0000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| BENZO(A)ANTHRACENE | UG/KG | 11 | 5 | 45.4545 | 15.00 | 150.00 | 1900.00 | 498.64 | 100.00 | 687.98 | 960.82 |
| BENZO(A)PYRENE | UG/KG | 11 | 9 | 81.8182 | 50.00 | 230.00 | 1500.00 | 572.73 | 430.00 | 471.30 | 889.35 |
| BENZO(B)FLUORANTHENE | UG/KG | 11 | 9 | 81.8182 | 50.00 | 270.00 | 1800.00 | 720.91 | 540.00 | 598.82 | 1123.20 |
| BENZO(GHI)PERYLENE | UG/KG | 11 | 8 | 72.7273 | 50.00 | 110.00 | 440.00 | 183.64 | 140.00 | 115.26 | 261.07 |
| BENZO(K)FLUORANTHENE | UG/KG | 11 | 9 | 81.8182 | 50.00 | 240.00 | 1300.00 | 579.09 | 510.00 | 424.44 | 864.23 |
| CHRYSENE | UG/KG | 11 | 9 | 81.8182 | 50.00 | 170.00 | 2100.00 | 682.73 | 330.00 | 698.53 | 1152.00 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 11 | 2 | 18.1818 | 10.00 | 270.00 | 330.00 | 89.09 | 50.00 | 109.93 | 162.94 |
| FLUORANTHENE | UG/KG | 11 | 8 | 72.7273 | 50.00 | 86.00 | 4400.00 | 1046.00 | 250.00 | 1572.66 | 2102.53 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 11 | 8 | 72.7273 | 50.00 | 110.00 | 550.00 | 204.55 | 180.00 | 142.99 | 300.61 |
| PYRENE | UG/KG | 11 | 8 | 72.7273 | 50.00 | 180.00 | 3300.00 | 1085.45 | 490.00 | 1188.45 | 1883.86 |
| TOTAL HPAH | UG/KG | 11 | 9 | 81.8182 | 500.00 | 920.00 | 17620.00 | 5662.82 | 2626.00 | 5745.96 | 9523.01 |
| ACENAPHTHENE | UG/KG | 11 | 2 | 18.1818 | 10.00 | 180.00 | 360.00 | 82.73 | 50.00 | 106.19 | 154.07 |
| ACENAPHTHYLENE | UG/KG | 11 | 5 | 45.4545 | 10.00 | 29.00 | 500.00 | 102.00 | 72.00 | 136.29 | 193.56 |
| ANTHRACENE | UG/KG | 11 | 7 | 63.6364 | 50.00 | 110.00 | 1400.00 | 400.00 | 150.00 | 679.19 | 721.92 |
| FLUORENE | UG/KG | 11 | 4 | 36.3636 | 10.00 | 36.00 | 550.00 | 106.09 | 50.00 | 156.18 | 211.02 |
| METHYLNAPHTHALENES | UG/KG | 11 | 1 | 9.0909 | 10.00 | 83.00 | 150.00 | 70.27 | 20.00 | 66.35 | 116.84 |
| NAPHTHALENE | UG/KG | 11 | 0 | 0.0000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| PHENANTHRENE | UG/KG | 11 | 7 | 63.6364 | 50.00 | 77.00 | 2700.00 | 453.00 | 100.00 | 781.81 | 978.23 |
| TOTAL LPAH | UG/KG | 11 | 7 | 63.6364 | 277.00 | 225.00 | 5600.00 | 1250.91 | 736.00 | 1561.88 | 2300.20 |
| TOTAL PAH | UG/KG | 11 | 9 | 81.8182 | 950.00 | 920.00 | 23220.00 | 6913.73 | 2911.00 | 7103.83 | 11686.14 |
| 2,4,6-TRICHLOROPHENOL | UG/KG | 11 | 0 | 0.0000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| 2,4-DICHLOROPHENOL | UG/KG | 11 | 0 | 0.0000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| 2,4-DIMETHYLPHENOL | UG/KG | 11 | 0 | 0.0000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |

R0063460

Station type=Pier Type of Result=Sediment
(Continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-DINITROPHENOL | UG/KG | 11 | 0 | 0.000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 2-CHLOROPHENOL | UG/KG | 11 | 0 | 0.000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| 2-METHYL-4,6-DINITROPHENOL | UG/KG | 11 | 0 | 0.000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| 2-METHYLPHENOL | UG/KG | 11 | 0 | 0.000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| 2-NITROPHENOL | UG/KG | 11 | 0 | 0.000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| 3- AND 4-METHYLPHENOL | UG/KG | 11 | 0 | 0.000 | 30.00 | . | 350.00 | 135.45 | 50.00 | 132.48 | 224.46 |
| 4-CHLORO-3-METHYLPHENOL | UG/KG | 11 | 0 | 0.000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| 4-NITROPHENOL | UG/KG | 11 | 0 | 0.000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| PENTACHLOROPHENOL | UG/KG | 11 | 0 | 0.000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| PHENOL | UG/KG | 11 | 1 | 9.091 | 25.00 | 210.00 | 210.00 | 90.00 | 35.00 | 71.06 | 137.74 |
| BIS(2-ETHYLHEXYL) PHTHALATE | UG/KG | 11 | 0 | 0.000 | 50.00 | . | 500.00 | 250.00 | 150.00 | 200.00 | 384.36 |
| BUTYLBENZYLPHTHALATE | UG/KG | 11 | 0 | 0.000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| DI-N-BUTYLPHTHALATE | UG/KG | 11 | 0 | 0.000 | 20.00 | . | 150.00 | 72.73 | 35.00 | 61.42 | 113.99 |
| DI-N-OCTYLPHTHALATE | UG/KG | 11 | 5 | 45.455 | 20.00 | 170.00 | 230.00 | 153.18 | 150.00 | 69.44 | 199.83 |
| DIETHYLPHTHALATE | UG/KG | 11 | 0 | 0.000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| DIMETHYLPHTHALATE | UG/KG | 11 | 0 | 0.000 | 10.00 | . | 100.00 | 36.82 | 20.00 | 34.30 | 59.86 |
| SULFIDE, TOTAL | MG/KG | 11 | 11 | 100.000 | 360.00 | 360.00 | 5400.00 | 3778.18 | 3900.00 | 1303.39 | 4653.81 |
| ACID VOLATILE SULFIDE | MG/KG | 11 | 11 | 100.000 | 310.00 | 310.00 | 4000.00 | 2864.55 | 3000.00 | 1045.67 | 3567.04 |
| CADMIUM, EXTRACTABLE | MG/KG | 11 | 10 | 90.909 | 0.50 | 0.77 | 1.70 | 1.06 | 1.10 | 0.29 | 1.26 |
| CADMIUM, EXTRACTABLE / AVS | | 11 | 10 | 90.909 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| COPPER, EXTRACTABLE | MG/KG | 11 | 11 | 100.000 | 87.00 | 87.00 | 300.00 | 168.00 | 170.00 | 62.68 | 210.11 |
| COPPER, EXTRACTABLE / AVS | | 11 | 11 | 100.000 | 0.04 | 0.04 | 0.58 | 0.10 | 0.05 | 0.16 | 0.21 |
| LEAD, EXTRACTABLE | MG/KG | 11 | 11 | 100.000 | 49.00 | 49.00 | 120.00 | 73.09 | 70.00 | 19.03 | 85.87 |
| LEAD, EXTRACTABLE / AVS | | 11 | 11 | 100.000 | 0.02 | 0.02 | 0.22 | 0.04 | 0.02 | 0.06 | 0.08 |
| MERCURY, EXTRACTABLE | MG/KG | 11 | 8 | 72.727 | 0.02 | 0.05 | 0.14 | 0.07 | 0.06 | 0.04 | 0.09 |
| MERCURY, EXTRACTABLE / AVS | | 11 | 8 | 72.727 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ZINC, EXTRACTABLE | MG/KG | 11 | 11 | 100.000 | 150.00 | 150.00 | 410.00 | 253.64 | 230.00 | 86.75 | 311.92 |
| ZINC, EXTRACTABLE / AVS | | 11 | 11 | 100.000 | 0.06 | 0.06 | 0.71 | 0.16 | 0.08 | 0.19 | 0.27 |
| DIBUTYLTIN | UG/KG | 11 | 1 | 9.091 | 1.00 | 2.50 | 2.50 | 1.64 | 1.50 | 0.39 | 1.90 |
| MONOBUTYLTIN | UG/KG | 11 | 1 | 9.091 | 1.00 | 3.60 | 3.60 | 1.65 | 1.50 | 0.70 | 2.12 |
| TRIBUTYLTIN | UG/KG | 11 | 0 | 0.000 | 3.50 | . | 15.75 | 11.59 | 14.25 | 5.22 | 15.10 |
| TOTAL ORGANIC CARBON | PERCENT | 11 | 11 | 100.000 | 1.28 | 1.28 | 2.32 | 1.80 | 1.73 | 0.34 | 2.03 |
| ANTIMONY, TOTAL | MG/KG | 4 | 0 | 0.000 | 0.50 | . | 1.00 | 0.75 | 0.75 | 0.29 | 1.21 |
| ARSENIC, TOTAL | MG/KG | 11 | 11 | 100.000 | 7.70 | 7.70 | 15.00 | 10.75 | 11.00 | 2.23 | 12.26 |
| BERYLLIUM, TOTAL | MG/KG | 11 | 11 | 100.000 | 0.27 | 0.27 | 0.88 | 0.63 | 0.68 | 0.19 | 0.75 |
| CADMIUM, TOTAL | MG/KG | 11 | 11 | 100.000 | 0.49 | 0.49 | 1.50 | 0.82 | 0.68 | 0.32 | 1.04 |
| CHROMIUM, TOTAL | MG/KG | 11 | 11 | 100.000 | 34.00 | 34.00 | 330.00 | 75.73 | 51.00 | 84.75 | 132.66 |
| COPPER, TOTAL | MG/KG | 11 | 11 | 100.000 | 120.00 | 120.00 | 330.00 | 197.27 | 180.00 | 67.54 | 242.65 |
| LEAD, TOTAL | MG/KG | 11 | 11 | 100.000 | 54.00 | 54.00 | 94.00 | 73.55 | 77.00 | 13.55 | 82.65 |
| MERCURY, TOTAL | MG/KG | 11 | 11 | 100.000 | 0.27 | 0.27 | 0.88 | 0.51 | 0.69 | 0.18 | 0.62 |
| NICKEL, TOTAL | MG/KG | 11 | 11 | 100.000 | 19.00 | 19.00 | 35.00 | 29.36 | 30.00 | 6.61 | 32.46 |
| SELENIUM, TOTAL | MG/KG | 11 | 0 | 0.000 | 0.50 | . | 1.00 | 0.68 | 0.50 | 0.25 | 0.85 |
| SILVER, TOTAL | MG/KG | 11 | 11 | 100.000 | 1.50 | 1.50 | 4.10 | 2.52 | 2.50 | 0.86 | 2.95 |
| THALLIUM, TOTAL | MG/KG | 11 | 0 | 0.000 | 0.50 | . | 1.00 | 0.68 | 0.50 | 0.25 | 0.85 |
| ZINC, TOTAL | MG/KG | 11 | 11 | 100.000 | 190.00 | 190.00 | 620.00 | 297.27 | 260.00 | 124.27 | 380.76 |
| CLAY | PERCENT | 11 | 11 | 100.000 | 22.60 | 22.60 | 51.62 | 37.88 | 38.52 | 8.69 | 43.72 |
| FINES | PERCENT | 11 | 11 | 100.000 | 38.43 | 38.43 | 93.93 | 69.84 | 71.78 | 16.16 | 80.39 |
| GRAVEL | PERCENT | 11 | 11 | 100.000 | 0.48 | 0.66 | 36.77 | 11.82 | 9.00 | 11.75 | 19.72 |
| MEAN GRAIN SIZE | UM | 10 | 10 | 100.000 | 2.43 | 2.43 | 87.91 | 19.91 | 11.36 | 25.05 | 37.83 |

R0063461

5803--

NOV 18

Station type=Pier Type of Result=Sediment (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MEDIAN GRAIN SIZE | UM | 11 | 11 | 100.000 | 3.49 | 3.49 | 411.81 | 49.69 | 7.98 | 121.24 | 131.14 |
| SAND | PERCENT | 11 | 11 | 100.000 | 5.61 | 5.61 | 47.24 | 18.64 | 13.99 | 12.23 | 26.86 |
| SILT | PERCENT | 11 | 11 | 100.000 | 15.84 | 15.84 | 46.54 | 31.65 | 28.59 | 10.26 | 38.55 |

Station type=Reference Type of Result=Clam Bioaccumulation

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ALPHA-BHC (HCH) | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| BETA-BHC (HCH) | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHLORDANE | UG/KG | 5 | 0 | 0 | 1.00 | . | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| DELTA-BHC (HCH) | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| DIELDRIN | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN I | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN II | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDOSULFAN SULFATE | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDRIN | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ENDRIN ALDEHYDE | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| HEPTACHLOR | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| HEPTACHLOR EPOXIDE | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| LINDANE (GAMMA-BHC) | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| METHOXYCHLOR | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| TOXAPHENE | UG/KG | 5 | 0 | 0 | 1.00 | . | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| 4,4'-DDD | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| 4,4'-DDE | UG/KG | 5 | 5 | 100 | 4.80 | 4.80 | 59.00 | 33.76 | 26.00 | 23.53 | 62.97 |
| 4,4'-DDT | UG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| TOTAL DDT | UG/KG | 5 | 5 | 100 | 5.30 | 4.80 | 59.50 | 34.26 | 26.50 | 23.53 | 63.47 |
| PCB-1016 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB 1221 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1232 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1242 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1248 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1254 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PCB-1260 | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| TOTAL PCB | UG/KG | 5 | 0 | 0 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| LIPIDS | MG/KG | 5 | 5 | 100 | 684.00 | 684.00 | 1440.00 | 1073.40 | 952.00 | 320.92 | 1471.88 |
| DIBUTYLTIN | UG/KG | 5 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| MONOBUTYLTIN | UG/KG | 5 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 5 | 4 | 80 | 0.50 | 1.30 | 5.10 | 2.04 | 1.40 | 1.78 | 4.25 |
| BENZO(A)ANTHRACENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| BENZO(A)PYRENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| BENZO(B)FLUORANTHENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| BENZO(GHI)PERYLENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| BENZO(K)FLUORANTHENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |

R0063462

Station type=Reference Type of Result=Clam Bioaccumulation (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CHRYSENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| FLUORANTHENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| PYRENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| TOTAL HPAH | UG/KG | 5 | 0 | 0 | 50.00 | . | 100.00 | 70.00 | 50.00 | 27.39 | 104.00 |
| ACENAPHTHENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| ACENAPHTHYLENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| ANTHRACENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| FLUORENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| METHYLNAPHTHALENES | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| NAPHTHALENE | UG/KG | 5 | 0 | 0 | 10.00 | . | 20.00 | 14.00 | 10.00 | 5.48 | 20.80 |
| PHENANTHRENE | UG/KG | 5 | 0 | 0 | 5.00 | . | 10.00 | 7.00 | 5.00 | 2.74 | 10.40 |
| TOTAL LPAH | UG/KG | 5 | 0 | 0 | 40.00 | . | 80.00 | 56.00 | 40.00 | 21.91 | 83.20 |
| TOTAL PAH | UG/KG | 5 | 0 | 0 | 90.00 | . | 180.00 | 126.00 | 90.00 | 49.30 | 187.21 |
| ANTIMONY, TOTAL | MG/KG | 5 | 5 | 100 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 5 | 0 | 0 | 2.50 | 2.50 | 3.20 | 2.88 | 3.00 | 0.28 | 3.22 |
| BERYLLIUM, TOTAL | MG/KG | 5 | 0 | 0 | 0.03 | . | 0.03 | 0.03 | 0.03 | 0.00 | 0.03 |
| CADMIUM, TOTAL | MG/KG | 5 | 0 | 0 | 0.10 | . | 0.10 | 0.10 | 0.10 | 0.00 | 0.10 |
| CHROMIUM, TOTAL | MG/KG | 5 | 2 | 40 | 0.20 | 0.40 | 0.40 | 0.28 | 0.20 | 0.11 | 0.42 |
| COPPER, TOTAL | MG/KG | 5 | 5 | 100 | 1.00 | 1.00 | 1.60 | 1.32 | 1.40 | 0.26 | 1.64 |
| LEAD, TOTAL | MG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| MERCURY, TOTAL | MG/KG | 5 | 2 | 40 | 0.01 | 0.03 | 0.04 | 0.02 | 0.01 | 0.01 | 0.04 |
| NICKEL, TOTAL | MG/KG | 5 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| SELENIUM, TOTAL | MG/KG | 5 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| SILVER, TOTAL | MG/KG | 5 | 0 | 0 | 0.15 | . | 0.15 | 0.15 | 0.15 | 0.00 | 0.15 |
| THALLIUM, TOTAL | MG/KG | 5 | 1 | 20 | 0.25 | 0.60 | 0.60 | 0.32 | 0.25 | 0.16 | 0.51 |
| ZINC, TOTAL | MG/KG | 5 | 5 | 100 | 11.00 | 11.00 | 14.00 | 12.20 | 12.00 | 1.30 | 13.82 |

Station type=Reference Type of Result=Halibut Bile

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BENZO(A)PYRENE, EQUIV | MG/L | 6 | 6 | 100 | 1.94 | 1.94 | 16.70 | 8.45 | 6.81 | 6.00 | 14.74 |
| NAPHTHALENE, EQUIV | MG/L | 6 | 6 | 100 | 72.40 | 72.40 | 312.00 | 144.57 | 101.05 | 96.47 | 245.81 |
| PHENANTHRENE, EQUIV | MG/L | 6 | 6 | 100 | 45.90 | 45.90 | 250.00 | 113.95 | 81.75 | 78.91 | 196.77 |
| PYRENE, EQUIV | MG/L | 6 | 6 | 100 | 13.20 | 13.20 | 118.00 | 61.93 | 46.45 | 46.01 | 110.21 |

R0063463

Station type-Reference Type of Result-Halibut Fillet

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| CHLORDANE | UG/KG | 3 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| DIELDRIN | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN I | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN II | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN SULFATE | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| METHOXYCHLOR | UG/KG | 3 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| TOXAPHENE | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| 4,4'-DDD | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| 4,4'-DDE | UG/KG | 3 | 3 | 100.000 | 8.30 | 8.30 | 35.00 | 22.10 | 23.00 | 13.37 | 99.32 |
| 4,4'-DDT | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| TOTAL DDT | UG/KG | 3 | 3 | 100.000 | 13.30 | 8.30 | 40.00 | 27.10 | 28.00 | 13.37 | 60.32 |
| PCB-1016 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1221 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1232 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1242 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1248 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1254 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1260 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| TOTAL PCB | UG/KG | 3 | 0 | 0.000 | 350.00 | . | 350.00 | 350.00 | 350.00 | 0.00 | 350.00 |
| LIPIDS | MG/KG | 3 | 3 | 100.000 | 1300.00 | 1300.00 | 1980.00 | 1670.00 | 1730.00 | 343.95 | 2524.41 |
| DIBUTYLTIN | UG/KG | 3 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| MONOBUTYLTIN | UG/KG | 1 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | . | . |
| TRIBUTYLTIN | UG/KG | 3 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| BENZO(A)ANTHRACENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| BENZO(A)PYRENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| BENZO(B)FLUORANTHENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| BENZO(GHI)PERYLENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| BENZO(K)FLUORANTHENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| CHRYSENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| FLUORANTHENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| TOTAL HPAH | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| ACENAPHTHENE | UG/KG | 3 | 0 | 0.000 | 45.00 | . | 45.00 | 45.00 | 45.00 | . | . |
| ACENAPHTHYLENE | UG/KG | 3 | 0 | 0.000 | 5.00 | . | 25.00 | 11.67 | 5.00 | 11.55 | 40.35 |
| ANTHRACENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 25.00 | 11.67 | 5.00 | 11.55 | 40.35 |
| FLUORENE | UG/KG | 3 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| NAPHTHALENE | UG/KG | 3 | 0 | 0.000 | 10.00 | . | 25.00 | 11.67 | 5.00 | 11.55 | 40.35 |
| PHENANTHRENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 50.00 | 23.33 | 10.00 | 23.09 | 80.70 |
| TOTAL LPAH | UG/KG | 3 | 0 | 0.000 | 25.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| TOTAL PAH | UG/KG | 3 | 0 | 0.000 | 25.00 | . | 125.00 | 61.67 | 35.00 | 55.08 | 190.48 |
| | | | | | | | 125.00 | 76.67 | 80.00 | 50.08 | 201.08 |

R0063464

Station type=Reference Type of Result=Halibut Fillet (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ANTIMONY, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 3 | 1 | 33.333 | 0.25 | 0.60 | 0.60 | 0.37 | 0.25 | 0.20 | 0.87 |
| BERYLLIUM, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.05 | . | 0.05 | 0.05 | 0.05 | 0.00 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| COPPER, TOTAL | MG/KG | 3 | 1 | 33.333 | 0.50 | 2.00 | 2.00 | 1.00 | 0.50 | 0.87 | 3.15 |
| LEAD, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| MERCURY, TOTAL | MG/KG | 3 | 3 | 100.000 | 0.01 | 0.01 | 0.08 | 0.05 | 0.05 | 0.04 | 0.13 |
| NICKEL, TOTAL | MG/KG | 3 | 0 | 0.000 | 1.50 | . | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 3 | 1 | 33.333 | 0.25 | 0.70 | 0.70 | 0.40 | 0.25 | 0.26 | 1.05 |
| SILVER, TOTAL | MG/KG | 2 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 3 | 2 | 66.667 | 6.00 | 6.00 | 15.00 | 9.00 | 6.00 | 5.20 | 21.91 |

Station type=Reference Type of Result=White Croaker Fillet

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| CHLORDANE | UG/KG | 3 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| DIELDRIN | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN I | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN II | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN SULFATE | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| METHOXYCHLOR | UG/KG | 3 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| TOXAPHENE | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| 4,4'-DDD | UG/KG | 3 | 2 | 66.667 | 2.50 | 13.00 | 25.00 | 13.50 | 13.00 | 11.26 | 41.47 |
| 4,4'-DDE | UG/KG | 3 | 3 | 100.000 | 620.00 | 620.00 | 1700.00 | 1000.00 | 680.00 | 606.96 | 2507.77 |
| 4,4'-DDT | UG/KG | 3 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| TOTAL DDT | UG/KG | 3 | 3 | 100.000 | 625.00 | 620.00 | 1727.50 | 1016.00 | 695.50 | 617.18 | 2549.17 |
| PCB-1016 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1221 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1232 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1242 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1248 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1254 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1260 | UG/KG | 3 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |

R0063465

Station type=Reference Type of Result=White Croaker Fillet (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL PCB | UG/KG | 3 | 0 | 0 | 350.00 | . | 350.00 | 350.00 | 350.00 | 0.00 | 350.00 |
| LIPIDS | MG/KG | 3 | 3 | 100 | 60100.00 | 60100.00 | 72000.00 | 69033.33 | 63000.00 | 6205.11 | 80447.67 |
| DIBUTYLTIN | UG/KG | 3 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| MONOBUTYLTIN | UG/KG | 3 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 3 | 3 | 100 | 6.00 | 6.00 | 11.00 | 9.00 | 10.00 | 2.65 | 15.57 |
| FLUORANTHENE | UG/KG | 3 | 0 | 0 | 10.00 | . | 15.00 | 13.33 | 15.00 | 2.89 | 20.50 |
| TOTAL HPAH | UG/KG | 3 | 0 | 0 | 10.00 | . | 15.00 | 13.33 | 15.00 | 2.89 | 20.50 |
| ACENAPHTHENE | UG/KG | 3 | 0 | 0 | 10.00 | . | 15.00 | 13.33 | 15.00 | 2.89 | 20.50 |
| ACENAPHTHYLENE | UG/KG | 3 | 0 | 0 | 10.00 | . | 15.00 | 13.33 | 15.00 | 2.89 | 20.50 |
| ANTHRACENE | UG/KG | 3 | 0 | 0 | 10.00 | . | 15.00 | 13.33 | 15.00 | 2.89 | 20.50 |
| FLUORENE | UG/KG | 3 | 0 | 0 | 10.00 | . | 15.00 | 13.33 | 15.00 | 2.89 | 20.50 |
| NAPHTHALENE | UG/KG | 3 | 0 | 0 | 20.00 | . | 30.00 | 26.67 | 30.00 | 5.77 | 41.01 |
| PHENANTHRENE | UG/KG | 3 | 0 | 0 | 10.00 | . | 15.00 | 13.33 | 15.00 | 2.89 | 20.50 |
| TOTAL LPAH | UG/KG | 3 | 0 | 0 | 70.00 | . | 105.00 | 93.33 | 105.00 | 20.21 | 143.53 |
| TOTAL PAH | UG/KG | 3 | 0 | 0 | 80.00 | . | 120.00 | 106.67 | 120.00 | 23.09 | 164.04 |
| ANTIMONY, TOTAL | MG/KG | 3 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 3 | 3 | 100 | 0.90 | 0.90 | 1.20 | 1.10 | 1.20 | 0.17 | 1.53 |
| BERYLLIUM, TOTAL | MG/KG | 3 | 0 | 0 | 0.05 | . | 0.05 | 0.05 | 0.05 | 0.00 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 3 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 3 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| COPPER, TOTAL | MG/KG | 3 | 0 | 0 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| LEAD, TOTAL | MG/KG | 3 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| MERCURY, TOTAL | MG/KG | 3 | 3 | 100 | 0.02 | 0.02 | 0.04 | 0.03 | 0.03 | 0.01 | 0.05 |
| NICKEL, TOTAL | MG/KG | 3 | 0 | 0 | 1.50 | . | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 3 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 3 | 0 | 0 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 3 | 0 | 0 | 15.00 | . | 15.00 | 15.00 | 15.00 | 0.00 | 15.00 |

R0063466

Station type=Reference Type of Result=Halibut Whole Body

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| CHLORDANE | UG/KG | 9 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| DIELDRIN | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN I | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN II | UG/KG | 9 | 1 | 11.111 | 2.50 | 9.40 | 9.40 | 3.27 | 2.50 | 2.30 | 5.03 |
| ENDOSULFAN SULFATE | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| METHOXYCHLOR | UG/KG | 9 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| TOXAPHENE | UG/KG | 9 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| 4,4'-DDD | UG/KG | 9 | 2 | 22.222 | 2.50 | 6.10 | 12.00 | 3.96 | 2.50 | 3.24 | 6.45 |
| 4,4'-DDE | UG/KG | 9 | 9 | 100.000 | 33.00 | 33.00 | 220.00 | 102.00 | 75.00 | 67.19 | 153.64 |
| 4,4' DDT | UG/KG | 9 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| TOTAL DDT | UG/KG | 9 | 9 | 100.000 | 38.00 | 33.00 | 234.50 | 108.46 | 80.00 | 69.37 | 161.78 |
| PCB 1016 | UG/KG | 9 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1221 | UG/KG | 9 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1232 | UG/KG | 9 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1242 | UG/KG | 9 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1248 | UG/KG | 9 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1254 | UG/KG | 9 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1260 | UG/KG | 9 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| TOTAL PCB | UG/KG | 9 | 0 | 0.000 | 350.00 | . | 350.00 | 350.00 | 350.00 | 0.00 | 350.00 |
| LIPIDS | MG/KG | 9 | 9 | 100.000 | 2460.00 | 2460.00 | 12600.00 | 8056.67 | 9360.00 | 3464.12 | 10719.42 |
| DIBUTYLTIN | UG/KG | 9 | 4 | 44.444 | 0.50 | 1.40 | 4.00 | 1.52 | 0.50 | 1.48 | 2.66 |
| MONOBUTYLTIN | UG/KG | 4 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 9 | 7 | 77.778 | 0.50 | 1.20 | 13.00 | 4.23 | 2.70 | 4.83 | 7.94 |
| BENZO(A)ANTHRACENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| BENZO(A)PYRENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| BENZO(B)FLUORANTHENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| BENZO(GHI)PERYLENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| BENZO(K)FLUORANTHENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| CHRYSENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| FLUORANTHENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.71 | 5.00 | 1.89 | 7.46 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 8 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| PYRENE | UG/KG | 2 | 0 | 0.000 | 5.00 | . | 10.00 | 5.63 | 5.00 | 1.77 | 7.10 |
| TOTAL HPAH | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| ACENAPHTHENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 90.00 | 42.78 | 45.00 | 26.64 | 61.71 |
| ACENAPHTHYLENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| ANTHRACENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| FLUORENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| NAPHTHALENE | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| PHENANTHRENE | UG/KG | 9 | 0 | 0.000 | 10.00 | . | 20.00 | 11.11 | 10.00 | 3.33 | 13.67 |
| TOTAL LPAH | UG/KG | 9 | 0 | 0.000 | 5.00 | . | 10.00 | 5.56 | 5.00 | 1.67 | 6.84 |
| | | | | | 35.00 | . | 70.00 | 38.89 | 35.00 | 11.67 | 47.86 |

R0063467



NOV 7 8

Station type=Reference Type of Result=Halibut Whole Body (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL PAH | UG/KG | 9 | 0 | 0.000 | 40.00 | . | 160.00 | 81.67 | 80.00 | 34.00 | 107.80 |
| ANTIMONY, TOTAL | MG/KG | 9 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 9 | 2 | 22.222 | 0.25 | 0.50 | 0.70 | 0.33 | 0.25 | 0.16 | 0.45 |
| BERYLLIUM, TOTAL | MG/KG | 9 | 0 | 0.000 | 0.05 | . | 0.05 | 0.05 | 0.05 | 0.00 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 9 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 9 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| COPPER, TOTAL | MG/KG | 9 | 6 | 66.667 | 0.50 | 1.00 | 57.00 | 12.06 | 2.00 | 19.76 | 27.24 |
| LEAD, TOTAL | MG/KG | 9 | 3 | 33.333 | 0.25 | 0.80 | 2.00 | 0.60 | 0.25 | 0.61 | 1.07 |
| MERCURY, TOTAL | MG/KG | 9 | 9 | 100.000 | 0.01 | 0.01 | 0.04 | 0.02 | 0.02 | 0.01 | 0.03 |
| NICKEL, TOTAL | MG/KG | 9 | 2 | 22.222 | 1.50 | 3.00 | 9.00 | 2.50 | 1.50 | 2.49 | 4.41 |
| SELENIUM, TOTAL | MG/KG | 9 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| SILVER, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 9 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 9 | 6 | 66.667 | 10.00 | 10.00 | 48.00 | 19.11 | 15.00 | 11.90 | 28.26 |

Station type=Reference Type of Result=White Croaker Whole Body

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| CHLORDANE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| DIELDRIN | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN I | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDOSULFAN II | UG/KG | 6 | 2 | 33.333 | 2.50 | 8.30 | 30.00 | 8.05 | 2.50 | 11.00 | 19.59 |
| ENDOSULFAN SULFATE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| METHOXYCHLOR | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| TOXAPHENE | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| 4,4'-DDD | UG/KG | 6 | 4 | 66.667 | 2.50 | 8.10 | 47.00 | 19.35 | 12.05 | 19.48 | 39.79 |
| 4,4'-DDE | UG/KG | 6 | 6 | 100.000 | 39.00 | 39.00 | 490.00 | 298.17 | 275.00 | 170.61 | 477.00 |
| 4,4'-DDT | UG/KG | 6 | 0 | 0.000 | 2.50 | . | 2.50 | 2.50 | 2.50 | 0.00 | 2.50 |
| TOTAL DDT | UG/KG | 6 | 6 | 100.000 | 44.00 | 39.00 | 532.50 | 320.02 | 305.05 | 182.65 | 511.69 |
| PCB-1016 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1221 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1232 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1242 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1248 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| PCB-1254 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |

R0063468

Station type=Reference Type of Result=White Croaker Whole Body (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1260 | UG/KG | 6 | 0 | 0.000 | 50.00 | . | 50.00 | 50.00 | 50.00 | 0.00 | 50.00 |
| TOTAL PCB | UG/KG | 6 | 0 | 0.000 | 350.00 | . | 350.00 | 350.00 | 350.00 | 0.00 | 350.00 |
| LIPIDS | MG/KG | 6 | 6 | 100.000 | 6320.00 | 6320.00 | 67600.00 | 34970.00 | 35900.00 | 23164.40 | 59279.55 |
| DIBUTYLTIN | UG/KG | 6 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| MONOBUTYLTIN | UG/KG | 3 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| TRIBUTYLTIN | UG/KG | 6 | 3 | 50.000 | 0.50 | 1.30 | 6.10 | 1.78 | 0.90 | 2.18 | 4.07 |
| BENZO(A)ANTHRACENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| BENZO(A)PYRENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| BENZO(B)FLUORANTHENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| BENZO(GHI)PERYLENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| BENZO(K)FLUORANTHENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| CHRYSENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| FLUORANTHENE | UG/KG | 4 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| PYRENE | UG/KG | 1 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| TOTAL HPAH | UG/KG | 4 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | . | . |
| ACENAPHTHENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 50.00 | 16.25 | 5.00 | 22.50 | 52.05 |
| ACENAPHTHYLENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| ANTHRACENE | UG/KG | 4 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| FLUORENE | UG/KG | 6 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| NAPHTHALENE | UG/KG | 6 | 0 | 0.000 | 10.00 | . | 10.00 | 10.00 | 10.00 | 0.00 | 10.00 |
| PHENANTHRENE | UG/KG | 4 | 0 | 0.000 | 5.00 | . | 5.00 | 5.00 | 5.00 | 0.00 | 5.00 |
| TOTAL LPAH | UG/KG | 6 | 0 | 0.000 | 25.00 | . | 35.00 | 31.67 | 35.00 | 5.16 | 37.09 |
| TOTAL PAH | UG/KG | 6 | 0 | 0.000 | 25.00 | . | 85.00 | 42.50 | 40.00 | 22.08 | 65.67 |
| ANTIMONY, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 6 | 6 | 100.000 | 0.60 | 0.60 | 1.30 | 0.82 | 0.80 | 0.26 | 1.09 |
| BERYLLIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.05 | . | 0.05 | 0.05 | 0.05 | 0.00 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| COPPER, TOTAL | MG/KG | 6 | 4 | 66.667 | 0.50 | 1.00 | 2.00 | 1.00 | 1.00 | 0.55 | 1.57 |
| LEAD, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| MERCURY, TOTAL | MG/KG | 6 | 6 | 100.000 | 0.04 | 0.04 | 0.07 | 0.06 | 0.06 | 0.01 | 0.07 |
| NICKEL, TOTAL | MG/KG | 6 | 0 | 0.000 | 1.50 | . | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 6 | 5 | 83.333 | 0.25 | 0.60 | 0.70 | 0.56 | 0.60 | 0.16 | 0.72 |
| SILVER, TOTAL | MG/KG | 1 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | . | . |
| THALLIUM, TOTAL | MG/KG | 6 | 0 | 0.000 | 0.25 | . | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
| ZINC, TOTAL | MG/KG | 6 | 3 | 50.000 | 11.00 | 11.00 | 15.00 | 13.83 | 15.00 | 1.83 | 15.76 |

R0063469

Station type=Reference Type of Result=Sediment

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| ALPHA-BHC (HCH) | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| BETA-BHC (HCH) | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| CHLORDANE | UG/KG | 7 | 0 | 0.000 | 1.50 | . | 2.50 | 2.00 | 2.00 | 0.29 | 2.27 |
| DELTA-BHC (HCH) | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| DIELDRIN | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| ENDOSULFAN I | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| ENDOSULFAN II | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| ENDOSULFAN SULFATE | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| ENDRIN | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| ENDRIN ALDEHYDE | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| HEPTACHLOR | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.04 | 0.52 |
| HEPTACHLOR EPOXIDE | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| LINDANE (GAMMA-BHC) | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| METHOXYCHLOR | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| TOXAPHENE | UG/KG | 7 | 0 | 0.000 | 1.50 | . | 2.50 | 2.00 | 2.00 | 0.29 | 2.27 |
| 4,4'-DDD | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 9.29 | 10.00 | 1.89 | 11.03 |
| 4,4'-DDE | UG/KG | 7 | 7 | 100.000 | 5.30 | 5.30 | 20.00 | 12.57 | 10.00 | 5.52 | 17.68 |
| 4,4'-DDT | UG/KG | 7 | 7 | 100.000 | 70.00 | 70.00 | 190.00 | 119.14 | 98.00 | 49.34 | 164.77 |
| TOTAL DDT | UG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| PCB-1016 | UG/KG | 7 | 7 | 100.000 | 75.65 | 75.30 | 210.50 | 132.19 | 108.30 | 52.43 | 180.67 |
| PCB-1221 | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 9.29 | 10.00 | 1.89 | 11.03 |
| PCB-1232 | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 9.29 | 10.00 | 1.89 | 11.03 |
| PCB-1242 | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 9.29 | 10.00 | 1.89 | 11.03 |
| PCB 1248 | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 9.29 | 10.00 | 1.89 | 11.03 |
| PCB-1254 | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 9.29 | 10.00 | 1.89 | 11.03 |
| PCB-1260 | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 9.29 | 10.00 | 1.89 | 11.03 |
| TOTAL PCB | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 10.00 | 9.29 | 10.00 | 1.89 | 11.03 |
| 1,2,4-TRICHLOROBENZENE | UG/KG | 7 | 0 | 0.000 | 35.00 | . | 70.00 | 65.00 | 70.00 | 13.23 | 77.23 |
| 1,2-DICHLOROBENZENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 1,3-DICHLOROBENZENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 1,4-DICHLOROBENZENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 2,4 DINITROTOLUENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 2,6-DINITROTOLUENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 2-CHLORONAPHTHALENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 3,3-DICHLOROBENZIDINE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 4-BROMOPHENYLPHENYLETHER | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 4-CHLOROPHENYLPHENYLETHER | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| BENZIDINE | UG/KG | 5 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| BIS(2-CHLOROETHOXY)METHANE | UG/KG | 7 | 0 | 0.000 | 35.00 | . | 50.00 | 46.00 | 50.00 | 6.92 | 54.09 |
| BIS(2-CHLOROETHYL)ETHER | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| BIS(2-CHLOROISOPROPYL)ETHER | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| HEXACHLOROBENZENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| HEXACHLOROBUTADIENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| HEXACHLOROCYCLOPENTADIENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| HEXACHLOROETHANE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| ISOPHORONE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| N-NITROSODI-N-PROPYLAMINE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| N-NITROSODIMETHYLAMINE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| N-NITROSODIPHENYLAMINE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |

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Station type=Reference Type of Result=Sediment (continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NITROBENZENE | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| BENZO(A)ANTHRACENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| BENZO(A)PYRENE | UG/KG | 7 | 5 | 71.429 | 5.00 | 19.00 | 150.00 | 52.90 | 20.00 | 58.95 | 107.43 |
| BENZO(B)FLUORANTHENE | UG/KG | 7 | 5 | 71.429 | 5.00 | 19.00 | 203.33 | 61.48 | 20.00 | 75.86 | 131.63 |
| BENZO(GHI)PERYLENE | UG/KG | 7 | 3 | 42.857 | 5.00 | 21.00 | 66.00 | 25.81 | 10.00 | 25.50 | 49.39 |
| BENZO(K)FLUORANTHENE | UG/KG | 7 | 5 | 71.429 | 5.00 | 19.00 | 200.00 | 69.10 | 20.00 | 85.79 | 148.44 |
| CHRYSENE | UG/KG | 7 | 5 | 71.429 | 5.00 | 19.00 | 88.00 | 38.00 | 20.00 | 33.99 | 69.44 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| FLUORANTHENE | UG/KG | 7 | 5 | 71.429 | 5.00 | 19.00 | 167.67 | 62.24 | 20.00 | 68.89 | 125.96 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 7 | 3 | 42.857 | 5.00 | 21.00 | 66.00 | 23.81 | 10.00 | 22.91 | 45.00 |
| PYRENE | UG/KG | 7 | 6 | 85.714 | 5.00 | 20.00 | 151.00 | 61.71 | 30.00 | 57.13 | 114.55 |
| TOTAL HPAH | UG/KG | 7 | 6 | 85.714 | 50.00 | 24.00 | 1063.00 | 417.43 | 173.00 | 430.56 | 815.63 |
| ACENAPHTHENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| ACENAPHTHYLENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| ANTHRACENE | UG/KG | 7 | 2 | 28.571 | 5.00 | 44.00 | 44.67 | 19.10 | 10.00 | 17.34 | 35.13 |
| FLUORENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| METHYLNAPHTHALENES | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 40.00 | 13.57 | 10.00 | 11.80 | 24.49 |
| NAPHTHALENE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| PHENANTHRENE | UG/KG | 7 | 2 | 28.571 | 5.00 | 44.00 | 44.67 | 19.10 | 10.00 | 17.34 | 35.13 |
| TOTAL LPAH | UG/KG | 7 | 2 | 28.571 | 35.00 | 88.00 | 222.67 | 86.52 | 70.00 | 63.55 | 155.30 |
| TOTAL PAH | UG/KG | 7 | 6 | 85.714 | 85.00 | 24.00 | 1385.67 | 513.95 | 243.00 | 489.66 | 966.81 |
| 2,4,6-TRICHLOROPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| 2,4-DICHLOROPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| 2,4-DIMETHYLPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| 2,4-DINITROPHENOL | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 2-CHLOROPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| 2-METHYL-4,6-DINITROPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| 2-METHYLPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| 2-NITROPHENOL | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| 3- AND 4-METHYLPHENOL | UG/KG | 7 | 0 | 0.000 | 20.00 | . | 86.67 | 38.10 | 30.00 | 21.99 | 58.44 |
| 4-CHLORO-3-METHYLPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| 4-NITROPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| PENTACHLOROPHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| PHENOL | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| BIS(2-ETHYLHEXYL)PHTHALATE | UG/KG | 7 | 1 | 14.286 | 45.00 | 310.00 | 310.00 | 119.76 | 100.00 | 96.90 | 209.38 |
| BUTYLBENZYLPHTHALATE | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| DI-N-BUTYLPHTHALATE | UG/KG | 7 | 0 | 0.000 | 15.00 | . | 46.67 | 23.81 | 20.00 | 10.48 | 33.51 |
| DI-N-OCTYLPHTHALATE | UG/KG | 7 | 2 | 28.571 | 15.00 | 160.00 | 220.00 | 68.57 | 20.00 | 84.79 | 146.99 |
| DIETHYLPHTHALATE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| DIMETHYLPHTHALATE | UG/KG | 7 | 0 | 0.000 | 5.00 | . | 23.33 | 11.19 | 10.00 | 5.67 | 16.43 |
| SULFIDE, TOTAL | MG/KG | 7 | 7 | 100.000 | 15.00 | 15.00 | 380.00 | 122.62 | 41.00 | 143.91 | 255.51 |
| ACID VOLATILE SULFIDE | MG/KG | 7 | 7 | 100.000 | 7.90 | 7.90 | 470.00 | 139.39 | 56.00 | 168.90 | 295.60 |
| CADMIUM, EXTRACTABLE | MG/KG | 7 | 6 | 85.714 | 0.20 | 0.76 | 2.60 | 1.47 | 1.40 | 0.89 | 2.29 |
| CADMIUM, EXTRACTABLE / AVS | MG/KG | 7 | 6 | 85.714 | 0.00 | 0.00 | 0.30 | 0.07 | 0.01 | 0.11 | 0.18 |
| COPPER, EXTRACTABLE | MG/KG | 7 | 7 | 100.000 | 11.00 | 11.00 | 82.00 | 47.71 | 38.00 | 27.29 | 72.96 |
| COPPER, EXTRACTABLE / AVS | MG/KG | 7 | 7 | 100.000 | 0.06 | 0.06 | 8.86 | 3.32 | 0.69 | 3.32 | 5.39 |
| LEAD, EXTRACTABLE | MG/KG | 7 | 7 | 100.000 | 12.00 | 12.00 | 69.00 | 41.05 | 35.00 | 18.32 | 57.99 |
| LEAD, EXTRACTABLE / AVS | MG/KG | 7 | 7 | 100.000 | 0.11 | 0.11 | 4.43 | 1.26 | 0.61 | 1.56 | 2.70 |
| MERCURY, EXTRACTABLE | MG/KG | 7 | 2 | 28.571 | 0.01 | 0.02 | 0.04 | 0.02 | 0.01 | 0.01 | 0.03 |

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Station type=Reference Type of Result=Sediment
(continued)

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MERCURY, EXTRACTABLE / AVS | | 7 | 2 | 28.571 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| ZINC, EXTRACTABLE | MG/KG | 7 | 7 | 100.000 | 29.00 | 29.00 | 210.00 | 128.95 | 120.00 | 65.72 | 189.73 |
| ZINC, EXTRACTABLE / AVS | | 7 | 7 | 100.000 | 0.19 | 0.19 | 24.05 | 5.99 | 1.81 | 8.79 | 14.12 |
| DIBUTYLTIN | UG/KG | 7 | 1 | 14.286 | 1.00 | 2.50 | 2.50 | 1.21 | 1.00 | 0.57 | 1.74 |
| MONOBUTYLTIN | UG/KG | 7 | 0 | 0.000 | 0.50 | . | 1.00 | 0.93 | 1.00 | 0.19 | 1.10 |
| TRIBUTYLTIN | UG/KG | 7 | 0 | 0.000 | 3.50 | . | 15.00 | 10.99 | 14.25 | 5.34 | 15.93 |
| TOTAL ORGANIC CARBON | PERCENT | 7 | 7 | 100.000 | 0.43 | 0.43 | 1.97 | 1.30 | 0.99 | 0.63 | 1.89 |
| ANTIMONY, TOTAL | MG/KG | 3 | 0 | 0.000 | 0.50 | . | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 |
| ARSENIC, TOTAL | MG/KG | 7 | 7 | 100.000 | 2.80 | 2.80 | 14.00 | 8.53 | 7.00 | 3.86 | 11.71 |
| BERYLLIUM, TOTAL | MG/KG | 7 | 6 | 85.714 | 0.05 | 0.38 | 0.71 | 0.40 | 0.43 | 0.19 | 0.58 |
| CADMIUM, TOTAL | MG/KG | 7 | 7 | 100.000 | 0.25 | 0.25 | 2.40 | 1.13 | 0.78 | 0.75 | 1.82 |
| CHROMIUM, TOTAL | MG/KG | 7 | 7 | 100.000 | 15.00 | 15.00 | 53.00 | 36.62 | 38.00 | 13.92 | 49.49 |
| COPPER, TOTAL | MG/KG | 7 | 7 | 100.000 | 13.00 | 13.00 | 143.33 | 74.62 | 43.00 | 56.83 | 127.17 |
| LEAD, TOTAL | MG/KG | 7 | 7 | 100.000 | 11.00 | 11.00 | 61.00 | 39.71 | 42.00 | 14.87 | 53.47 |
| MERCURY, TOTAL | MG/KG | 7 | 7 | 100.000 | 0.07 | 0.07 | 0.59 | 0.30 | 0.20 | 0.20 | 0.48 |
| NICKEL, TOTAL | MG/KG | 7 | 7 | 100.000 | 8.00 | 8.00 | 37.00 | 24.29 | 24.00 | 10.59 | 34.08 |
| SELENIUM, TOTAL | MG/KG | 7 | 3 | 42.857 | 0.35 | 1.30 | 1.70 | 0.90 | 0.50 | 0.58 | 1.43 |
| SILVER, TOTAL | MG/KG | 7 | 7 | 100.000 | 0.80 | 0.80 | 2.40 | 1.82 | 2.10 | 0.56 | 2.33 |
| THALLIUM, TOTAL | MG/KG | 7 | 0 | 0.000 | 0.35 | . | 0.50 | 0.47 | 0.50 | 0.06 | 0.52 |
| ZINC, TOTAL | MG/KG | 7 | 7 | 100.000 | 42.00 | 42.00 | 240.00 | 153.10 | 130.00 | 81.47 | 228.44 |
| CLAY | PERCENT | 7 | 7 | 100.000 | 6.97 | 6.97 | 33.91 | 24.58 | 23.28 | 9.16 | 33.06 |
| FINES | PERCENT | 7 | 7 | 100.000 | 18.29 | 18.29 | 93.62 | 71.17 | 78.86 | 28.99 | 99.17 |
| GRAVEL | PERCENT | 7 | 7 | 100.000 | 0.00 | 0.00 | 0.19 | 0.06 | 0.02 | 0.07 | 0.12 |
| MEAN GRAIN SIZE | UM | 7 | 7 | 100.000 | 8.41 | 8.41 | 110.02 | 23.97 | 9.86 | 37.96 | 59.07 |
| MEDIAN GRAIN SIZE | UM | 7 | 7 | 100.000 | 9.53 | 9.53 | 127.44 | 30.45 | 15.34 | 42.99 | 70.21 |
| SAND | PERCENT | 7 | 7 | 100.000 | 8.38 | 8.38 | 84.64 | 28.77 | 21.34 | 25.93 | 52.75 |
| SILT | PERCENT | 7 | 7 | 100.000 | 8.32 | 8.32 | 68.34 | 46.59 | 44.75 | 20.97 | 65.98 |

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Station type=Basin Type of Result=Bioassay

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Lower 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AMPHIPOD REBURIAL | PERCENT | 34 | 34 | 100 | 0.779 | 0.779 | 1.000 | 0.953 | 0.967 | 0.043 | 0.938 |
| AMPHIPOD SURVIVAL | PERCENT | 34 | 34 | 100 | 0.570 | 0.570 | 0.988 | 0.883 | 0.895 | 0.068 | 0.859 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 34 | 34 | 100 | 0.000 | 0.000 | 0.963 | 0.443 | 0.458 | 0.429 | 0.294 |
| ECHINODERM SURVIVAL | PERCENT | 34 | 34 | 100 | 0.250 | 0.250 | 1.000 | 0.764 | 0.872 | 0.232 | 0.683 |
| POLYCHAETE GROWTH | MG/D | 34 | 34 | 100 | 0.066 | 0.066 | 0.134 | 0.094 | 0.094 | 0.019 | 0.088 |
| POLYCHAETE SURVIVAL | PERCENT | 34 | 34 | 100 | 0.840 | 0.840 | 1.000 | 0.950 | 0.960 | 0.046 | 0.934 |

Station type=Pier Type of Result=Bioassay

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Lower 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AMPHIPOD REBURIAL | PERCENT | 11 | 11 | 100 | 0.246 | 0.246 | 0.962 | 0.719 | 0.779 | 0.240 | 0.558 |
| AMPHIPOD SURVIVAL | PERCENT | 11 | 11 | 100 | 0.163 | 0.163 | 0.830 | 0.548 | 0.690 | 0.272 | 0.366 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 11 | 11 | 100 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.001 | -0.000 |
| ECHINODERM SURVIVAL | PERCENT | 11 | 11 | 100 | 0.363 | 0.363 | 0.910 | 0.698 | 0.727 | 0.167 | 0.586 |
| POLYCHAETE GROWTH | MG/D | 11 | 11 | 100 | 0.083 | 0.083 | 0.187 | 0.142 | 0.138 | 0.026 | 0.124 |
| POLYCHAETE SURVIVAL | PERCENT | 11 | 11 | 100 | 0.760 | 0.760 | 1.000 | 0.887 | 0.920 | 0.071 | 0.839 |

Station type=Reference Type of Result=Bioassay

| Analyte name | Units | # Values | # Detectable Values | % Frequency of Detection | Minimum Value | Minimum Detectable Value | Maximum Value | Mean Value | Median Value | Standard Deviation | Lower 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AMPHIPOD REBURIAL | PERCENT | 7 | 7 | 100 | 0.931 | 0.931 | 0.989 | 0.964 | 0.965 | 0.018 | 0.947 |
| AMPHIPOD SURVIVAL | PERCENT | 7 | 7 | 100 | 0.640 | 0.640 | 0.883 | 0.807 | 0.830 | 0.078 | 0.735 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 7 | 7 | 100 | 0.000 | 0.000 | 0.662 | 0.654 | 0.802 | 0.311 | 0.347 |
| ECHINODERM SURVIVAL | PERCENT | 7 | 7 | 100 | 0.709 | 0.709 | 0.977 | 0.848 | 0.863 | 0.100 | 0.788 |
| POLYCHAETE GROWTH | MG/D | 7 | 7 | 100 | 0.086 | 0.086 | 0.108 | 0.098 | 0.098 | 0.019 | 0.070 |
| POLYCHAETE SURVIVAL | PERCENT | 7 | 7 | 100 | 0.928 | 0.928 | 1.000 | 0.968 | 0.960 | 0.027 | 0.943 |

R0063473

## Section 2. Descriptive Statistics for Reference Stations

Listing is for all physical and chemical parameters that were analyzed in samples of fish bile (California halibut), fish tissue (California halibut fillet, white croaker fillet, California halibut whole body, white croaker whole body), and surface sediment. Data were included for this analysis as the detectable concentration for detectable compounds, and as one half the practical quantitation limit (PQL) when the compound was not found at detectable levels. The following descriptive statistics are presented.

| | |
|---|---|
| Analyte name | Name of analyte. |
| Units | Units associated with analyte concentration. |
| # Values | Number of data values available. A value is the concentration at which a compound was detected, or when the compound was not found at detectable levels one half of the PQL is the value. |
| Shapiro-Wilks Statistic (untrans. data) | Shapiro-Wilks test for normality. Value shown is the Shapiro-Wilks *W* statistic for the data values for this compound. No data transformation was used in this test. Value is not calculated when the standard deviation of the mean is not greater than 0. |
| Prob. < W (untrans. data) | Probability associated with *W* statistic shown in previous column. When the probability is less than 0.05, then null hypothesis of a normal distribution is rejected. Value is not calculated when the standard deviation of the mean is not greater than 0. |
| Shapiro-Wilks Statistic (log10 (value+1)) | Shapiro-Wilks test for normality. Value shown is the Shapiro-Wilks *W* statistic for the data values for this compound. A $\log_{10}$ data transformation was used in this test. Value is not calculated when the standard deviation of the mean is not greater than 0. |
| Prob. < W (log10 (value+1)) | Probability associated with *W* statistic shown in previous column. When the probability is less than 0.05, then null hypothesis of a log-normal distribution is rejected. Value is not calculated when the standard deviation of the mean is not greater than 0. |
| Mean Value | Arithmetic average of available data values for this compound. |
| Standard Deviation | Standard deviation of the mean of available data values for this compound. |
| Minimum Value | Minimum concentration in the data set where the compound was found at a detectable level. |
| Maximum Value | Maximum concentration in the data set. When the frequency of detection for this compound is 0, then this value is one half of the PQL. |
| Upper 95% Confidence Limit | Upper 95 percent predictive interval limit of available data values for this compound, using a 1-tail *t* statistic ($t_{0.05,n-1}$). Not calculated when number of values is less than 2. The following formula was used (Statistical Intervals, Hahn & Meeker, Wiley, Inc.): |

$$95\%\ \text{Predictive Limit} = \text{mean} + t * \sigma(1+1/n)^{1/2}$$

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where: $t$ = critical $t$ value for appropriate n and 95% 1-tail distribution
$\sigma$ = standard deviation of the mean
n = number of data values

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Bechtel/Navy Clean II
Task 2: Descriptive Statistics for Reference Station Values
Only parameters with at least one detectable value included

Type of Result=Halibut Bile

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BENZO(A)PYRENE, EQUIV | NG/L | 6 | 0.907 | 0.4008 | 0.956 | 0.8019 | 8.45 | 6.00 | 1.94 | 16.70 | 21.50 |
| NAPHTHALENE, EQUIV | NG/L | 6 | 0.813 | 0.0710 | 0.861 | 0.1866 | 144.57 | 96.47 | 72.40 | 312.00 | 354.54 |
| PHENANTHRENE, EQUIV | NG/L | 6 | 0.855 | 0.1648 | 0.941 | 0.6882 | 113.95 | 78.91 | 45.90 | 250.00 | 285.71 |
| PYRENE, EQUIV | NG/L | 6 | 0.847 | 0.1399 | 0.921 | 0.5035 | 61.93 | 46.01 | 13.20 | 118.00 | 162.06 |

Type of Result=Halibut Fillet

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ALPHA BHC (HCH) | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| CHLORDANE | UG/KG | 3 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| DIELDRIN | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN I | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN II | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN SULFATE | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDRIN | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| HEPTACHLOR | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| METHOXYCHLOR | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| TOXAPHENE | UG/KG | 3 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| 4,4'-DDD | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| 4,4'-DDE | UG/KG | 3 | 0.997 | 0.8883 | 0.949 | 0.5656 | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| 4,4' DDT | UG/KG | 3 | . | . | . | . | 22.10 | 13.37 | 8.30 | 35.00 | 67.19 |
| PCB-1016 | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| PCB-1221 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1232 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1242 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1248 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1254 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1260 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| LIPIDS | MG/KG | 3 | 0.977 | 0.7102 | 0.959 | 0.6103 | 1670.00 | 343.95 | 1300.00 | 1980.00 | 2029.69 |
| DIBUTYLTIN | UG/KG | 3 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| MONOBUTYLTIN | UG/KG | 1 | . | . | . | . | 0.50 | . | 0.50 | 0.50 | . |
| TRIBUTYLTIN | UG/KG | 3 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| BENZO(A)ANTHRACENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| BENZO(A)PYRENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| BENZO(B)FLUORANTHENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| BENZO(GHI)PERYLENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| BENZO(K)FLUORANTHENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| CHRYSENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |

R0063476

Bechtel/Navy Clean II
Task 2: Descriptive Statistics for Reference Station Values
Only parameters with at least one detectable value included

Type of Result=Halibut Fillet
(continued)

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DIBENZO(A,H)ANTHRACENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| FLUORANTHENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| ACENAPHTHENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 11.67 | 11.55 | 5.00 | 25.00 | 50.60 |
| ACENAPHTHYLENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 11.67 | 11.55 | 5.00 | 25.00 | 50.60 |
| ANTHRACENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| FLUORENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 11.67 | 11.55 | 5.00 | 25.00 | 50.60 |
| NAPHTHALENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 23.33 | 23.09 | 10.00 | 50.00 | 101.20 |
| PHENANTHRENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| ANTIMONY, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 0.37 | 0.20 | 0.25 | 0.60 | 1.05 |
| BERYLLIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.05 | 0.00 | 0.05 | 0.05 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| COPPER, TOTAL | MG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 1.00 | 0.87 | 0.50 | 2.00 | 3.92 |
| LEAD, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| MERCURY, TOTAL | MG/KG | 3 | 0.993 | 0.8426 | 0.992 | 0.8267 | 0.05 | 0.04 | 0.01 | 0.08 | 0.17 |
| NICKEL, TOTAL | MG/KG | 3 | . | . | . | . | 1.50 | 0.00 | 1.50 | 1.50 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 0.40 | 0.26 | 0.25 | 0.70 | 1.26 |
| SILVER, TOTAL | MG/KG | 2 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| ZINC, TOTAL | MG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 9.00 | 5.20 | 6.00 | 15.00 | 26.82 |

R0063477

Bechtel/Navy Clean II
Task 2: Descriptive Statistics for Reference Station Values
Only parameters with at least one detectable value included

Type of Result=White Croaker Fillet

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| CHLORDANE | UG/KG | 3 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| DIELDRIN | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN I | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN II | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN SULFATE | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDRIN | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| HEPTACHLOR | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| METHOXYCHLOR | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| TOXAPHENE | UG/KG | 3 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| 4,4'-DDD | UG/KG | 3 | 0.999 | 0.9261 | 0.993 | 0.9847 | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| 4,4'-DDE | UG/KG | 3 | 0.793 | 0.0944 | 0.818 | 0.1583 | 13.80 | 11.26 | 2.50 | 25.00 | 51.46 |
| 4,4' DDT | UG/KG | 3 | . | . | . | . | 1000.00 | 606.96 | 620.00 | 1700.00 | 3046.49 |
| PCB-1016 | UG/KG | 3 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| PCB-1221 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1232 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1242 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1248 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1254 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1260 | UG/KG | 3 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| LIPIDS | MG/KG | 3 | 0.919 | 0.4504 | 0.929 | 0.4854 | 65033.33 | 6205.11 | 60100.00 | 72000.00 | 85955.14 |
| DIBUTYLTIN | UG/KG | 3 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| MONOBUTYLTIN | UG/KG | 3 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| TRIBUTYLTIN | UG/KG | 3 | 0.893 | 0.3631 | 0.867 | 0.2882 | 9.00 | 2.65 | 6.00 | 11.00 | 17.92 |
| FLUORANTHENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 13.33 | 2.89 | 10.00 | 15.00 | 23.07 |
| ACENAPHTHENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 13.33 | 2.89 | 10.00 | 15.00 | 23.07 |
| ACENAPHTHYLENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 13.33 | 2.89 | 10.00 | 15.00 | 23.07 |
| ANTHRACENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 13.33 | 2.89 | 10.00 | 15.00 | 23.07 |
| FLUORENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 13.33 | 2.89 | 10.00 | 15.00 | 23.07 |
| NAPHTHALENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 26.67 | 5.77 | 20.00 | 30.00 | 46.13 |
| PHENANTHRENE | UG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 13.33 | 2.89 | 10.00 | 15.00 | 23.07 |
| ANTIMONY, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 3 | 0.750 | 0.0001 | 0.750 | 0.0001 | 1.10 | 0.17 | 0.90 | 1.20 | 1.68 |
| BERYLLIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.05 | 0.00 | 0.05 | 0.05 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| COPPER, TOTAL | MG/KG | 3 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| LEAD, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| MERCURY, TOTAL | MG/KG | 3 | 1.000 | 0.9916 | 1.000 | 0.9901 | 0.03 | 0.01 | 0.02 | 0.04 | 0.06 |
| NICKEL, TOTAL | MG/KG | 3 | . | . | . | . | 1.50 | 0.00 | 1.50 | 1.50 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| ZINC, TOTAL | MG/KG | 3 | . | . | . | . | 15.00 | 0.00 | 15.00 | 15.00 | 15.00 |

R0063478

Bechtel/Navy Clean II
Task 2: Descriptive Statistics for Reference Station Values
Only parameters with at least one detectable value included

Type of Result=Halibut Whole Body

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| CHLORDANE | UG/KG | 9 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| DIELDRIN | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN I | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN II | UG/KG | 9 | 0.386 | 0.0001 | 0.386 | 0.0001 | 3.27 | 2.30 | 2.50 | 9.40 | 7.77 |
| ENDOSULFAN SULFATE | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDRIN | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| HEPTACHLOR | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 9 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 9 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| METHOXYCHLOR | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| TOXAPHENE | UG/KG | 9 | . | . | . | . | 3.96 | 3.24 | 2.50 | 12.00 | 10.31 |
| 4,4'-DDD | UG/KG | 9 | 0.540 | 0.0001 | 0.565 | 0.0001 | 102.00 | 67.19 | 33.00 | 220.00 | 233.69 |
| 4,4'-DDE | UG/KG | 9 | 0.896 | 0.2257 | 0.948 | 0.6577 | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| 4,4'-DDT | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1016 | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1221 | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1232 | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1242 | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1248 | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1254 | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1260 | UG/KG | 9 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| LIPIDS | MG/KG | 9 | 0.938 | 0.5566 | 0.880 | 0.1557 | 8056.67 | 3464.12 | 2660.00 | 12600.00 | 14846.80 |
| DIBUTYLTIN | UG/KG | 9 | 0.714 | 0.0024 | 0.752 | 0.0062 | 1.52 | 1.48 | 0.50 | 4.00 | 4.43 |
| MONOBUTYLTIN | UG/KG | 4 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| TRIBUTYLTIN | UG/KG | 9 | 0.742 | 0.0049 | 0.893 | 0.2081 | 4.23 | 4.83 | 0.50 | 13.00 | 13.70 |
| BENZO(A)ANTHRACENE | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 5.71 | 1.89 | 5.00 | 10.00 | 9.64 |
| BENZO(A)PYRENE | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 5.71 | 1.89 | 5.00 | 10.00 | 9.64 |
| BENZO(B)FLUORANTHENE | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 5.71 | 1.89 | 5.00 | 10.00 | 9.64 |
| BENZO(GHI)PERYLENE | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 5.71 | 1.89 | 5.00 | 10.00 | 9.64 |
| BENZO(K)FLUORANTHENE | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 5.71 | 1.89 | 5.00 | 10.00 | 9.64 |
| CHRYSENE | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 5.71 | 1.89 | 5.00 | 10.00 | 9.64 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 5.71 | 1.89 | 5.00 | 10.00 | 9.64 |
| FLUORANTHENE | UG/KG | 9 | 0.386 | 0.0001 | 0.386 | 0.0001 | 5.56 | 1.67 | 5.00 | 10.00 | 8.82 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 8 | 0.417 | 0.0001 | 0.417 | 0.0001 | 5.43 | 1.77 | 5.00 | 10.00 | 9.18 |
| PYRENE | UG/KG | 2 | . | . | . | . | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 |
| ACENAPHTHENE | UG/KG | 9 | 0.386 | 0.0001 | 0.386 | 0.0001 | 5.56 | 1.67 | 5.00 | 10.00 | 8.82 |
| ACENAPHTHYLENE | UG/KG | 9 | 0.386 | 0.0001 | 0.386 | 0.0001 | 5.56 | 1.67 | 5.00 | 10.00 | 8.82 |
| ANTHRACENE | UG/KG | 9 | 0.386 | 0.0001 | 0.386 | 0.0001 | 5.56 | 1.67 | 5.00 | 10.00 | 8.82 |
| FLUORENE | UG/KG | 9 | 0.386 | 0.0001 | 0.386 | 0.0001 | 5.56 | 1.67 | 5.00 | 10.00 | 8.82 |
| NAPHTHALENE | UG/KG | 9 | 0.386 | 0.0001 | 0.386 | 0.0001 | 11.11 | 3.33 | 10.00 | 20.00 | 17.64 |
| PHENANTHRENE | UG/KG | 9 | 0.386 | 0.0001 | 0.386 | 0.0001 | 5.56 | 1.67 | 5.00 | 10.00 | 8.82 |
| ANTIMONY, TOTAL | MG/KG | 9 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 9 | 0.567 | 0.0001 | 0.569 | 0.0001 | 0.33 | 0.16 | 0.25 | 0.70 | 0.65 |
| BERYLLIUM, TOTAL | MG/KG | 9 | . | . | . | . | 0.05 | 0.00 | 0.05 | 0.05 | 0.05 |

R0063479

Type of Result=Halibut Whole Body (continued)

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CADMIUM, TOTAL | MG/KG | 9 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 9 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| COPPER, TOTAL | MG/KG | 9 | 0.675 | 0.0009 | 0.836 | 0.0516 | 12.06 | 19.76 | 0.50 | 57.00 | 50.79 |
| LEAD, TOTAL | MG/KG | 9 | 0.670 | 0.0008 | 0.693 | 0.0014 | 0.60 | 0.61 | 0.25 | 2.00 | 1.80 |
| MERCURY, TOTAL | MG/KG | 9 | 0.918 | 0.3687 | 0.918 | 0.3680 | 0.02 | 0.01 | 0.01 | 0.04 | 0.04 |
| NICKEL, TOTAL | MG/KG | 9 | 0.482 | 0.0001 | 0.930 | 0.0001 | 2.50 | 2.49 | 1.50 | 9.00 | 7.38 |
| SELENIUM, TOTAL | MG/KG | 9 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| SILVER, TOTAL | MG/KG | 3 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| THALLIUM, TOTAL | MG/KG | 9 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| ZINC, TOTAL | MG/KG | 9 | 0.731 | 0.0036 | 0.877 | 0.1420 | 19.11 | 11.90 | 10.00 | 40.00 | 42.44 |

Type of Result=White Croaker Whole Body

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ALPHA-BHC (HCH) | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| BETA-BHC (HCH) | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| CHLORDANE | UG/KG | 6 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| DELTA-BHC (HCH) | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| DIELDRIN | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN I | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDOSULFAN II | UG/KG | 4 | 0.616 | 0.0001 | 0.694 | 0.0046 | 8.05 | 11.00 | 2.50 | 30.00 | 31.99 |
| ENDOSULFAN SULFATE | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDRIN | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| ENDRIN ALDEHYDE | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| HEPTACHLOR | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| HEPTACHLOR EPOXIDE | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| LINDANE (GAMMA-BHC) | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| METHOXYCHLOR | UG/KG | 6 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| TOXAPHENE | UG/KG | 6 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| 4,4'-DDD | UG/KG | 6 | 0.837 | 0.1132 | 0.886 | 0.2960 | 19.35 | 19.48 | 2.50 | 47.00 | 61.74 |
| 4,4'-DDE | UG/KG | 6 | 0.924 | 0.5339 | 0.793 | 0.0481 | 298.17 | 170.41 | 35.00 | 490.00 | 669.07 |
| 4,4' DDT | UG/KG | 6 | . | . | . | . | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| PCB-1016 | UG/KG | 6 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1221 | UG/KG | 6 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1232 | UG/KG | 4 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1242 | UG/KG | 6 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1248 | UG/KG | 6 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1254 | UG/KG | 6 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| PCB-1260 | UG/KG | 6 | . | . | . | . | 50.00 | 0.00 | 50.00 | 50.00 | 50.00 |
| LIPIDS | MG/KG | 6 | 0.958 | 0.8123 | 0.923 | 0.5280 | 34970.00 | 23164.40 | 6320.00 | 67600.00 | 85387.34 |
| DIBUTYLTIN | UG/KG | 6 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| MONOBUTYLTIN | UG/KG | 3 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |

R0063480

Bechtel/Navy Clean II
Task 2: Descriptive Statistics for Reference Station Values
Only parameters with at least one detectable value included

Type of Result=White Croaker Whole Body
(continued)

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TRIBUTYLTIN | UG/KG | 6 | 0.684 | 0.0031 | 0.791 | 0.0463 | 1.78 | 2.18 | 0.50 | 6.10 | 6.53 |
| BENZO(A)ANTHRACENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| BENZO(A)PYRENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| BENZO(B)FLUORANTHENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| BENZO(GHI)PERYLENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| BENZO(K)FLUORANTHENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| CHRYSENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| FLUORANTHENE | UG/KG | 4 | . | . | . | . | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| PYRENE | UG/KG | 1 | . | . | . | . | 5.00 | . | 5.00 | 5.00 | . |
| ACENAPHTHENE | UG/KG | 6 | . | . | . | . | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 |
| ACENAPHTHYLENE | UG/KG | 6 | . | . | . | . | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 |
| ANTHRACENE | UG/KG | 4 | . | . | . | . | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 |
| FLUORENE | UG/KG | 6 | . | . | . | . | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 |
| NAPHTHALENE | UG/KG | 6 | . | . | . | . | 10.00 | 0.00 | 10.00 | 10.00 | 10.00 |
| PHENANTHRENE | UG/KG | 4 | . | . | . | . | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 |
| ANTIMONY, TOTAL | MG/KG | 6 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| ARSENIC, TOTAL | MG/KG | 6 | 0.781 | 0.0377 | 0.808 | 0.0644 | 0.82 | 0.26 | 0.60 | 1.30 | 1.37 |
| BERYLLIUM, TOTAL | MG/KG | 6 | . | . | . | . | 0.05 | 0.00 | 0.05 | 0.05 | 0.05 |
| CADMIUM, TOTAL | MG/KG | 6 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| CHROMIUM, TOTAL | MG/KG | 6 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| COPPER, TOTAL | MG/KG | 6 | 0.814 | 0.0719 | 0.853 | 0.1569 | 1.00 | 0.55 | 0.50 | 2.00 | 2.19 |
| LEAD, TOTAL | MG/KG | 6 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| MERCURY, TOTAL | MG/KG | 6 | 0.804 | 0.0595 | 0.805 | 0.0604 | 0.06 | 0.01 | 0.04 | 0.07 | 0.09 |
| NICKEL, TOTAL | MG/KG | 6 | . | . | . | . | 1.50 | 0.00 | 1.50 | 1.50 | 1.50 |
| SELENIUM, TOTAL | MG/KG | 6 | 0.686 | 0.0034 | 0.665 | 0.0012 | 0.56 | 0.16 | 0.25 | 0.70 | 0.90 |
| SILVER, TOTAL | MG/KG | 1 | . | . | . | . | 0.25 | . | 0.25 | 0.25 | . |
| THALLIUM, TOTAL | MG/KG | 6 | . | . | . | . | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
| ZINC, TOTAL | MG/KG | 6 | 0.692 | 0.0043 | 0.696 | 0.0049 | 13.83 | 1.83 | 11.00 | 15.00 | 17.83 |

R0063481

VOL 18

Bechtel/Navy Clean II
Task 2: Descriptive Statistics for Reference Station Values
Only parameters with at least one detectable value included



Type of Result=Sediment

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALDRIN | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| ALPHA-BHC (HCH) | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| BETA-BHC (HCH) | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| CHLORDANE | UG/KG | 7 | 0.783 | 0.0276 | 0.779 | 0.0251 | 2.00 | 0.29 | 1.50 | 2.50 | 2.60 |
| DELTA-BHC (HCH) | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| DIELDRIN | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| ENDOSULFAN I | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| ENDOSULFAN II | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| ENDOSULFAN SULFATE | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| ENDRIN | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| ENDRIN ALDEHYDE | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| HEPTACHLOR | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| HEPTACHLOR EPOXIDE | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| LINDANE (GAMMA-BHC) | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| METHOXYCHLOR | UG/KG | 7 | 0.783 | 0.0276 | 0.779 | 0.0251 | 2.00 | 0.29 | 1.50 | 2.50 | 2.60 |
| TOXAPHENE | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 9.29 | 1.89 | 5.00 | 10.00 | 13.21 |
| 4,4'-DDD | UG/KG | 7 | 0.914 | 0.4420 | 0.935 | 0.6094 | 12.57 | 5.52 | 5.30 | 20.00 | 24.05 |
| 4,4'-DDE | UG/KG | 7 | 0.866 | 0.1781 | 0.900 | 0.3463 | 119.14 | 49.34 | 70.00 | 190.00 | 221.63 |
| 4,4'-DDT | UG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0004 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| PCB-1016 | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 9.29 | 1.89 | 5.00 | 10.00 | 13.21 |
| PCB-1221 | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 9.29 | 1.89 | 5.00 | 10.00 | 13.21 |
| PCB-1232 | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 9.29 | 1.89 | 5.00 | 10.00 | 13.21 |
| PCB-1242 | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 9.29 | 1.89 | 5.00 | 10.00 | 13.21 |
| PCB-1248 | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 9.29 | 1.89 | 5.00 | 10.00 | 13.21 |
| PCB-1254 | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 9.29 | 1.89 | 5.00 | 10.00 | 13.21 |
| PCB-1260 | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 9.29 | 1.89 | 5.00 | 10.00 | 13.21 |
| 1,2,4-TRICHLOROBENZENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 1,2-DICHLOROBENZENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 1,3-DICHLOROBENZENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 1,4-DICHLOROBENZENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 2,4-DINITROTOLUENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 2,6-DINITROTOLUENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 2-CHLORONAPHTHALENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 3,3-DICHLOROBENZIDINE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 4-BROMOPHENYLPHENYLETHER | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 4-CHLOROPHENYLPHENYLETHER | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| BENZIDINE | UG/KG | 5 | 0.735 | 0.0233 | 0.721 | 0.0175 | 46.00 | 6.52 | 35.00 | 50.00 | 61.22 |
| BIS(2-CHLOROETHOXY)METHANE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| BIS(2-CHLOROETHYL)ETHER | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| BIS(2-CHLOROISOPROPYL)ETHER | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| HEXACHLOROBENZENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| HEXACHLOROBUTADIENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| HEXACHLOROCYCLOPENTADIENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| HEXACHLOROETHANE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| ISOPHORONE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| N-NITROSODI-N-PROPYLAMINE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| N-NITROSODIMETHYLAMINE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| N-NITROSODIPHENYLAMINE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| NITROBENZENE | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |

R0063482

Bechtel/Navy Clean II
Task 2: Descriptive Statistics for Reference Station Values
Only parameters with at least one detectable value included

Type of Result=Sediment
(continued)

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BENZO(A)ANTHRACENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| BENZO(A)PYRENE | UG/KG | 7 | 0.784 | 0.0283 | 0.951 | 0.7556 | 52.90 | 58.95 | 5.00 | 150.00 | 175.37 |
| BENZO(B)FLUORANTHENE | UG/KG | 7 | 0.772 | 0.0211 | 0.946 | 0.7061 | 61.48 | 75.86 | 5.00 | 203.33 | 219.05 |
| BENZO(GHI)PERYLENE | UG/KG | 7 | 0.754 | 0.0136 | 0.869 | 0.1861 | 25.81 | 25.50 | 5.00 | 66.00 | 78.78 |
| BENZO(K)FLUORANTHENE | UG/KG | 7 | 0.718 | 0.0057 | 0.910 | 0.4138 | 69.10 | 85.79 | 5.00 | 200.00 | 247.31 |
| CHRYSENE | UG/KG | 7 | 0.843 | 0.1092 | 0.945 | 0.7014 | 38.00 | 33.99 | 5.00 | 88.00 | 108.61 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| FLUORANTHENE | UG/KG | 7 | 0.788 | 0.0310 | 0.910 | 0.4128 | 62.24 | 68.89 | 5.00 | 167.67 | 205.36 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 7 | 0.795 | 0.0367 | 0.904 | 0.3689 | 23.81 | 22.91 | 5.00 | 66.00 | 71.40 |
| PYRENE | UG/KG | 7 | 0.860 | 0.1551 | 0.944 | 0.6930 | 61.71 | 57.13 | 5.00 | 151.00 | 180.39 |
| ACENAPHTHENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| ACENAPHTHYLENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| ANTHRACENE | UG/KG | 7 | 0.678 | 0.0021 | 0.778 | 0.0245 | 19.10 | 17.34 | 5.00 | 44.67 | 55.11 |
| FLUORENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| METHYLNAPHTHALENES | UG/KG | 7 | 0.574 | 0.0001 | 0.778 | 0.0242 | 13.57 | 11.80 | 5.00 | 40.00 | 38.09 |
| NAPHTHALENE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| PHENANTHRENE | UG/KG | 7 | 0.678 | 0.0021 | 0.778 | 0.0245 | 19.10 | 17.34 | 5.00 | 44.67 | 55.11 |
| 2,4,6-TRICHLOROPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| 2,4-DICHLOROPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| 2,4-DIMETHYLPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| 2,4-DINITROPHENOL | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 2-CHLOROPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| 2-METHYL-4,6-DINITROPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| 2-METHYLPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| 2 NITROPHENOL | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| 3- AND 4-METHYLPHENOL | UG/KG | 7 | 0.664 | 0.0015 | 0.898 | 0.3331 | 38.10 | 21.99 | 20.00 | 86.67 | 83.78 |
| 4-CHLORO 3-METHYLPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| 4-NITROPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| PENTACHLOROPHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| PHENOL | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| BIS(2-ETHYLHEXYL)PHTHALATE | UG/KG | 7 | 0.802 | 0.0429 | 0.948 | 0.1210 | 119.76 | 96.90 | 45.00 | 310.00 | 321.05 |
| BUTYLBENZYLPHTHALATE | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| DI-N BUTYLPHTHALATE | UG/KG | 7 | 0.689 | 0.0027 | 0.869 | 0.1893 | 23.81 | 10.48 | 15.00 | 46.67 | 45.59 |
| DI N OCTYLPHTHALATE | UG/KG | 7 | 0.676 | 0.0020 | 0.736 | 0.0088 | 68.57 | 84.79 | 15.00 | 220.00 | 244.71 |
| DIETHYLPHTHALATE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| DIMETHYLPHTHALATE | UG/KG | 7 | 0.683 | 0.0023 | 0.779 | 0.0251 | 11.19 | 5.67 | 5.00 | 23.33 | 22.97 |
| SULFIDE, TOTAL | MG/KG | 7 | 0.795 | 0.0362 | 0.860 | 0.1561 | 122.42 | 143.91 | 15.00 | 380.00 | 421.37 |
| ACID VOLATILE SULFIDE | MG/KG | 7 | 0.798 | 0.0388 | 0.973 | 0.9200 | 139.39 | 168.90 | 7.90 | 470.00 | 490.25 |
| CADMIUM, EXTRACTABLE | MG/KG | 7 | 0.956 | 0.7950 | 0.946 | 0.7094 | 1.47 | 0.89 | 0.20 | 2.60 | 3.31 |
| CADMIUM, EXTRACTABLE / AVS | | 7 | 0.724 | 0.0066 | 0.733 | 0.0081 | 0.07 | 0.11 | 0.00 | 0.30 | 0.31 |
| COPPER, EXTRACTABLE | MG/KG | 7 | 0.900 | 0.3437 | 0.897 | 0.3237 | 47.71 | 27.29 | 11.00 | 82.00 | 104.41 |
| COPPER, EXTRACTABLE / AVS | | 7 | 0.751 | 0.0126 | 0.874 | 0.2067 | 2.32 | 3.32 | 0.06 | 8.86 | 9.21 |
| LEAD, EXTRACTABLE | MG/KG | 7 | 0.950 | 0.8088 | 0.877 | 0.2196 | 41.05 | 18.32 | 12.00 | 69.00 | 79.10 |
| LEAD, EXTRACTABLE / AVS | | 7 | 0.757 | 0.0146 | 0.857 | 0.1462 | 1.26 | 1.56 | 0.11 | 4.43 | 4.50 |
| MERCURY, EXTRACTABLE | MG/KG | 7 | 0.780 | 0.0257 | 0.784 | 0.0280 | 0.02 | 0.01 | 0.01 | 0.04 | 0.04 |
| MERCURY, EXTRACTABLE / AVS | | 7 | 0.561 | 0.0001 | 0.561 | 0.0001 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 |
| ZINC, EXTRACTABLE | MG/KG | 7 | 0.938 | 0.6363 | 0.870 | 0.1911 | 128.95 | 68.72 | 29.00 | 210.00 | 265.48 |
| ZINC, EXTRACTABLE / AVS | | 7 | 0.734 | 0.0084 | 0.918 | 0.4728 | 5.99 | 8.79 | 0.19 | 24.05 | 26.26 |

R0063483

Bechtel/Navy Clean II
Task 2: Descriptive Statistics for Reference Station Values
Only parameters with at least one detectable value included

Type of Result=Sediment
(continued)

| Analyte name | Units | # Values | Shapiro-Wilks Statistic (untrans. data) | Prob. < W (untrans. data) | Shapiro-Wilks Statistic (log10(value+1)) | Prob. < W (log10 (value+1)) | Mean Value | Standard Deviation | Minimum Value | Maximum Value | Upper 95% Confidence Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DIBUTYLTIN | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 1.21 | 0.57 | 1.00 | 2.50 | 2.39 |
| MONOBUTYLTIN | UG/KG | 7 | 0.457 | 0.0001 | 0.457 | 0.0001 | 0.93 | 0.19 | 0.50 | 1.00 | 1.32 |
| TRIBUTYLTIN | UG/KG | 7 | 0.737 | 0.0090 | 0.724 | 0.0066 | 10.99 | 5.34 | 3.50 | 15.00 | 22.08 |
| TOTAL ORGANIC CARBON | PERCENT | 7 | 0.835 | 0.0911 | 0.860 | 0.1558 | 1.30 | 0.63 | 0.43 | 1.97 | 2.61 |
| ANTIMONY, TOTAL | MG/KG | 3 | . | . | . | . | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| ARSENIC, TOTAL | MG/KG | 7 | 0.949 | 0.7331 | 0.913 | 0.4370 | 8.33 | 3.66 | 2.80 | 14.00 | 15.93 |
| BERYLLIUM, TOTAL | MG/KG | 7 | 0.857 | 0.1478 | 0.833 | 0.0864 | 0.40 | 0.19 | 0.05 | 0.71 | 0.80 |
| CADMIUM, TOTAL | MG/KG | 7 | 0.920 | 0.4897 | 0.950 | 0.7423 | 1.13 | 0.75 | 0.25 | 2.40 | 2.68 |
| CHROMIUM, TOTAL | MG/KG | 7 | 0.943 | 0.6792 | 0.905 | 0.3796 | 36.62 | 13.92 | 15.00 | 53.00 | 65.54 |
| COPPER, TOTAL | MG/KG | 7 | 0.805 | 0.0458 | 0.876 | 0.2173 | 74.62 | 56.83 | 13.00 | 143.33 | 192.67 |
| LEAD, TOTAL | MG/KG | 7 | 0.869 | 0.1866 | 0.728 | 0.0072 | 39.71 | 14.87 | 11.00 | 61.00 | 70.61 |
| MERCURY, TOTAL | MG/KG | 7 | 0.906 | 0.3812 | 0.913 | 0.4351 | 0.30 | 0.20 | 0.07 | 0.59 | 0.71 |
| NICKEL, TOTAL | MG/KG | 7 | 0.941 | 0.4609 | 0.897 | 0.3286 | 24.29 | 10.59 | 8.00 | 37.00 | 46.29 |
| SELENIUM, TOTAL | MG/KG | 7 | 0.812 | 0.0535 | 0.817 | 0.0608 | 0.90 | 0.58 | 0.35 | 1.70 | 2.09 |
| SILVER, TOTAL | MG/KG | 7 | 0.892 | 0.2982 | 0.854 | 0.1363 | 1.82 | 0.56 | 0.80 | 2.60 | 2.97 |
| THALLIUM, TOTAL | MG/KG | 7 | 0.614 | 0.0004 | 0.610 | 0.0006 | 0.47 | 0.06 | 0.35 | 0.50 | 0.59 |
| ZINC, TOTAL | MG/KG | 7 | 0.863 | 0.1657 | 0.881 | 0.2375 | 153.10 | 81.47 | 42.00 | 260.00 | 322.34 |
| CLAY | PERCENT | 7 | 0.876 | 0.2173 | 0.748 | 0.0117 | 24.58 | 9.14 | 6.97 | 33.91 | 43.61 |
| FINES | PERCENT | 7 | 0.750 | 0.0123 | 0.614 | 0.0004 | 71.17 | 25.95 | 15.29 | 91.62 | 125.07 |
| GRAVEL | PERCENT | 7 | 0.817 | 0.0603 | 0.817 | 0.0600 | 0.06 | 0.07 | 0.00 | 0.19 | 0.21 |
| MEAN GRAIN SIZE | UN | 7 | 0.480 | 0.0001 | 0.560 | 0.0001 | 23.97 | 37.96 | 8.41 | 110.02 | 102.82 |
| MEDIAN GRAIN SIZE | UN | 7 | 0.534 | 0.0001 | 0.712 | 0.0049 | 30.45 | 42.99 | 9.53 | 127.64 | 119.76 |
| SAND | PERCENT | 7 | 0.749 | 0.0119 | 0.949 | 0.7375 | 28.77 | 25.93 | 8.38 | 84.64 | 82.63 |
| SILT | PERCENT | 7 | 0.909 | 0.4068 | 0.750 | 0.0150 | 46.59 | 20.97 | 8.32 | 68.34 | 90.14 |

R0063484

## Section 3. Results of Cluster Analyses

Cluster Analysis was used to evaluate patterns among different groups of stations and variables. Stations were evaluated as all 52 together (basin, pier, and reference) and as the 45 West Basin stations (basin and pier). Both of these station groups were evaluated with three variable groups: 1) chemical and physical data, 2) physical data, and 3) chemical data. The results of six cluster analyses are presented in this section.

For the purposes of this evaluation, chemicals included all compounds that were analyzed (except total organic carbon) that were found in at least 50 percent of the samples. Variations in detection limits (due to complex sample matrices) for compounds that were detected at a frequency less than 50 percent caused interference in pattern recognition. Therefore, compounds not detected at a frequency greater than 50 percent were not included in this process.

The physical data group for this analysis included grain size as percent fines (sum of clay and silt) and total organic carbon.

The results of each cluster analysis are presented in three figures: 1) dendrogram showing groups of variables, 2) dendrogram showing groups of stations, and 3) two-way table showing relative analyte concentration by station. The dendrograms (tree diagrams) show groupings of analytes and stations according to a dissimilarity index (Bray-Curtis) shown on the vertical axis as "distance between clusters."

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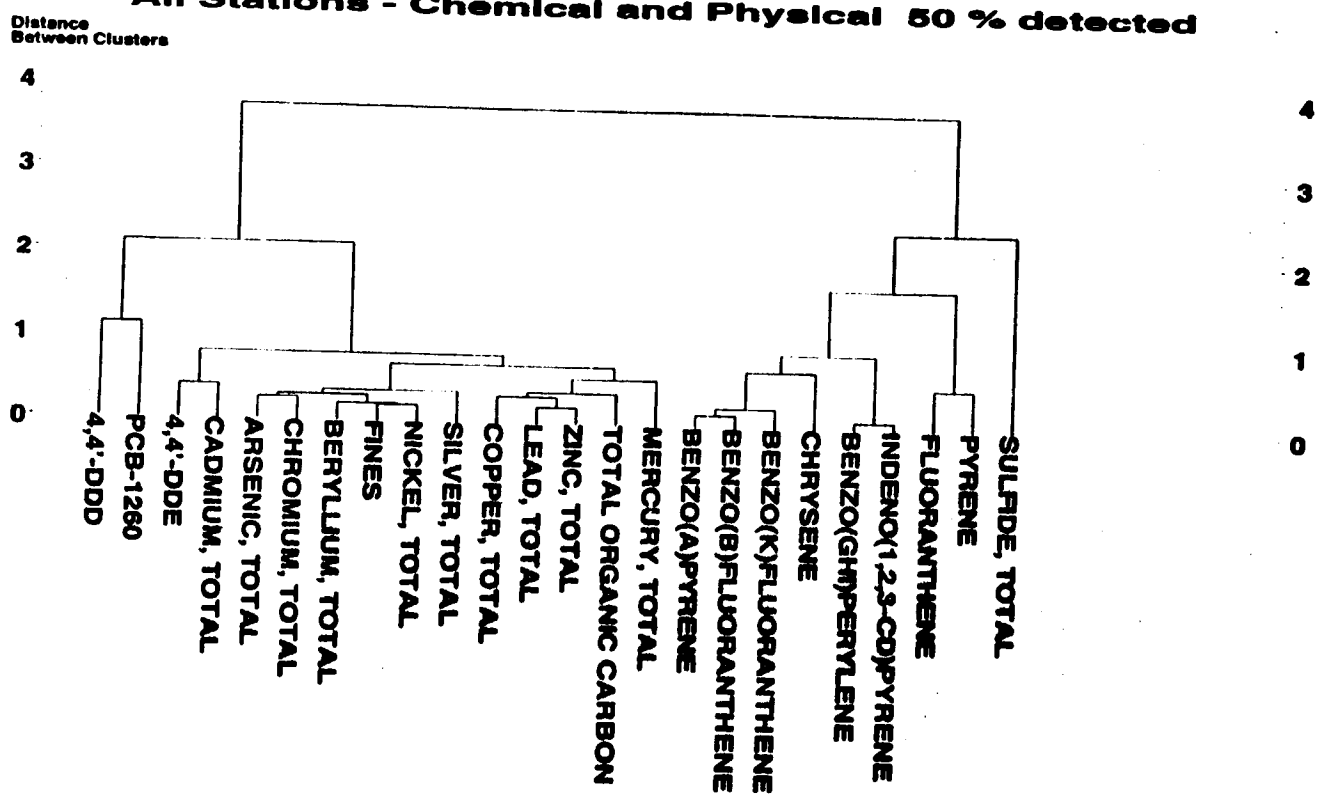
R0063485

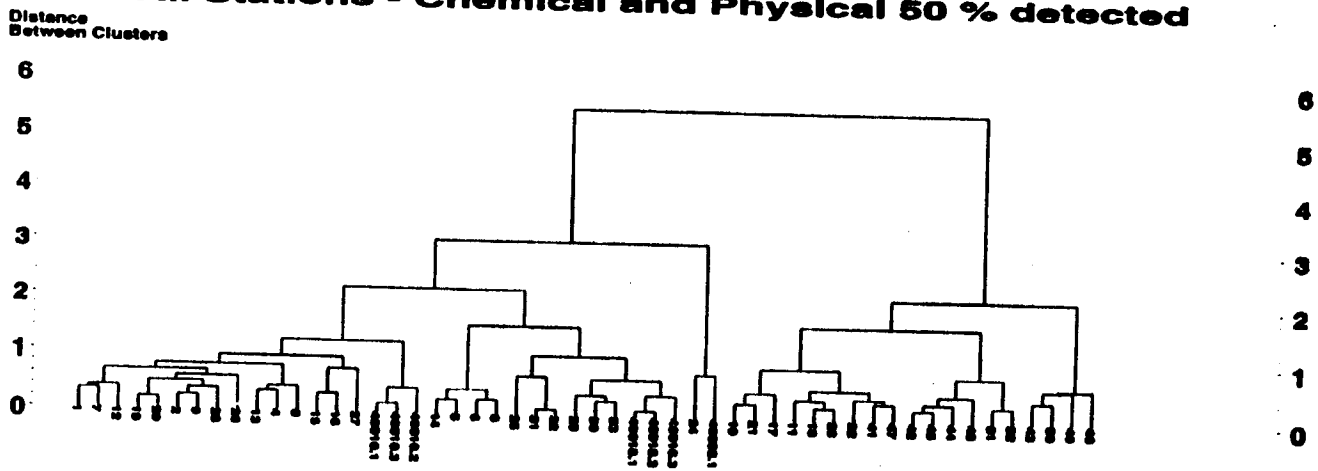
## All Stations - Chemical and Physical 50 % detected




R0063486

VOL 18

## All Stations - Chemical and Physical 50 % detected




R0063487

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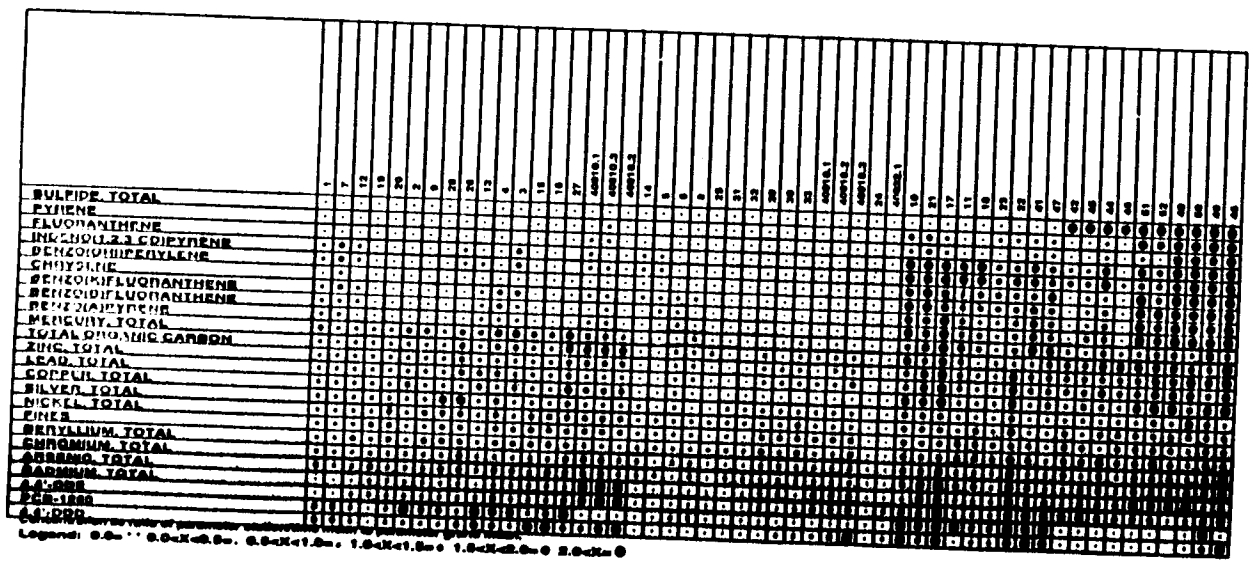
## All Stations - Chemical and Physical 50 % detected

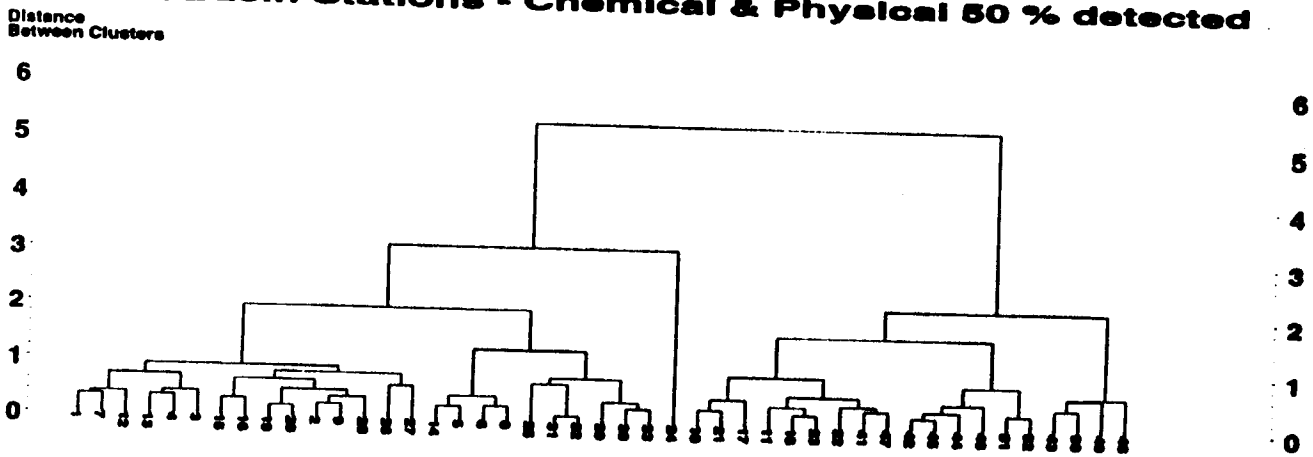



R0063488

VOL 18

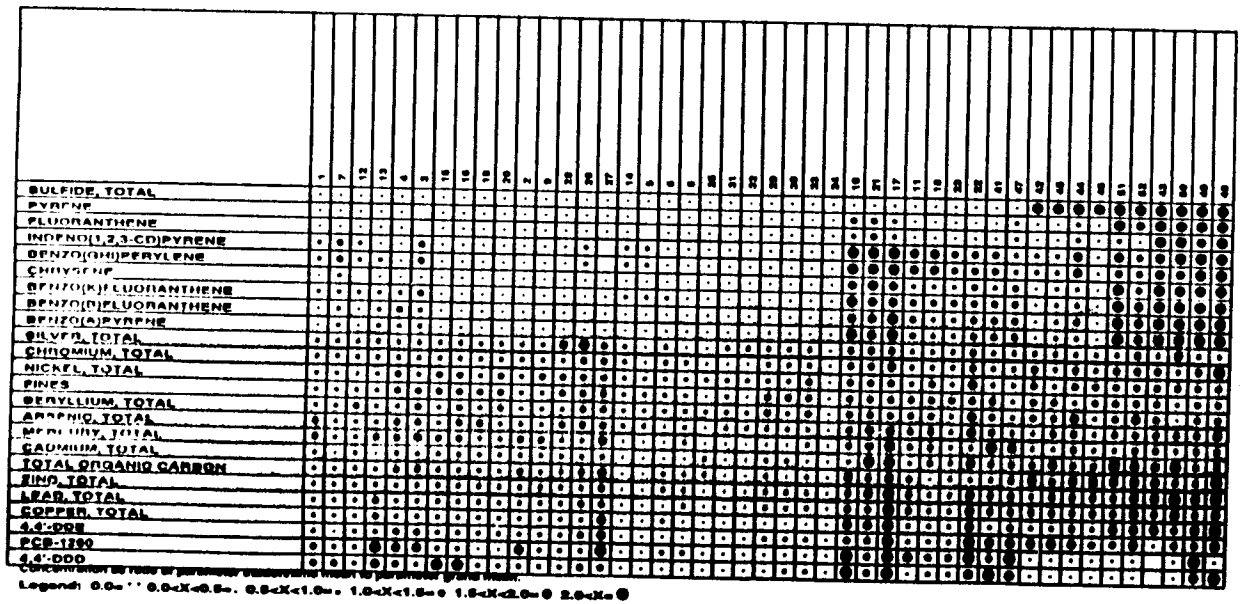
R0063489

## West Basin Stations - Chemical & Physical 50 % detected




R0063490

## West Basin Stations - Chemical & Physical 50 % detected




R0063491

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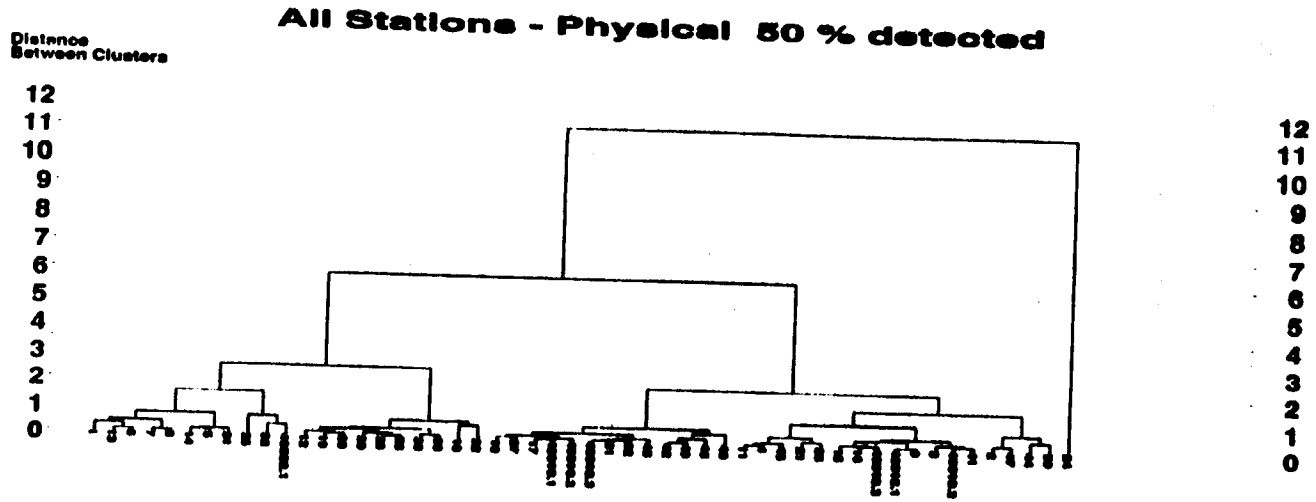
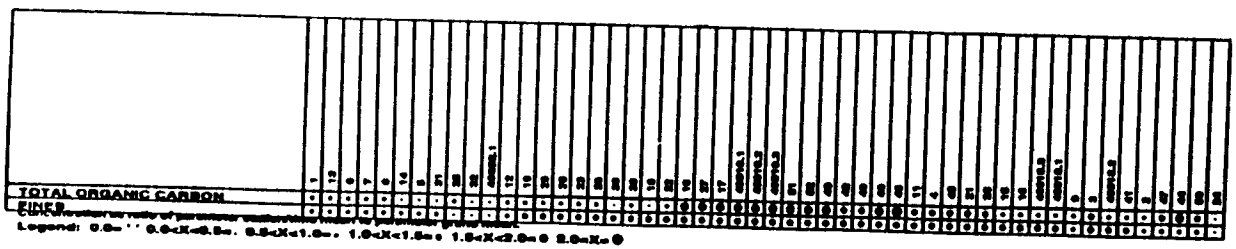
All Stations - Physical 50 % detected
Distance Between Clusters
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
FINES
TOTAL ORGANIC CARBON
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0

R0063492


All Stations - Physical 50 % detected
Distance Between Clusters
12
11
10
9
8
7
6
5
4
3
2
1
0
12
11
10
9
8
7
6
5
4
3
2
1
0

R0063493

**All Stations - Physical 50 % detected**




R0063494

## West Basin Stations - Physical 50 % detected




R0063495

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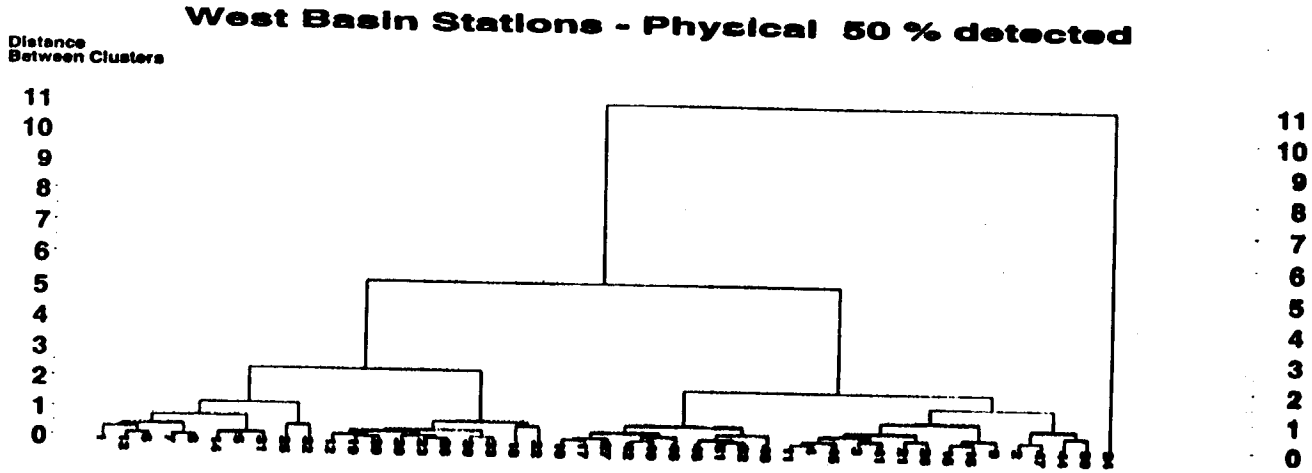
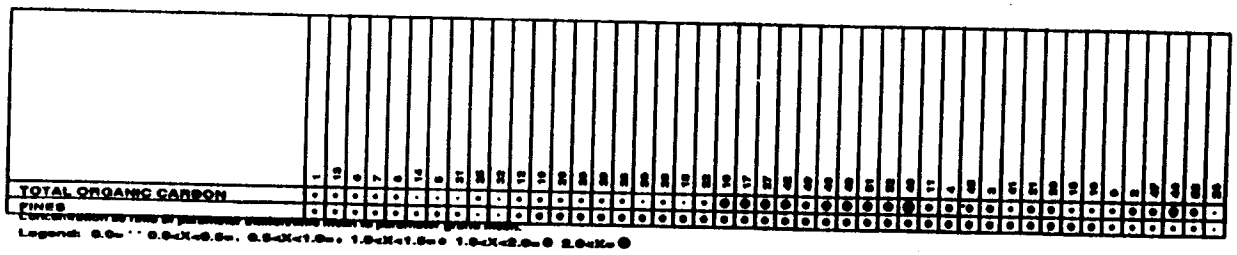

West Basin Stations - Physical 50 % detected
Distance Between Clusters
11
10
9
8
7
6
5
4
3
2
1
0

R0063496

**West Basin Stations - Physical 50 % detected**




R0063497



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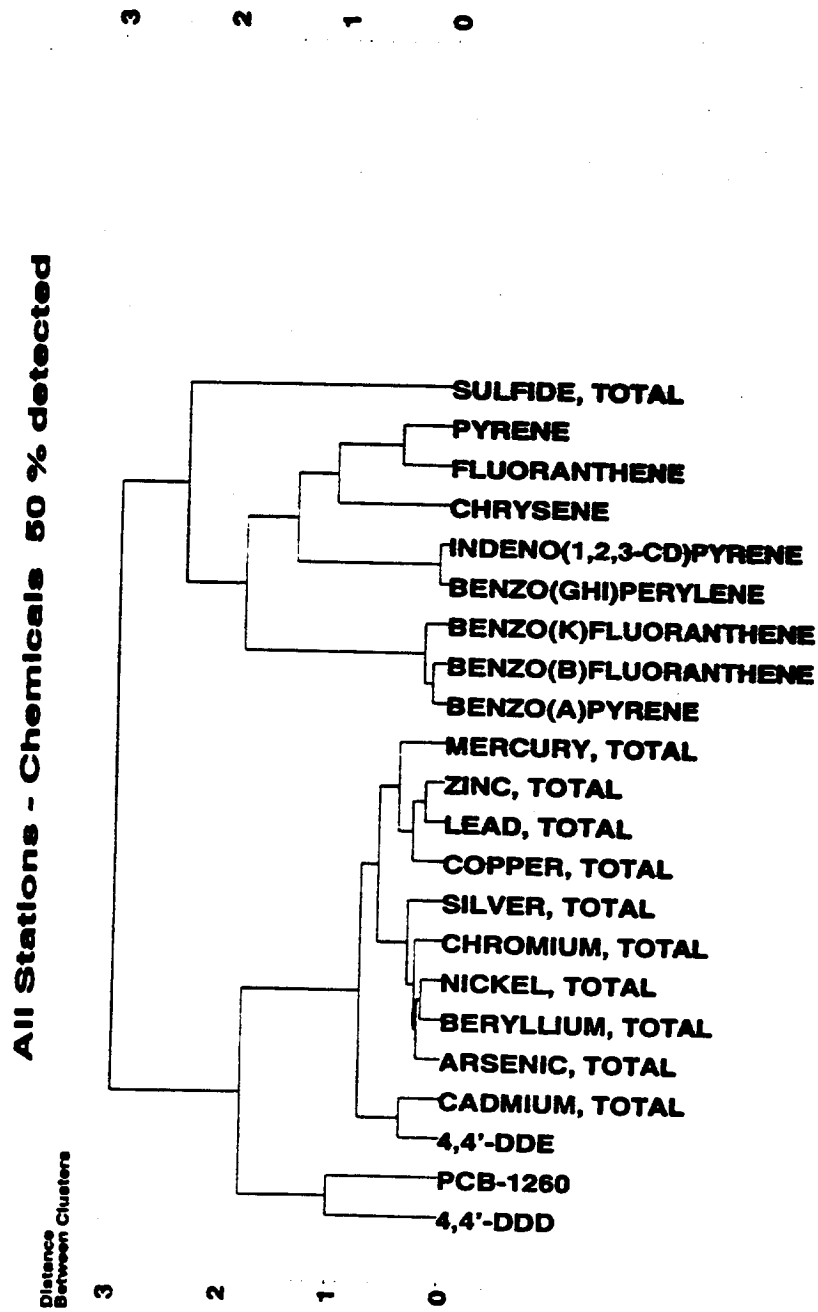


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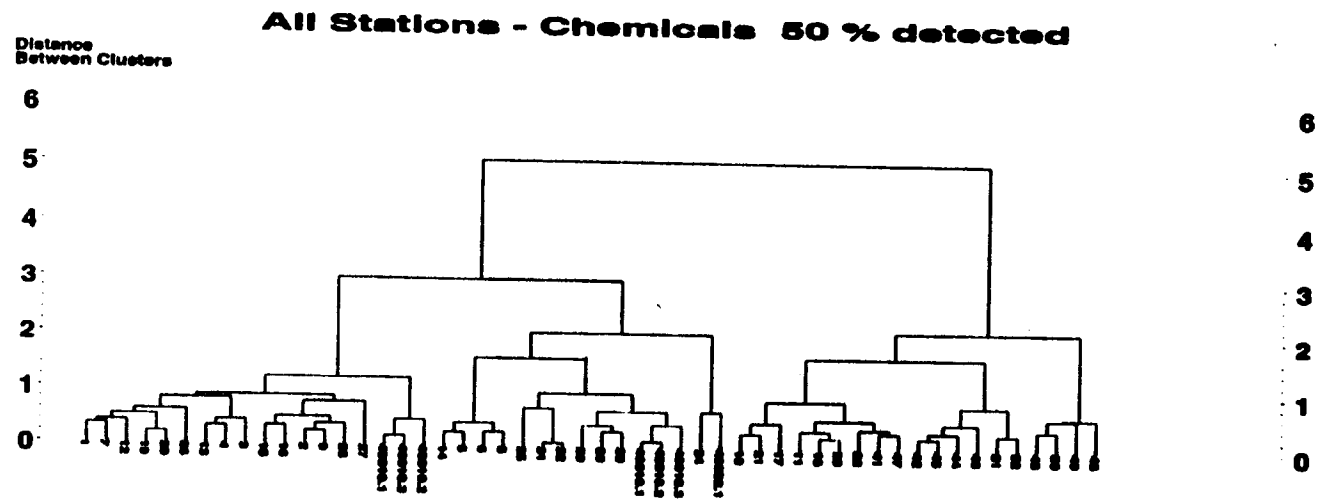
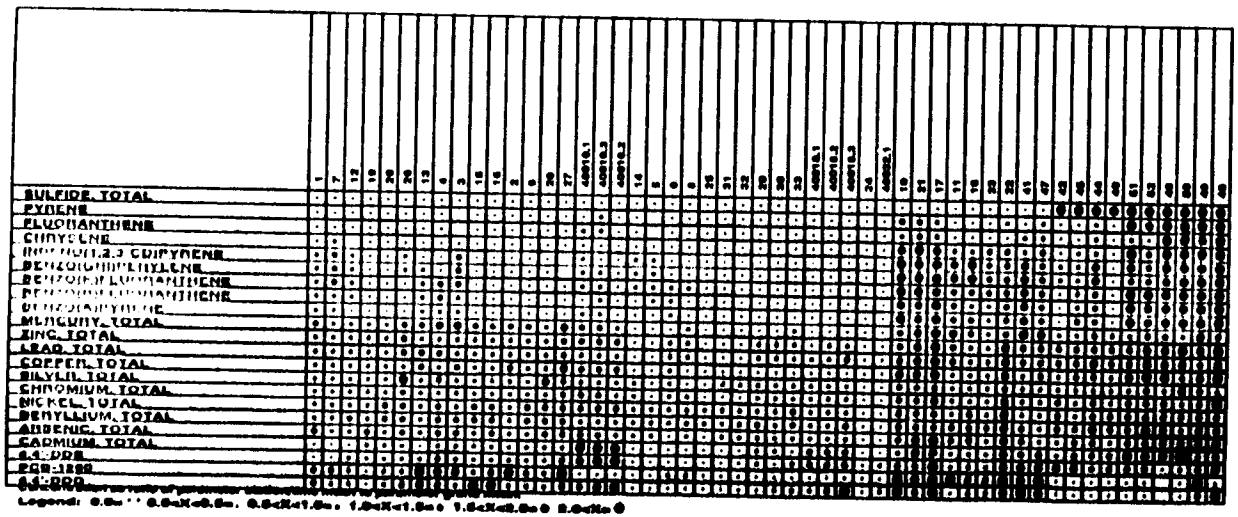
R0063498


All Stations - Chemicals 50 % detected
Distance
Between Clusters
6
5
4
3
2
1
0
6
5
4
3
2
1
0

R0063499

## All Stations - Chemicals 50 % detected

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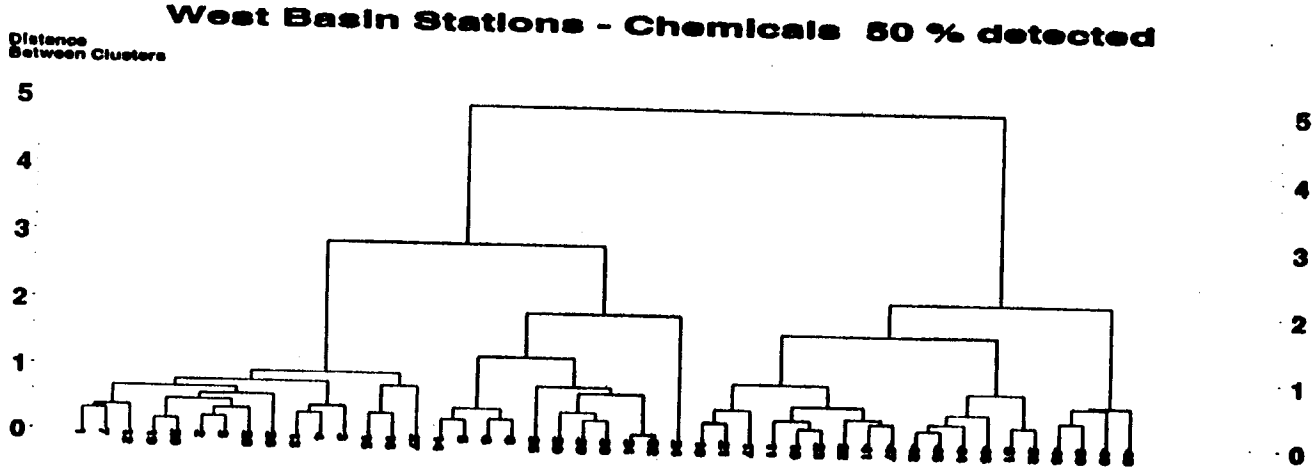
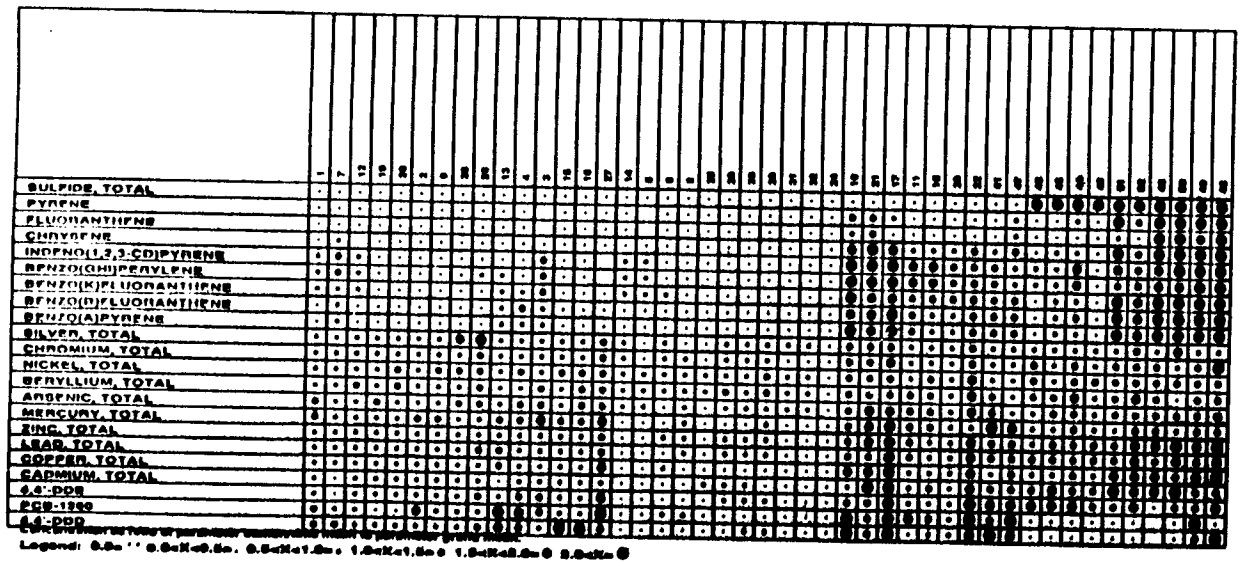
R0063501


West Basin Stations - Chemicals 50 % detected
Distance Between Clusters
5
4
3
2
1
0

R0063502

## West Basin Stations - Chemicals 50 % detected




R0063503

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## Section 4. Comparison of West Basin Station Data to Project Reference Data

This section presents the results of comparisons of West Basin station data to the project reference data for sediment chemistry, clam tissue chemistry, fish tissue chemistry, and toxicity bioassay data. Benthic infauna data were evaluated separately in a benthic infauna report (MEC, 1995).

Comparisons of West Basin data to project reference data were evaluated by comparing each individual value per station to the reference data, and by comparing the mean value of sediment evaluation zones (determined by cluster analysis) to the mean of the project reference values.

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## Section 4-1. Comparison of West Basin Station Surface Sediment Data to Project Reference Values

Concentrations of chemical analytes that were detected in surface sediment at West Basin stations were compared to project reference values (see Section 2 for description of project reference values calculated as 95 percent upper predictive limit). The following listing shows compounds that were detected at West Basin stations at levels exceeding the project reference value. The results are presented by compound and by station.

| | |
|---|---|
| Analyte name | Name of analyte. |
| Units | Units associated with analyte concentration. |
| Station | Station at which analyte was detected. |
| Station Value | Concentration of analyte at the station. |
| Upper 95% Confidence Limit | Upper 95 percent predictive limit of reference station values as calculated in Section 2. |
| Station Value / Upper 95% CL | Ratio of analyte value at the station to the upper 95 percent predictive limit of reference station values. |

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Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

---------- Type of Result=Halibut Bile Station type=Basin ----------

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| BENZO(A)PYRENE, EQUIV | MG/L | T2 | 58.80 | 21.50 | 2.73 |
| BENZO(A)PYRENE, EQUIV | MG/L | T5 | 33.20 | 21.50 | 1.54 |
| NAPHTHALENE, EQUIV | MG/L | T2 | 655.00 | 354.54 | 1.85 |
| NAPHTHALENE, EQUIV | MG/L | T5 | 506.00 | 354.54 | 1.43 |
| PHENANTHRENE, EQUIV | MG/L | T2 | 536.00 | 285.71 | 1.88 |
| PHENANTHRENE, EQUIV | MG/L | T5 | 323.00 | 285.71 | 1.13 |
| PYRENE, EQUIV | MG/L | T2 | 469.00 | 162.06 | 2.89 |
| PYRENE, EQUIV | MG/L | T5 | 220.00 | 162.06 | 1.36 |

---------- Type of Result=Halibut Fillet Station type=Basin ----------

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 4,4'-DDE | UG/KG | T1 | 200.00 | 67.19 | 2.98 |
| LIPIDS | MG/KG | T1 | 2880.00 | 2829.69 | 1.02 |
| DIBUTYLTIN | UG/KG | T1 | 1.40 | 0.50 | 2.80 |
| TRIBUTYLTIN | UG/KG | T4 | 1.40 | 0.50 | 2.80 |
| MERCURY, TOTAL | MG/KG | T1 | 0.17 | 0.17 | 1.03 |

---------- Type of Result=White Croaker Fillet Station type=Basin ----------

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| ENDOSULFAN II | UG/KG | T5 | 30.00 | 2.50 | 12.00 |
| ENDOSULFAN II | UG/KG | T5 | 19.00 | 2.50 | 7.60 |
| ENDOSULFAN II | UG/KG | T5 | 85.00 | 2.50 | 34.00 |
| ENDOSULFAN II | UG/KG | T6 | 18.00 | 2.50 | 7.20 |
| ENDOSULFAN II | UG/KG | T6 | 15.00 | 2.50 | 6.00 |
| ENDRIN | UG/KG | T5 | 7.40 | 2.50 | 2.96 |
| ENDRIN | UG/KG | T5 | 8.40 | 2.50 | 3.36 |
| ENDRIN | UG/KG | T5 | 8.50 | 2.50 | 3.40 |
| 4,4'-DDD | UG/KG | T5 | 57.00 | 51.46 | 1.11 |
| 4,4'-DDD | UG/KG | T7 | 81.00 | 51.46 | 1.57 |
| COPPER, TOTAL | MG/KG | T5 | 1.00 | 0.50 | 2.00 |
| COPPER, TOTAL | MG/KG | T6 | 1.00 | 0.50 | 2.00 |
| COPPER, TOTAL | MG/KG | T6 | 2.00 | 0.50 | 4.00 |
| LEAD, TOTAL | MG/KG | T5 | 4.20 | 0.25 | 16.80 |
| MERCURY, TOTAL | MG/KG | T5 | 0.07 | 0.06 | 1.10 |
| MERCURY, TOTAL | MG/KG | T6 | 0.07 | 0.06 | 1.10 |
| MERCURY, TOTAL | MG/KG | T7 | 0.07 | 0.06 | 1.10 |
| SELENIUM, TOTAL | MG/KG | T7 | 0.60 | 0.25 | 2.40 |

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Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Halibut Whole Body Station type=Basin

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| ENDOSULFAN II | UG/KG | T5 | 13.00 | 7.77 | 1.67 |
| ENDOSULFAN II | UG/KG | T5 | 20.00 | 7.77 | 2.57 |
| 4,4'-DDE | UG/KG | T5 | 380.00 | 233.69 | 1.63 |
| 4,4'-DDE | UG/KG | T6 | 340.00 | 233.69 | 1.45 |
| LIPIDS | MG/KG | T6 | 24500.00 | 14846.80 | 1.65 |
| LIPIDS | MG/KG | T6 | 15600.00 | 14846.80 | 1.05 |
| TRIBUTYLTIN | UG/KG | T3 | 20.00 | 13.70 | 1.46 |
| ARSENIC, TOTAL | MG/KG | T1 | 0.70 | 0.65 | 1.08 |
| MERCURY, TOTAL | MG/KG | T3 | 0.05 | 0.04 | 1.16 |
| MERCURY, TOTAL | MG/KG | T5 | 0.05 | 0.06 | 1.16 |
| MERCURY, TOTAL | MG/KG | T5 | 0.05 | 0.04 | 1.16 |
| SELENIUM, TOTAL | MG/KG | T3 | 0.90 | 0.25 | 3.60 |

Type of Result=White Croaker Whole Body Station type=Basin

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| ALPHA-BHC (HCH) | UG/KG | T7 | 5.70 | 2.50 | 2.28 |
| ENDOSULFAN II | UG/KG | T4 | 35.00 | 31.99 | 1.09 |
| ENDRIN | UG/KG | T3 | 5.40 | 2.50 | 2.16 |
| ENDRIN | UG/KG | T6 | 33.00 | 2.50 | 13.20 |
| ENDRIN | UG/KG | T4 | 7.50 | 2.50 | 3.00 |
| 4,4'-DDD | UG/KG | T7 | 72.00 | 61.74 | 1.17 |
| 4,4'-DDE | UG/KG | T4 | 1000.00 | 669.07 | 1.49 |
| 4,4'-DDE | UG/KG | T7 | 750.00 | 669.07 | 1.12 |
| DIBUTYLTIN | UG/KG | T3 | 1.00 | 0.50 | 2.00 |
| DIBUTYLTIN | UG/KG | T4 | 1.10 | 0.50 | 2.20 |
| DIBUTYLTIN | UG/KG | T4 | 3.80 | 0.50 | 7.60 |
| DIBUTYLTIN | UG/KG | T4 | 3.30 | 0.50 | 6.60 |
| DIBUTYLTIN | UG/KG | T5 | 1.40 | 0.50 | 2.80 |
| DIBUTYLTIN | UG/KG | T5 | 1.60 | 0.50 | 3.20 |
| DIBUTYLTIN | UG/KG | T6 | 1.70 | 0.50 | 3.40 |
| DIBUTYLTIN | UG/KG | T6 | 1.60 | 0.50 | 3.20 |
| DIBUTYLTIN | UG/KG | T7 | 1.50 | 0.50 | 3.00 |
| DIBUTYLTIN | UG/KG | T7 | 4.10 | 0.50 | 8.20 |
| TRIBUTYLTIN | UG/KG | T3 | 6.90 | 6.53 | 1.06 |
| TRIBUTYLTIN | UG/KG | T4 | 11.00 | 6.53 | 1.68 |
| TRIBUTYLTIN | UG/KG | T4 | 16.00 | 6.53 | 2.65 |
| TRIBUTYLTIN | UG/KG | T4 | 7.70 | 6.53 | 1.18 |
| TRIBUTYLTIN | UG/KG | T4 | 7.90 | 6.53 | 1.21 |
| TRIBUTYLTIN | UG/KG | T4 | 11.00 | 6.53 | 1.68 |
| TRIBUTYLTIN | UG/KG | T5 | 13.00 | 6.53 | 1.99 |
| TRIBUTYLTIN | UG/KG | T5 | 11.00 | 6.53 | 1.68 |
| TRIBUTYLTIN | UG/KG | T6 | 12.00 | 6.53 | 1.84 |
| TRIBUTYLTIN | UG/KG | T6 | 12.00 | 6.53 | 1.84 |
| TRIBUTYLTIN | UG/KG | T7 | 8.60 | 6.53 | 1.32 |

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Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=White Croaker Whole Body Station type=Basin
(continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| TRIBUTYLTIN | UG/KG | T7 | 17.00 | 6.53 | 2.60 |
| ARSENIC, TOTAL | MG/KG | T3 | 1.40 | 1.37 | 1.02 |
| ARSENIC, TOTAL | MG/KG | T4 | 1.40 | 1.37 | 1.02 |
| ARSENIC, TOTAL | MG/KG | T4 | 1.40 | 1.37 | 1.02 |
| ARSENIC, TOTAL | MG/KG | T4 | 1.50 | 1.37 | 1.09 |
| ARSENIC, TOTAL | MG/KG | T4 | 1.50 | 1.37 | 1.09 |
| ARSENIC, TOTAL | MG/KG | T5 | 1.80 | 1.37 | 1.31 |
| BERYLLIUM, TOTAL | MG/KG | T4 | 0.10 | 0.05 | 2.00 |
| CHROMIUM, TOTAL | MG/KG | T4 | 0.70 | 0.25 | 2.80 |
| CHROMIUM, TOTAL | MG/KG | T4 | 0.50 | 0.25 | 2.00 |
| CHROMIUM, TOTAL | MG/KG | T4 | 0.70 | 0.25 | 2.80 |
| COPPER, TOTAL | MG/KG | T3 | 3.00 | 2.19 | 1.37 |
| COPPER, TOTAL | MG/KG | T4 | 4.00 | 2.19 | 1.82 |
| COPPER, TOTAL | MG/KG | T4 | 4.00 | 2.19 | 1.82 |
| COPPER, TOTAL | MG/KG | T4 | 3.00 | 2.19 | 1.37 |
| COPPER, TOTAL | MG/KG | T4 | 4.00 | 2.19 | 1.82 |
| COPPER, TOTAL | MG/KG | T7 | 3.00 | 2.19 | 1.37 |
| COPPER, TOTAL | MG/KG | T7 | 3.00 | 2.19 | 1.37 |
| MERCURY, TOTAL | MG/KG | T3 | 0.14 | 0.09 | 1.60 |
| MERCURY, TOTAL | MG/KG | T4 | 0.09 | 0.09 | 1.03 |
| SELENIUM, TOTAL | MG/KG | T4 | 1.00 | 0.90 | 1.11 |
| SELENIUM, TOTAL | MG/KG | T4 | 1.00 | 0.90 | 1.11 |
| SELENIUM, TOTAL | MG/KG | T4 | 0.90 | 0.90 | 1.00 |
| SELENIUM, TOTAL | MG/KG | T4 | 0.90 | 0.90 | 1.00 |
| SELENIUM, TOTAL | MG/KG | T5 | 0.90 | 0.90 | 1.00 |
| SELENIUM, TOTAL | MG/KG | T7 | 0.90 | 0.90 | 1.00 |
| SELENIUM, TOTAL | MG/KG | T7 | 1.30 | 0.90 | 1.48 |

R0063508

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Sediment Station type=Basin

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| ALDRIN | UG/KG | 28 | 2.30 | 0.59 | 3.90 |
| LINDANE (GAMMA-BHC) | UG/KG | 1 | 0.63 | 0.59 | 1.07 |
| LINDANE (GAMMA-BHC) | UG/KG | 10 | 6.80 | 0.59 | 11.54 |
| LINDANE (GAMMA-BHC) | UG/KG | 26 | 2.50 | 0.59 | 4.24 |
| 4,4'-DDD | UG/KG | 16 | 42.00 | 24.05 | 1.75 |
| 4,4'-DDD | UG/KG | 17 | 33.00 | 24.05 | 1.37 |
| 4,4'-DDT | UG/KG | 16 | 34.00 | 0.59 | 57.71 |
| PCB-1260 | UG/KG | 1 | 170.00 | 13.21 | 12.87 |
| PCB-1260 | UG/KG | 2 | 290.00 | 13.21 | 21.95 |
| PCB-1260 | UG/KG | 3 | 240.00 | 13.21 | 18.17 |
| PCB-1260 | UG/KG | 4 | 250.00 | 13.21 | 18.92 |
| PCB-1260 | UG/KG | 5 | 67.00 | 13.21 | 5.07 |
| PCB-1260 | UG/KG | 6 | 110.00 | 13.21 | 8.33 |
| PCB-1260 | UG/KG | 7 | 150.00 | 13.21 | 11.35 |
| PCB-1260 | UG/KG | 8 | 97.00 | 13.21 | 7.34 |
| PCB-1260 | UG/KG | 9 | 150.00 | 13.21 | 11.35 |
| PCB-1260 | UG/KG | 10 | 540.00 | 13.21 | 40.87 |
| PCB-1260 | UG/KG | 11 | 310.00 | 13.21 | 23.46 |
| PCB-1260 | UG/KG | 12 | 110.00 | 13.21 | 8.33 |
| PCB-1260 | UG/KG | 13 | 370.00 | 13.21 | 28.01 |
| PCB-1260 | UG/KG | 14 | 63.00 | 13.21 | 4.77 |
| PCB-1260 | UG/KG | 15 | 120.00 | 13.21 | 9.08 |
| PCB-1260 | UG/KG | 16 | 150.00 | 13.21 | 11.35 |
| PCB-1260 | UG/KG | 17 | 880.00 | 13.21 | 66.61 |
| PCB-1260 | UG/KG | 18 | 200.00 | 13.21 | 15.14 |
| PCB-1260 | UG/KG | 19 | 56.00 | 13.21 | 4.24 |
| PCB-1260 | UG/KG | 20 | 75.00 | 13.21 | 5.68 |
| PCB-1260 | UG/KG | 21 | 230.00 | 13.21 | 17.41 |
| PCB-1260 | UG/KG | 22 | 410.00 | 13.21 | 31.03 |
| PCB-1260 | UG/KG | 23 | 160.00 | 13.21 | 12.11 |
| PCB-1260 | UG/KG | 26 | 130.00 | 13.21 | 9.84 |
| PCB-1260 | UG/KG | 27 | 430.00 | 13.21 | 32.55 |
| PCB-1260 | UG/KG | 28 | 140.00 | 13.21 | 10.60 |
| PCB-1260 | UG/KG | 30 | 51.00 | 13.21 | 3.86 |
| PCB-1260 | UG/KG | 33 | 31.00 | 13.21 | 2.35 |
| PCB-1260 | UG/KG | 41 | 220.00 | 13.21 | 16.65 |
| BENZO(A)ANTHRACENE | UG/KG | 1 | 38.33 | 22.97 | 1.67 |
| BENZO(A)ANTHRACENE | UG/KG | 3 | 59.00 | 22.97 | 2.57 |
| BENZO(A)ANTHRACENE | UG/KG | 5 | 60.00 | 22.97 | 2.61 |
| BENZO(A)ANTHRACENE | UG/KG | 6 | 46.00 | 22.97 | 2.00 |
| BENZO(A)ANTHRACENE | UG/KG | 7 | 65.00 | 22.97 | 2.83 |
| BENZO(A)ANTHRACENE | UG/KG | 10 | 200.00 | 22.97 | 8.71 |
| BENZO(A)ANTHRACENE | UG/KG | 11 | 92.00 | 22.97 | 4.01 |
| BENZO(A)ANTHRACENE | UG/KG | 12 | 36.00 | 22.97 | 1.57 |
| BENZO(A)ANTHRACENE | UG/KG | 14 | 32.00 | 22.97 | 1.39 |
| BENZO(A)ANTHRACENE | UG/KG | 17 | 150.00 | 22.97 | 6.53 |
| BENZO(A)ANTHRACENE | UG/KG | 18 | 120.00 | 22.97 | 5.22 |
| BENZO(A)ANTHRACENE | UG/KG | 21 | 280.00 | 22.97 | 12.19 |
| BENZO(A)ANTHRACENE | UG/KG | 22 | 130.00 | 22.97 | 5.66 |

R0063509

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Sediment Station type=Basin
(continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| BENZO(A)ANTHRACENE | UG/KG | 23 | 110.00 | 22.97 | 4.79 |
| BENZO(A)ANTHRACENE | UG/KG | 26 | 38.00 | 22.97 | 1.65 |
| BENZO(A)ANTHRACENE | UG/KG | 41 | 140.00 | 22.97 | 6.10 |
| BENZO(A)PYRENE | UG/KG | 3 | 200.00 | 175.37 | 1.14 |
| BENZO(A)PYRENE | UG/KG | 4 | 220.00 | 175.37 | 1.25 |
| BENZO(A)PYRENE | UG/KG | 7 | 180.00 | 175.37 | 1.03 |
| BENZO(A)PYRENE | UG/KG | 10 | 540.00 | 175.37 | 3.08 |
| BENZO(A)PYRENE | UG/KG | 11 | 310.00 | 175.37 | 1.77 |
| BENZO(A)PYRENE | UG/KG | 17 | 500.00 | 175.37 | 2.85 |
| BENZO(A)PYRENE | UG/KG | 18 | 240.00 | 175.37 | 1.37 |
| BENZO(A)PYRENE | UG/KG | 21 | 440.00 | 175.37 | 2.51 |
| BENZO(A)PYRENE | UG/KG | 22 | 300.00 | 175.37 | 1.71 |
| BENZO(A)PYRENE | UG/KG | 23 | 180.00 | 175.37 | 1.03 |
| BENZO(A)PYRENE | UG/KG | 41 | 340.00 | 175.37 | 1.94 |
| BENZO(B)FLUORANTHENE | UG/KG | 3 | 240.00 | 219.05 | 1.10 |
| BENZO(B)FLUORANTHENE | UG/KG | 4 | 320.00 | 219.05 | 1.46 |
| BENZO(B)FLUORANTHENE | UG/KG | 10 | 500.00 | 219.05 | 2.28 |
| BENZO(B)FLUORANTHENE | UG/KG | 11 | 370.00 | 219.05 | 1.69 |
| BENZO(B)FLUORANTHENE | UG/KG | 17 | 680.00 | 219.05 | 3.10 |
| BENZO(B)FLUORANTHENE | UG/KG | 18 | 260.00 | 219.05 | 1.19 |
| BENZO(B)FLUORANTHENE | UG/KG | 21 | 510.00 | 219.05 | 2.33 |
| BENZO(B)FLUORANTHENE | UG/KG | 22 | 410.00 | 219.05 | 1.87 |
| BENZO(B)FLUORANTHENE | UG/KG | 23 | 220.00 | 219.05 | 1.00 |
| BENZO(B)FLUORANTHENE | UG/KG | 41 | 440.00 | 219.05 | 2.01 |
| BENZO(GHI)PERYLENE | UG/KG | 3 | 120.00 | 78.78 | 1.52 |
| BENZO(GHI)PERYLENE | UG/KG | 7 | 130.00 | 78.78 | 1.65 |
| BENZO(GHI)PERYLENE | UG/KG | 10 | 340.00 | 78.78 | 4.32 |
| BENZO(GHI)PERYLENE | UG/KG | 11 | 200.00 | 78.78 | 2.54 |
| BENZO(GHI)PERYLENE | UG/KG | 12 | 91.00 | 78.78 | 1.16 |
| BENZO(GHI)PERYLENE | UG/KG | 13 | 93.00 | 78.78 | 1.18 |
| BENZO(GHI)PERYLENE | UG/KG | 17 | 380.00 | 78.78 | 4.82 |
| BENZO(GHI)PERYLENE | UG/KG | 18 | 220.00 | 78.78 | 2.79 |
| BENZO(GHI)PERYLENE | UG/KG | 21 | 300.00 | 78.78 | 3.81 |
| BENZO(GHI)PERYLENE | UG/KG | 22 | 150.00 | 78.78 | 1.90 |
| BENZO(GHI)PERYLENE | UG/KG | 23 | 140.00 | 78.78 | 1.78 |
| BENZO(GHI)PERYLENE | UG/KG | 41 | 160.00 | 78.78 | 2.03 |
| BENZO(K)FLUORANTHENE | UG/KG | 3 | 310.00 | 247.31 | 1.25 |
| BENZO(K)FLUORANTHENE | UG/KG | 4 | 250.00 | 247.31 | 1.01 |
| BENZO(K)FLUORANTHENE | UG/KG | 7 | 260.00 | 247.31 | 1.05 |
| BENZO(K)FLUORANTHENE | UG/KG | 10 | 660.00 | 247.31 | 2.67 |
| BENZO(K)FLUORANTHENE | UG/KG | 11 | 370.00 | 247.31 | 1.50 |
| BENZO(K)FLUORANTHENE | UG/KG | 17 | 480.00 | 247.31 | 1.94 |
| BENZO(K)FLUORANTHENE | UG/KG | 18 | 320.00 | 247.31 | 1.29 |
| BENZO(K)FLUORANTHENE | UG/KG | 21 | 550.00 | 247.31 | 2.22 |
| BENZO(K)FLUORANTHENE | UG/KG | 22 | 300.00 | 247.31 | 1.21 |
| BENZO(K)FLUORANTHENE | UG/KG | 23 | 290.00 | 247.31 | 1.17 |
| BENZO(K)FLUORANTHENE | UG/KG | 41 | 400.00 | 247.31 | 1.62 |
| CHRYSENE | UG/KG | 7 | 150.00 | 108.61 | 1.38 |

R0063510

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Sediment Station type=Basin
(continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| CHRYSENE | UG/KG | 10 | 390.00 | 108.61 | 3.59 |
| CHRYSENE | UG/KG | 11 | 150.00 | 108.61 | 1.38 |
| CHRYSENE | UG/KG | 17 | 380.00 | 108.61 | 3.50 |
| CHRYSENE | UG/KG | 18 | 220.00 | 108.61 | 2.03 |
| CHRYSENE | UG/KG | 21 | 550.00 | 108.61 | 5.06 |
| CHRYSENE | UG/KG | 22 | 280.00 | 108.61 | 2.58 |
| CHRYSENE | UG/KG | 23 | 230.00 | 108.61 | 2.12 |
| CHRYSENE | UG/KG | 41 | 220.00 | 108.61 | 2.03 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 18 | 120.00 | 22.97 | 5.22 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 41 | 80.00 | 22.97 | 3.48 |
| FLUORANTHENE | UG/KG | 21 | 320.00 | 205.36 | 1.56 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 3 | 120.00 | 71.40 | 1.68 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 5 | 75.00 | 71.40 | 1.05 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 7 | 130.00 | 71.40 | 1.82 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 10 | 360.00 | 71.40 | 5.04 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 11 | 200.00 | 71.40 | 2.80 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 12 | 91.00 | 71.40 | 1.27 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 17 | 400.00 | 71.40 | 5.60 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 18 | 220.00 | 71.40 | 3.08 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 21 | 300.00 | 71.40 | 4.20 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 22 | 150.00 | 71.40 | 2.10 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 23 | 140.00 | 71.40 | 1.96 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 41 | 160.00 | 71.40 | 2.24 |
| PYRENE | UG/KG | 10 | 340.00 | 180.39 | 1.88 |
| PYRENE | UG/KG | 21 | 350.00 | 180.39 | 1.94 |
| ACENAPHTHYLENE | UG/KG | 1 | 25.00 | 22.97 | 1.09 |
| ACENAPHTHYLENE | UG/KG | 5 | 30.00 | 22.97 | 1.31 |
| ACENAPHTHYLENE | UG/KG | 7 | 32.00 | 22.97 | 1.39 |
| ACENAPHTHYLENE | UG/KG | 10 | 68.00 | 22.97 | 2.96 |
| ACENAPHTHYLENE | UG/KG | 11 | 37.00 | 22.97 | 1.61 |
| ACENAPHTHYLENE | UG/KG | 41 | 40.00 | 22.97 | 1.74 |
| ANTHRACENE | UG/KG | 5 | 60.00 | 55.11 | 1.09 |
| ANTHRACENE | UG/KG | 7 | 65.00 | 55.11 | 1.18 |
| ANTHRACENE | UG/KG | 10 | 160.00 | 55.11 | 2.90 |
| ANTHRACENE | UG/KG | 11 | 73.00 | 55.11 | 1.32 |
| ANTHRACENE | UG/KG | 21 | 180.00 | 55.11 | 3.27 |
| ANTHRACENE | UG/KG | 41 | 80.00 | 55.11 | 1.45 |
| PHENANTHRENE | UG/KG | 10 | 110.00 | 55.11 | 2.00 |
| PHENANTHRENE | UG/KG | 11 | 73.00 | 55.11 | 1.32 |
| PHENANTHRENE | UG/KG | 21 | 160.00 | 55.11 | 2.90 |
| PHENANTHRENE | UG/KG | 22 | 76.00 | 55.11 | 1.38 |
| PHENANTHRENE | UG/KG | 41 | 60.00 | 55.11 | 1.09 |
| PHENOL | UG/KG | 31 | 94.00 | 45.59 | 2.06 |
| ACID VOLATILE SULFIDE | MG/KG | 10 | 590.00 | 490.25 | 1.20 |
| COPPER, EXTRACTABLE | MG/KG | 3 | 110.00 | 104.41 | 1.05 |
| COPPER, EXTRACTABLE | MG/KG | 10 | 140.00 | 104.41 | 1.34 |
| COPPER, EXTRACTABLE | MG/KG | 13 | 120.00 | 104.41 | 1.15 |
| COPPER, EXTRACTABLE | MG/KG | 17 | 330.00 | 104.41 | 3.16 |

R0063511

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

---------- Type of Result=Sediment Station type=Basin ----------
(continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| COPPER, EXTRACTABLE | MG/KG | 21 | 140.00 | 104.41 | 1.34 |
| COPPER, EXTRACTABLE | MG/KG | 27 | 160.00 | 104.41 | 1.53 |
| COPPER, EXTRACTABLE | MG/KG | 41 | 120.00 | 104.41 | 1.15 |
| COPPER, EXTRACTABLE / AVS | | 4 | 22.09 | 9.21 | 2.40 |
| LEAD, EXTRACTABLE | MG/KG | 17 | 190.00 | 79.10 | 2.40 |
| LEAD, EXTRACTABLE / AVS | | 4 | 10.47 | 4.50 | 2.33 |
| MERCURY, EXTRACTABLE | MG/KG | 1 | 0.07 | 0.04 | 1.52 |
| MERCURY, EXTRACTABLE | MG/KG | 2 | 0.05 | 0.04 | 1.10 |
| MERCURY, EXTRACTABLE | MG/KG | 3 | 0.06 | 0.04 | 1.35 |
| MERCURY, EXTRACTABLE | MG/KG | 4 | 0.11 | 0.04 | 2.52 |
| MERCURY, EXTRACTABLE | MG/KG | 6 | 0.05 | 0.04 | 1.05 |
| MERCURY, EXTRACTABLE | MG/KG | 7 | 0.07 | 0.04 | 1.49 |
| MERCURY, EXTRACTABLE | MG/KG | 8 | 0.07 | 0.04 | 1.49 |
| MERCURY, EXTRACTABLE | MG/KG | 9 | 0.07 | 0.04 | 1.62 |
| MERCURY, EXTRACTABLE | MG/KG | 10 | 0.05 | 0.04 | 1.03 |
| MERCURY, EXTRACTABLE | MG/KG | 11 | 0.07 | 0.04 | 1.67 |
| MERCURY, EXTRACTABLE | MG/KG | 13 | 0.08 | 0.04 | 1.78 |
| MERCURY, EXTRACTABLE | MG/KG | 14 | 0.06 | 0.04 | 1.44 |
| MERCURY, EXTRACTABLE | MG/KG | 16 | 0.06 | 0.04 | 1.37 |
| MERCURY, EXTRACTABLE | MG/KG | 41 | 0.06 | 0.04 | 1.37 |
| MERCURY, EXTRACTABLE / AVS | | 4 | 0.03 | 0.01 | 4.90 |
| ZINC, EXTRACTABLE | MG/KG | 17 | 560.00 | 265.48 | 2.18 |
| ZINC, EXTRACTABLE / AVS | | 4 | 30.23 | 24.26 | 1.25 |
| ARSENIC, TOTAL | MG/KG | 17 | 19.00 | 15.93 | 1.19 |
| ARSENIC, TOTAL | MG/KG | 21 | 16.00 | 15.93 | 1.00 |
| ARSENIC, TOTAL | MG/KG | 22 | 17.00 | 15.93 | 1.07 |
| BERYLLIUM, TOTAL | MG/KG | 22 | 1.00 | 0.80 | 1.24 |
| CHROMIUM, TOTAL | MG/KG | 17 | 86.00 | 65.54 | 1.34 |
| CHROMIUM, TOTAL | MG/KG | 21 | 67.00 | 65.54 | 1.02 |
| CHROMIUM, TOTAL | MG/KG | 22 | 71.00 | 65.54 | 1.08 |
| COPPER, TOTAL | MG/KG | 10 | 210.00 | 192.67 | 1.09 |
| COPPER, TOTAL | MG/KG | 17 | 530.00 | 192.67 | 2.75 |
| COPPER, TOTAL | MG/KG | 21 | 220.00 | 192.67 | 1.14 |
| COPPER, TOTAL | MG/KG | 22 | 210.00 | 192.67 | 1.09 |
| COPPER, TOTAL | MG/KG | 27 | 220.00 | 192.67 | 1.14 |
| LEAD, TOTAL | MG/KG | 10 | 77.00 | 70.61 | 1.09 |
| LEAD, TOTAL | MG/KG | 17 | 180.00 | 70.61 | 2.55 |
| LEAD, TOTAL | MG/KG | 21 | 78.00 | 70.61 | 1.10 |
| LEAD, TOTAL | MG/KG | 22 | 89.00 | 70.61 | 1.26 |
| LEAD, TOTAL | MG/KG | 27 | 75.00 | 70.61 | 1.06 |
| LEAD, TOTAL | MG/KG | 41 | 74.00 | 70.61 | 1.05 |
| MERCURY, TOTAL | MG/KG | 3 | 0.85 | 0.71 | 1.19 |
| MERCURY, TOTAL | MG/KG | 4 | 0.72 | 0.71 | 1.01 |
| MERCURY, TOTAL | MG/KG | 17 | 1.80 | 0.71 | 2.52 |
| MERCURY, TOTAL | MG/KG | 21 | 0.74 | 0.71 | 1.04 |
| MERCURY, TOTAL | MG/KG | 27 | 0.87 | 0.71 | 1.22 |
| MERCURY, TOTAL | MG/KG | 41 | 1.10 | 0.71 | 1.54 |
| SILVER, TOTAL | MG/KG | 10 | 3.40 | 2.97 | 1.14 |

R0063512

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Sediment Station type=Basin (continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| SILVER, TOTAL | MG/KG | 17 | 3.80 | 2.97 | 1.28 |
| SILVER, TOTAL | MG/KG | 21 | 3.00 | 2.97 | 1.01 |
| SILVER, TOTAL | MG/KG | 22 | 3.50 | 2.97 | 1.18 |
| SILVER, TOTAL | MG/KG | 26 | 19.00 | 2.97 | 6.39 |
| SILVER, TOTAL | MG/KG | 27 | 3.40 | 2.97 | 1.14 |
| SILVER, TOTAL | MG/KG | 28 | 5.20 | 2.97 | 1.75 |
| ZINC, TOTAL | MG/KG | 17 | 480.00 | 322.34 | 1.49 |
| CLAY | PERCENT | 17 | 47.98 | 43.61 | 1.10 |
| CLAY | PERCENT | 21 | 46.36 | 43.61 | 1.06 |
| CLAY | PERCENT | 22 | 46.45 | 43.61 | 1.07 |
| CLAY | PERCENT | 27 | 46.57 | 43.61 | 1.07 |
| GRAVEL | PERCENT | 24 | 14.65 | 0.21 | 80.51 |
| MEAN GRAIN SIZE | UM | 24 | 637.84 | 102.82 | 6.20 |
| MEDIAN GRAIN SIZE | UM | 24 | 397.77 | 119.76 | 3.32 |
| MEDIAN GRAIN SIZE | UM | 32 | 151.40 | 119.76 | 1.26 |

Type of Result=Sediment Station type=Pier

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 4,4'-DDD | UG/KG | 48 | 36.00 | 24.05 | 1.50 |
| PCB-1260 | UG/KG | 47 | 340.00 | 13.21 | 25.74 |
| PCB-1260 | UG/KG | 49 | 390.00 | 13.21 | 29.52 |
| BENZO(A)ANTHRACENE | UG/KG | 43 | 1600.00 | 22.97 | 69.66 |
| BENZO(A)ANTHRACENE | UG/KG | 47 | 150.00 | 22.97 | 6.53 |
| BENZO(A)ANTHRACENE | UG/KG | 48 | 1900.00 | 22.97 | 82.72 |
| BENZO(A)ANTHRACENE | UG/KG | 49 | 500.00 | 22.97 | 21.77 |
| BENZO(A)ANTHRACENE | UG/KG | 50 | 1000.00 | 22.97 | 43.54 |
| BENZO(A)PYRENE | UG/KG | 43 | 980.00 | 175.37 | 5.59 |
| BENZO(A)PYRENE | UG/KG | 44 | 230.00 | 175.37 | 1.31 |
| BENZO(A)PYRENE | UG/KG | 45 | 240.00 | 175.37 | 1.37 |
| BENZO(A)PYRENE | UG/KG | 47 | 290.00 | 175.37 | 1.65 |
| BENZO(A)PYRENE | UG/KG | 48 | 1500.00 | 175.37 | 8.55 |
| BENZO(A)PYRENE | UG/KG | 49 | 1100.00 | 175.37 | 6.27 |
| BENZO(A)PYRENE | UG/KG | 50 | 870.00 | 175.37 | 4.96 |
| BENZO(A)PYRENE | UG/KG | 51 | 510.00 | 175.37 | 2.91 |
| BENZO(A)PYRENE | UG/KG | 52 | 430.00 | 175.37 | 2.45 |
| BENZO(B)FLUORANTHENE | UG/KG | 43 | 1300.00 | 219.05 | 5.93 |
| BENZO(B)FLUORANTHENE | UG/KG | 44 | 320.00 | 219.05 | 1.46 |
| BENZO(B)FLUORANTHENE | UG/KG | 45 | 270.00 | 219.05 | 1.23 |
| BENZO(B)FLUORANTHENE | UG/KG | 47 | 330.00 | 219.05 | 1.51 |
| BENZO(B)FLUORANTHENE | UG/KG | 48 | 1800.00 | 219.05 | 8.22 |
| BENZO(B)FLUORANTHENE | UG/KG | 49 | 1400.00 | 219.05 | 6.39 |
| BENZO(B)FLUORANTHENE | UG/KG | 50 | 1200.00 | 219.05 | 5.48 |
| BENZO(B)FLUORANTHENE | UG/KG | 51 | 620.00 | 219.05 | 2.83 |

R0063513

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Sediment Station type=Pier
(continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| BENZO(B)FLUORANTHENE | UG/KG | 52 | 540.00 | 219.05 | 2.47 |
| BENZO(GHI)PERYLENE | UG/KG | 43 | 180.00 | 78.78 | 2.28 |
| BENZO(GHI)PERYLENE | UG/KG | 44 | 200.00 | 78.78 | 2.54 |
| BENZO(GHI)PERYLENE | UG/KG | 47 | 110.00 | 78.78 | 1.40 |
| BENZO(GHI)PERYLENE | UG/KG | 48 | 440.00 | 78.78 | 5.59 |
| BENZO(GHI)PERYLENE | UG/KG | 49 | 340.00 | 78.78 | 4.32 |
| BENZO(GHI)PERYLENE | UG/KG | 50 | 220.00 | 78.78 | 2.79 |
| BENZO(GHI)PERYLENE | UG/KG | 51 | 140.00 | 78.78 | 1.78 |
| BENZO(GHI)PERYLENE | UG/KG | 52 | 140.00 | 78.78 | 1.78 |
| BENZO(K)FLUORANTHENE | UG/KG | 43 | 1100.00 | 247.31 | 4.45 |
| BENZO(K)FLUORANTHENE | UG/KG | 44 | 260.00 | 247.31 | 1.05 |
| BENZO(K)FLUORANTHENE | UG/KG | 47 | 360.00 | 247.31 | 1.46 |
| BENZO(K)FLUORANTHENE | UG/KG | 48 | 1300.00 | 247.31 | 5.26 |
| BENZO(K)FLUORANTHENE | UG/KG | 49 | 960.00 | 247.31 | 3.88 |
| BENZO(K)FLUORANTHENE | UG/KG | 50 | 870.00 | 247.31 | 3.52 |
| BENZO(K)FLUORANTHENE | UG/KG | 51 | 620.00 | 247.31 | 2.51 |
| BENZO(K)FLUORANTHENE | UG/KG | 52 | 510.00 | 247.31 | 2.06 |
| CHRYSENE | UG/KG | 43 | 1700.00 | 108.61 | 15.65 |
| CHRYSENE | UG/KG | 44 | 200.00 | 108.61 | 1.84 |
| CHRYSENE | UG/KG | 45 | 170.00 | 108.61 | 1.57 |
| CHRYSENE | UG/KG | 47 | 330.00 | 108.61 | 3.04 |
| CHRYSENE | UG/KG | 48 | 2100.00 | 108.61 | 19.34 |
| CHRYSENE | UG/KG | 49 | 820.00 | 108.61 | 7.55 |
| CHRYSENE | UG/KG | 50 | 1200.00 | 108.61 | 11.05 |
| CHRYSENE | UG/KG | 51 | 580.00 | 108.61 | 5.34 |
| CHRYSENE | UG/KG | 52 | 260.00 | 108.61 | 2.39 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 48 | 330.00 | 22.97 | 14.37 |
| DIBENZO(A,H)ANTHRACENE | UG/KG | 49 | 270.00 | 22.97 | 11.76 |
| FLUORANTHENE | UG/KG | 43 | 3600.00 | 205.36 | 17.53 |
| FLUORANTHENE | UG/KG | 47 | 250.00 | 205.36 | 1.22 |
| FLUORANTHENE | UG/KG | 48 | 4400.00 | 205.36 | 21.43 |
| FLUORANTHENE | UG/KG | 49 | 520.00 | 205.36 | 2.53 |
| FLUORANTHENE | UG/KG | 50 | 2000.00 | 205.36 | 9.74 |
| FLUORANTHENE | UG/KG | 51 | 250.00 | 205.36 | 1.22 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 43 | 220.00 | 71.40 | 3.08 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 44 | 200.00 | 71.40 | 2.80 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 47 | 110.00 | 71.40 | 1.54 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 48 | 550.00 | 71.40 | 7.70 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 49 | 360.00 | 71.40 | 5.04 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 50 | 240.00 | 71.40 | 3.36 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 51 | 180.00 | 71.40 | 2.52 |
| INDENO(1,2,3-CD)PYRENE | UG/KG | 52 | 140.00 | 71.40 | 1.96 |
| PYRENE | UG/KG | 43 | 2800.00 | 180.39 | 15.52 |
| PYRENE | UG/KG | 47 | 250.00 | 180.39 | 1.39 |
| PYRENE | UG/KG | 48 | 3300.00 | 180.39 | 18.29 |
| PYRENE | UG/KG | 49 | 2000.00 | 180.39 | 11.09 |
| PYRENE | UG/KG | 50 | 1800.00 | 180.39 | 9.98 |
| PYRENE | UG/KG | 51 | 870.00 | 180.39 | 4.82 |

R0063514

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Sediment Station type=Pier
(continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| PYRENE | UG/KG | 52 | 490.00 | 180.39 | 2.72 |
| ACENAPHTHENE | UG/KG | 43 | 180.00 | 22.97 | 7.84 |
| ACENAPHTHENE | UG/KG | 48 | 360.00 | 22.97 | 15.67 |
| ACENAPHTHYLENE | UG/KG | 48 | 500.00 | 22.97 | 21.77 |
| ACENAPHTHYLENE | UG/KG | 49 | 110.00 | 22.97 | 4.79 |
| ACENAPHTHYLENE | UG/KG | 50 | 81.00 | 22.97 | 3.53 |
| ACENAPHTHYLENE | UG/KG | 51 | 72.00 | 22.97 | 3.13 |
| ACENAPHTHYLENE | UG/KG | 52 | 29.00 | 22.97 | 1.26 |
| ANTHRACENE | UG/KG | 43 | 650.00 | 55.11 | 11.79 |
| ANTHRACENE | UG/KG | 47 | 150.00 | 55.11 | 2.72 |
| ANTHRACENE | UG/KG | 48 | 1400.00 | 55.11 | 25.40 |
| ANTHRACENE | UG/KG | 49 | 300.00 | 55.11 | 5.44 |
| ANTHRACENE | UG/KG | 50 | 1200.00 | 55.11 | 21.77 |
| ANTHRACENE | UG/KG | 51 | 290.00 | 55.11 | 5.26 |
| ANTHRACENE | UG/KG | 52 | 110.00 | 55.11 | 2.00 |
| FLUORENE | UG/KG | 48 | 550.00 | 22.97 | 23.95 |
| FLUORENE | UG/KG | 49 | 46.00 | 22.97 | 2.00 |
| FLUORENE | UG/KG | 50 | 190.00 | 22.97 | 8.27 |
| FLUORENE | UG/KG | 51 | 36.00 | 22.97 | 1.57 |
| METHYLNAPHTHALENES | UG/KG | 48 | 83.00 | 38.09 | 2.18 |
| PHENANTHRENE | UG/KG | 43 | 510.00 | 55.11 | 9.25 |
| PHENANTHRENE | UG/KG | 47 | 77.00 | 55.11 | 1.40 |
| PHENANTHRENE | UG/KG | 48 | 2700.00 | 55.11 | 48.99 |
| PHENANTHRENE | UG/KG | 49 | 250.00 | 55.11 | 4.54 |
| PHENANTHRENE | UG/KG | 50 | 810.00 | 55.11 | 14.70 |
| PHENANTHRENE | UG/KG | 51 | 250.00 | 55.11 | 4.54 |
| PHENANTHRENE | UG/KG | 52 | 86.00 | 55.11 | 1.56 |
| PHENOL | UG/KG | 47 | 210.00 | 45.59 | 4.61 |
| SULFIDE, TOTAL | MG/KG | 42 | 3600.00 | 421.37 | 8.54 |
| SULFIDE, TOTAL | MG/KG | 43 | 4400.00 | 421.37 | 10.44 |
| SULFIDE, TOTAL | MG/KG | 44 | 3800.00 | 421.37 | 9.02 |
| SULFIDE, TOTAL | MG/KG | 45 | 3800.00 | 421.37 | 9.02 |
| SULFIDE, TOTAL | MG/KG | 46 | 4100.00 | 421.37 | 9.73 |
| SULFIDE, TOTAL | MG/KG | 48 | 3900.00 | 421.37 | 9.26 |
| SULFIDE, TOTAL | MG/KG | 49 | 3000.00 | 421.37 | 7.12 |
| SULFIDE, TOTAL | MG/KG | 50 | 4900.00 | 421.37 | 11.63 |
| SULFIDE, TOTAL | MG/KG | 51 | 5400.00 | 421.37 | 12.82 |
| SULFIDE, TOTAL | MG/KG | 52 | 4300.00 | 421.37 | 10.20 |
| ACID VOLATILE SULFIDE | MG/KG | 42 | 2600.00 | 490.25 | 5.30 |
| ACID VOLATILE SULFIDE | MG/KG | 43 | 4000.00 | 490.25 | 8.16 |
| ACID VOLATILE SULFIDE | MG/KG | 44 | 2600.00 | 490.25 | 5.30 |
| ACID VOLATILE SULFIDE | MG/KG | 45 | 2200.00 | 490.25 | 4.49 |
| ACID VOLATILE SULFIDE | MG/KG | 46 | 2400.00 | 490.25 | 4.90 |
| ACID VOLATILE SULFIDE | MG/KG | 48 | 3300.00 | 490.25 | 6.73 |
| ACID VOLATILE SULFIDE | MG/KG | 49 | 3000.00 | 490.25 | 6.12 |
| ACID VOLATILE SULFIDE | MG/KG | 50 | 3800.00 | 490.25 | 7.75 |
| ACID VOLATILE SULFIDE | MG/KG | 51 | 1600.00 | 490.25 | 7.34 |
| ACID VOLATILE SULFIDE | MG/KG | 52 | 3700.00 | 490.25 | 7.55 |

R0063515

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Sediment Station type=Pier
(continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| COPPER, EXTRACTABLE | MG/KG | 43 | 220.00 | 104.41 | 2.11 |
| COPPER, EXTRACTABLE | MG/KG | 44 | 120.00 | 104.41 | 1.15 |
| COPPER, EXTRACTABLE | MG/KG | 45 | 130.00 | 104.41 | 1.25 |
| COPPER, EXTRACTABLE | MG/KG | 47 | 180.00 | 104.41 | 1.72 |
| COPPER, EXTRACTABLE | MG/KG | 48 | 300.00 | 104.41 | 2.87 |
| COPPER, EXTRACTABLE | MG/KG | 49 | 220.00 | 104.41 | 2.11 |
| COPPER, EXTRACTABLE | MG/KG | 50 | 160.00 | 104.41 | 1.53 |
| COPPER, EXTRACTABLE | MG/KG | 51 | 170.00 | 104.41 | 1.63 |
| COPPER, EXTRACTABLE | MG/KG | 52 | 170.00 | 104.41 | 1.63 |
| LEAD, EXTRACTABLE | MG/KG | 48 | 120.00 | 79.10 | 1.52 |
| LEAD, EXTRACTABLE | MG/KG | 50 | 89.00 | 79.10 | 1.13 |
| MERCURY, EXTRACTABLE | MG/KG | 42 | 0.06 | 0.04 | 1.40 |
| MERCURY, EXTRACTABLE | MG/KG | 44 | 0.09 | 0.04 | 2.01 |
| MERCURY, EXTRACTABLE | MG/KG | 45 | 0.14 | 0.04 | 3.20 |
| MERCURY, EXTRACTABLE | MG/KG | 46 | 0.08 | 0.04 | 1.88 |
| MERCURY, EXTRACTABLE | MG/KG | 47 | 0.06 | 0.04 | 1.30 |
| MERCURY, EXTRACTABLE | MG/KG | 48 | 0.11 | 0.04 | 2.52 |
| MERCURY, EXTRACTABLE | MG/KG | 49 | 0.05 | 0.04 | 1.05 |
| MERCURY, EXTRACTABLE | MG/KG | 50 | 0.05 | 0.04 | 1.24 |
| ZINC, EXTRACTABLE | MG/KG | 43 | 280.00 | 265.48 | 1.05 |
| ZINC, EXTRACTABLE | MG/KG | 48 | 410.00 | 265.48 | 1.54 |
| ZINC, EXTRACTABLE | MG/KG | 49 | 270.00 | 265.48 | 1.02 |
| ZINC, EXTRACTABLE | MG/KG | 50 | 410.00 | 265.48 | 1.54 |
| DIBUTYLTIN | UG/KG | 47 | 2.50 | 2.39 | 1.05 |
| MONOBUTYLTIN | UG/KG | 43 | 3.60 | 1.32 | 2.72 |
| BERYLLIUM, TOTAL | MG/KG | 44 | 0.88 | 0.80 | 1.10 |
| BERYLLIUM, TOTAL | MG/KG | 52 | 0.86 | 0.80 | 1.07 |
| CHROMIUM, TOTAL | MG/KG | 48 | 330.00 | 65.54 | 5.04 |
| COPPER, TOTAL | MG/KG | 43 | 260.00 | 192.67 | 1.35 |
| COPPER, TOTAL | MG/KG | 48 | 330.00 | 192.67 | 1.71 |
| COPPER, TOTAL | MG/KG | 49 | 230.00 | 192.67 | 1.19 |
| COPPER, TOTAL | MG/KG | 51 | 210.00 | 192.67 | 1.09 |
| COPPER, TOTAL | MG/KG | 52 | 260.00 | 192.67 | 1.35 |
| LEAD, TOTAL | MG/KG | 43 | 80.00 | 70.61 | 1.13 |
| LEAD, TOTAL | MG/KG | 44 | 79.00 | 70.61 | 1.12 |
| LEAD, TOTAL | MG/KG | 48 | 94.00 | 70.61 | 1.33 |
| LEAD, TOTAL | MG/KG | 49 | 77.00 | 70.61 | 1.09 |
| LEAD, TOTAL | MG/KG | 50 | 84.00 | 70.61 | 1.19 |
| LEAD, TOTAL | MG/KG | 51 | 72.00 | 70.61 | 1.02 |
| LEAD, TOTAL | MG/KG | 52 | 89.00 | 70.61 | 1.26 |
| MERCURY, TOTAL | MG/KG | 47 | 0.88 | 0.71 | 1.23 |
| SILVER, TOTAL | MG/KG | 50 | 4.10 | 2.97 | 1.38 |
| ZINC, TOTAL | MG/KG | 48 | 390.00 | 322.34 | 1.21 |
| ZINC, TOTAL | MG/KG | 50 | 620.00 | 322.34 | 1.92 |
| ZINC, TOTAL | MG/KG | 52 | 340.00 | 322.34 | 1.05 |
| CLAY | PERCENT | 43 | 51.62 | 43.61 | 1.18 |
| CLAY | PERCENT | 45 | 64.06 | 43.61 | 1.01 |
| CLAY | PERCENT | 46 | 46.36 | 43.61 | 1.06 |

R0063516

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Sediment Station type=Pier
(continued)

| Analyte name | Units | Station | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| GRAVEL | PERCENT | 42 | 14.02 | 0.21 | 67.79 |
| GRAVEL | PERCENT | 43 | 0.46 | 0.21 | 2.21 |
| GRAVEL | PERCENT | 44 | 36.77 | 0.21 | 177.82 |
| GRAVEL | PERCENT | 45 | 9.85 | 0.21 | 47.64 |
| GRAVEL | PERCENT | 46 | 15.39 | 0.21 | 74.45 |
| GRAVEL | PERCENT | 47 | 2.58 | 0.21 | 12.47 |
| GRAVEL | PERCENT | 48 | 8.10 | 0.21 | 39.16 |
| GRAVEL | PERCENT | 49 | 0.82 | 0.21 | 3.93 |
| GRAVEL | PERCENT | 50 | 29.45 | 0.21 | 142.41 |
| GRAVEL | PERCENT | 51 | 3.91 | 0.21 | 18.89 |
| GRAVEL | PERCENT | 52 | 9.00 | 0.21 | 43.54 |
| MEDIAN GRAIN SIZE | UM | 50 | 411.81 | 119.76 | 3.44 |

R0063517

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values below the Lower 95% Confidence Limit
Sorted by Parameter and Station

---------- Type of Result=Bioassay Station type=Basin ----------

| Analyte name | Units | Station | Station Value | Lower 95% Confidence Limit | Station Value/Lower 95% CL |
|---|---|---|---|---|---|
| AMPHIPOD REBURIAL | PERCENT | 1 | 0.920 | 0.926 | 0.994 |
| AMPHIPOD REBURIAL | PERCENT | 3 | 0.882 | 0.926 | 0.953 |
| AMPHIPOD REBURIAL | PERCENT | 8 | 0.920 | 0.926 | 0.994 |
| AMPHIPOD REBURIAL | PERCENT | 22 | 0.898 | 0.926 | 0.970 |
| AMPHIPOD REBURIAL | PERCENT | 28 | 0.904 | 0.926 | 0.976 |
| AMPHIPOD REBURIAL | PERCENT | 41 | 0.779 | 0.926 | 0.841 |
| AMPHIPOD SURVIVAL | PERCENT | 41 | 0.570 | 0.644 | 0.885 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 2 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 4 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 6 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 7 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 8 | 0.007 | 0.009 | 0.772 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 12 | 0.003 | 0.009 | 0.331 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 13 | 0.003 | 0.009 | 0.331 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 14 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 17 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 24 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 25 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 31 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 33 | 0.005 | 0.009 | 0.552 |
| ECHINODERM SURVIVAL | PERCENT | 2 | 0.337 | 0.640 | 0.527 |
| ECHINODERM SURVIVAL | PERCENT | 5 | 0.320 | 0.640 | 0.500 |
| ECHINODERM SURVIVAL | PERCENT | 6 | 0.520 | 0.640 | 0.813 |
| ECHINODERM SURVIVAL | PERCENT | 13 | 0.423 | 0.640 | 0.661 |
| ECHINODERM SURVIVAL | PERCENT | 17 | 0.463 | 0.640 | 0.724 |
| ECHINODERM SURVIVAL | PERCENT | 24 | 0.603 | 0.640 | 0.943 |
| ECHINODERM SURVIVAL | PERCENT | 25 | 0.507 | 0.640 | 0.792 |
| ECHINODERM SURVIVAL | PERCENT | 31 | 0.250 | 0.640 | 0.391 |
| ECHINODERM SURVIVAL | PERCENT | 33 | 0.460 | 0.640 | 0.719 |
| POLYCHAETE SURVIVAL | PERCENT | 11 | 0.880 | 0.913 | 0.966 |
| POLYCHAETE SURVIVAL | PERCENT | 21 | 0.840 | 0.913 | 0.920 |
| POLYCHAETE SURVIVAL | PERCENT | 26 | 0.840 | 0.913 | 0.920 |
| POLYCHAETE SURVIVAL | PERCENT | 32 | 0.880 | 0.913 | 0.984 |

R0063518

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values below the Lower 95% Confidence Limit
Sorted by Parameter and Station

Type of Result=Bioassay Station type=Pier

| Analyte name | Units | Station | Station Value | Lower 95% Confidence Limit | Station Value/Lower 95% CL |
|---|---|---|---|---|---|
| AMPHIPOD REBURIAL | PERCENT | 42 | 0.610 | 0.926 | 0.659 |
| AMPHIPOD REBURIAL | PERCENT | 44 | 0.246 | 0.926 | 0.266 |
| AMPHIPOD REBURIAL | PERCENT | 45 | 0.630 | 0.926 | 0.680 |
| AMPHIPOD REBURIAL | PERCENT | 46 | 0.452 | 0.926 | 0.488 |
| AMPHIPOD REBURIAL | PERCENT | 47 | 0.915 | 0.926 | 0.988 |
| AMPHIPOD REBURIAL | PERCENT | 48 | 0.538 | 0.926 | 0.581 |
| AMPHIPOD REBURIAL | PERCENT | 49 | 0.779 | 0.926 | 0.841 |
| AMPHIPOD SURVIVAL | PERCENT | 52 | 0.919 | 0.926 | 0.993 |
| AMPHIPOD SURVIVAL | PERCENT | 42 | 0.290 | 0.644 | 0.450 |
| AMPHIPOD SURVIVAL | PERCENT | 44 | 0.163 | 0.644 | 0.253 |
| AMPHIPOD SURVIVAL | PERCENT | 45 | 0.530 | 0.644 | 0.823 |
| AMPHIPOD SURVIVAL | PERCENT | 46 | 0.210 | 0.644 | 0.326 |
| AMPHIPOD SURVIVAL | PERCENT | 48 | 0.230 | 0.644 | 0.357 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 42 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 43 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 44 | 0.003 | 0.009 | 0.331 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 45 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 46 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 47 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 48 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 49 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 50 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 51 | 0.000 | 0.009 | 0.000 |
| ECHINODERM NORMAL DEVELOPMENT | PERCENT | 52 | 0.000 | 0.009 | 0.000 |
| ECHINODERM SURVIVAL | PERCENT | 42 | 0.517 | 0.640 | 0.808 |
| ECHINODERM SURVIVAL | PERCENT | 45 | 0.363 | 0.640 | 0.567 |
| ECHINODERM SURVIVAL | PERCENT | 46 | 0.507 | 0.640 | 0.792 |
| POLYCHAETE SURVIVAL | PERCENT | 47 | 0.840 | 0.913 | 0.920 |
| POLYCHAETE SURVIVAL | PERCENT | 48 | 0.760 | 0.913 | 0.833 |
| POLYCHAETE SURVIVAL | PERCENT | 49 | 0.840 | 0.913 | 0.920 |
| POLYCHAETE SURVIVAL | PERCENT | 51 | 0.880 | 0.913 | 0.964 |
| POLYCHAETE SURVIVAL | PERCENT | 52 | 0.800 | 0.913 | 0.877 |

R0063519

Type of Result=Halibut Bile Station type=Basin

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| T2 | BENZO(A)PYRENE, EQUIV | NG/L | 58.80 | 21.50 | 2.73 |
| T5 | BENZO(A)PYRENE, EQUIV | NG/L | 33.20 | 21.50 | 1.54 |
| T2 | NAPHTHALENE, EQUIV | NG/L | 695.00 | 356.54 | 1.95 |
| T5 | NAPHTHALENE, EQUIV | NG/L | 504.00 | 356.54 | 1.41 |
| T2 | PHENANTHRENE, EQUIV | NG/L | 536.00 | 285.71 | 1.88 |
| T5 | PHENANTHRENE, EQUIV | NG/L | 323.00 | 285.71 | 1.13 |
| T2 | PYRENE, EQUIV | NG/L | 469.00 | 161.06 | 2.89 |
| T8 | PYRENE, EQUIV | NG/L | 220.00 | 161.06 | 1.36 |

Type of Result=Halibut Fillet Station type=Basin

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| T1 | 4,4'-DDE | UG/KG | 200.00 | 67.19 | 2.98 |
| T1 | LIPIDS | MG/KG | 2880.00 | 2829.69 | 1.02 |
| T1 | DIBUTYLTIN | UG/KG | 1.40 | 0.50 | 2.80 |
| T4 | TRIBUTYLTIN | UG/KG | 1.40 | 0.50 | 2.80 |
| T1 | MERCURY, TOTAL | MG/KG | 0.17 | 0.17 | 1.03 |

Type of Result=White Croaker Fillet Station type=Basin

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| T5 | ENDOSULFAN II | UG/KG | 30.00 | 2.50 | 12.00 |
| T5 | ENDOSULFAN II | UG/KG | 19.00 | 2.50 | 7.60 |
| T5 | ENDOSULFAN II | UG/KG | 85.00 | 2.50 | 34.00 |
| T6 | ENDOSULFAN II | UG/KG | 18.00 | 2.50 | 7.20 |
| T6 | ENDOSULFAN II | UG/KG | 15.00 | 2.50 | 6.00 |
| T5 | ENDRIN | UG/KG | 7.40 | 2.50 | 2.96 |
| T5 | ENDRIN | UG/KG | 8.40 | 2.50 | 3.36 |
| T5 | ENDRIN | UG/KG | 8.50 | 2.50 | 3.40 |
| T5 | 4,4'-DDD | UG/KG | 57.00 | 51.46 | 1.11 |
| T7 | 4,4'-DDD | UG/KG | 81.00 | 51.46 | 1.57 |
| T5 | COPPER, TOTAL | MG/KG | 1.00 | 0.50 | 2.00 |
| T6 | COPPER, TOTAL | MG/KG | 1.00 | 0.50 | 2.00 |
| T6 | COPPER, TOTAL | MG/KG | 2.00 | 0.50 | 4.00 |
| T5 | LEAD, TOTAL | MG/KG | 4.20 | 0.25 | 16.80 |
| T5 | MERCURY, TOTAL | MG/KG | 0.07 | 0.06 | 1.10 |
| T6 | MERCURY, TOTAL | MG/KG | 0.07 | 0.06 | 1.10 |
| T7 | MERCURY, TOTAL | MG/KG | 0.07 | 0.06 | 1.10 |
| T7 | SELENIUM, TOTAL | MG/KG | 0.60 | 0.25 | 2.40 |

R0063520

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Station and Parameter

Type of Result=Halibut Whole Body Station type=Basin

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| T5 | ENDOSULFAN II | UG/KG | 13.00 | 7.77 | 1.67 |
| T5 | ENDOSULFAN II | UG/KG | 20.00 | 7.77 | 2.57 |
| T5 | 4,4'-DDE | UG/KG | 380.00 | 233.69 | 1.63 |
| T6 | 4,4'-DDE | UG/KG | 340.00 | 233.69 | 1.45 |
| T6 | LIPIDS | MG/KG | 24500.00 | 14846.80 | 1.65 |
| T6 | LIPIDS | MG/KG | 15600.00 | 14846.80 | 1.05 |
| T3 | TRIBUTYLTIN | UG/KG | 20.00 | 13.70 | 1.46 |
| T1 | ARSENIC, TOTAL | MG/KG | 0.70 | 0.65 | 1.08 |
| T3 | MERCURY, TOTAL | MG/KG | 0.05 | 0.04 | 1.16 |
| T5 | MERCURY, TOTAL | MG/KG | 0.05 | 0.04 | 1.16 |
| T5 | MERCURY, TOTAL | MG/KG | 0.05 | 0.04 | 1.16 |
| T3 | SELENIUM, TOTAL | MG/KG | 0.90 | 0.25 | 3.60 |

Type of Result=White Croaker Whole Body Station type=Basin

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| T7 | ALPHA-BHC (HCH) | UG/KG | 5.70 | 2.50 | 2.28 |
| T4 | ENDOSULFAN II | UG/KG | 35.00 | 31.99 | 1.09 |
| T3 | ENDRIN | UG/KG | 5.40 | 2.50 | 2.16 |
| T4 | ENDRIN | UG/KG | 33.00 | 2.50 | 13.20 |
| T6 | ENDRIN | UG/KG | 7.50 | 2.50 | 3.00 |
| T7 | 4,4'-DDD | UG/KG | 72.00 | 61.74 | 1.17 |
| T4 | 4,4'-DDE | UG/KG | 1000.00 | 669.07 | 1.49 |
| T7 | 4,4'-DDE | UG/KG | 750.00 | 669.07 | 1.12 |
| T3 | DIBUTYLTIN | UG/KG | 1.00 | 0.50 | 2.00 |
| T4 | DIBUTYLTIN | UG/KG | 1.10 | 0.50 | 2.20 |
| T4 | DIBUTYLTIN | UG/KG | 3.80 | 0.50 | 7.60 |
| T4 | DIBUTYLTIN | UG/KG | 3.30 | 0.50 | 6.60 |
| T5 | DIBUTYLTIN | UG/KG | 1.40 | 0.50 | 2.80 |
| T5 | DIBUTYLTIN | UG/KG | 1.60 | 0.50 | 3.20 |
| T6 | DIBUTYLTIN | UG/KG | 1.70 | 0.50 | 3.40 |
| T6 | DIBUTYLTIN | UG/KG | 1.60 | 0.50 | 3.20 |
| T7 | DIBUTYLTIN | UG/KG | 1.50 | 0.50 | 3.00 |
| T7 | DIBUTYLTIN | UG/KG | 4.10 | 0.50 | 8.20 |
| T3 | TRIBUTYLTIN | UG/KG | 6.90 | 6.53 | 1.06 |
| T4 | TRIBUTYLTIN | UG/KG | 11.00 | 6.53 | 1.68 |
| T4 | TRIBUTYLTIN | UG/KG | 16.00 | 6.53 | 2.45 |
| T4 | TRIBUTYLTIN | UG/KG | 7.70 | 6.53 | 1.18 |
| T4 | TRIBUTYLTIN | UG/KG | 7.90 | 6.53 | 1.21 |
| T4 | TRIBUTYLTIN | UG/KG | 11.00 | 6.53 | 1.68 |
| T5 | TRIBUTYLTIN | UG/KG | 13.00 | 6.53 | 1.99 |
| T5 | TRIBUTYLTIN | UG/KG | 11.00 | 6.53 | 1.68 |
| T6 | TRIBUTYLTIN | UG/KG | 12.00 | 6.53 | 1.84 |
| T6 | TRIBUTYLTIN | UG/KG | 12.00 | 6.53 | 1.84 |
| T7 | TRIBUTYLTIN | UG/KG | 8.60 | 6.53 | 1.32 |

R0063521

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Station and Parameter

Type of Result=White Croaker Whole Body Station type=Basin
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| T7 | TRIBUTYLTIN | UG/KG | 17.00 | 6.53 | 2.60 |
| T3 | ARSENIC, TOTAL | MG/KG | 1.40 | 1.37 | 1.02 |
| T4 | ARSENIC, TOTAL | MG/KG | 1.40 | 1.37 | 1.02 |
| T4 | ARSENIC, TOTAL | MG/KG | 1.40 | 1.37 | 1.02 |
| T4 | ARSENIC, TOTAL | MG/KG | 1.50 | 1.37 | 1.09 |
| T4 | ARSENIC, TOTAL | MG/KG | 1.50 | 1.37 | 1.09 |
| T5 | ARSENIC, TOTAL | MG/KG | 1.80 | 1.37 | 1.31 |
| T4 | BERYLLIUM, TOTAL | MG/KG | 0.10 | 0.05 | 2.00 |
| T4 | CHROMIUM, TOTAL | MG/KG | 0.70 | 0.25 | 2.80 |
| T4 | CHROMIUM, TOTAL | MG/KG | 0.50 | 0.25 | 2.00 |
| T3 | CHROMIUM, TOTAL | MG/KG | 0.70 | 0.25 | 2.80 |
| T4 | COPPER, TOTAL | MG/KG | 3.00 | 2.19 | 1.37 |
| T4 | COPPER, TOTAL | MG/KG | 6.00 | 2.19 | 1.82 |
| T4 | COPPER, TOTAL | MG/KG | 4.00 | 2.19 | 1.82 |
| T4 | COPPER, TOTAL | MG/KG | 3.00 | 2.19 | 1.37 |
| T7 | COPPER, TOTAL | MG/KG | 4.00 | 2.19 | 1.82 |
| T7 | COPPER, TOTAL | MG/KG | 3.00 | 2.19 | 1.37 |
| T3 | MERCURY, TOTAL | MG/KG | 3.00 | 2.19 | 1.37 |
| T4 | MERCURY, TOTAL | MG/KG | 0.14 | 0.09 | 1.60 |
| T4 | SELENIUM, TOTAL | MG/KG | 0.09 | 0.09 | 1.03 |
| T4 | SELENIUM, TOTAL | MG/KG | 1.00 | 0.90 | 1.11 |
| T4 | SELENIUM, TOTAL | MG/KG | 1.00 | 0.90 | 1.11 |
| T4 | SELENIUM, TOTAL | MG/KG | 0.90 | 0.90 | 1.00 |
| T5 | SELENIUM, TOTAL | MG/KG | 0.90 | 0.90 | 1.00 |
| T7 | SELENIUM, TOTAL | MG/KG | 0.90 | 0.90 | 1.00 |
| T7 | SELENIUM, TOTAL | MG/KG | 0.90 | 0.90 | 1.00 |
| | | | 1.30 | 0.90 | 1.45 |

R0063522

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidance Limit
Sorted by Station and Parameter

Type of Result=Sediment Station type=Basin

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 1 | LINDANE (GAMMA-BHC) | UG/KG | 0.63 | 0.59 | 1.07 |
| 1 | PCB-1260 | UG/KG | 170.00 | 13.21 | 12.87 |
| 1 | BENZO(A)ANTHRACENE | UG/KG | 38.33 | 22.97 | 1.67 |
| 1 | ACENAPHTHYLENE | UG/KG | 25.00 | 22.97 | 1.09 |
| 1 | MERCURY, EXTRACTABLE | MG/KG | 0.07 | 0.04 | 1.52 |
| 2 | PCB-1260 | UG/KG | 290.00 | 13.21 | 21.95 |
| 2 | MERCURY, EXTRACTABLE | MG/KG | 0.05 | 0.04 | 1.10 |
| 3 | PCB-1260 | UG/KG | 240.00 | 13.21 | 18.17 |
| 3 | BENZO(A)ANTHRACENE | UG/KG | 59.00 | 22.97 | 2.57 |
| 3 | BENZO(A)PYRENE | UG/KG | 200.00 | 175.37 | 1.14 |
| 3 | BENZO(B)FLUORANTHENE | UG/KG | 240.00 | 219.05 | 1.10 |
| 3 | BENZO(GHI)PERYLENE | UG/KG | 120.00 | 78.78 | 1.52 |
| 3 | BENZO(K)FLUORANTHENE | UG/KG | 310.00 | 247.31 | 1.25 |
| 3 | INDENO(1,2,3-CD)PYRENE | UG/KG | 120.00 | 71.40 | 1.68 |
| 3 | COPPER, EXTRACTABLE | MG/KG | 110.00 | 104.41 | 1.05 |
| 3 | MERCURY, EXTRACTABLE | MG/KG | 0.06 | 0.04 | 1.35 |
| 3 | MERCURY, TOTAL | MG/KG | 0.85 | 0.71 | 1.19 |
| 4 | PCB-1260 | UG/KG | 250.00 | 13.21 | 18.92 |
| 4 | BENZO(A)PYRENE | UG/KG | 220.00 | 175.37 | 1.25 |
| 4 | BENZO(B)FLUORANTHENE | UG/KG | 320.00 | 219.05 | 1.46 |
| 4 | BENZO(K)FLUORANTHENE | UG/KG | 250.00 | 247.31 | 1.01 |
| 4 | COPPER, EXTRACTABLE / AVS | | 22.09 | 9.21 | 2.40 |
| 4 | LEAD, EXTRACTABLE / AVS | | 10.47 | 4.50 | 2.33 |
| 4 | MERCURY, EXTRACTABLE | MG/KG | 0.11 | 0.04 | 2.52 |
| 4 | MERCURY, EXTRACTABLE / AVS | | 0.03 | 0.01 | 4.90 |
| 4 | ZINC, EXTRACTABLE / AVS | | 30.23 | 24.26 | 1.25 |
| 4 | MERCURY, TOTAL | MG/KG | 0.72 | 0.71 | 1.01 |
| 5 | PCB-1260 | UG/KG | 67.00 | 13.21 | 5.07 |
| 5 | BENZO(A)ANTHRACENE | UG/KG | 60.00 | 22.97 | 2.61 |
| 5 | INDENO(1,2,3-CD)PYRENE | UG/KG | 75.00 | 71.40 | 1.05 |
| 5 | ACENAPHTHYLENE | UG/KG | 30.00 | 22.97 | 1.31 |
| 5 | ANTHRACENE | UG/KG | 60.00 | 55.11 | 1.09 |
| 6 | PCB-1260 | UG/KG | 110.00 | 13.21 | 8.33 |
| 6 | BENZO(A)ANTHRACENE | UG/KG | 46.00 | 22.97 | 2.00 |
| 6 | MERCURY, EXTRACTABLE | MG/KG | 0.05 | 0.04 | 1.05 |
| 7 | PCB-1260 | UG/KG | 150.00 | 13.21 | 11.35 |
| 7 | BENZO(A)ANTHRACENE | UG/KG | 65.00 | 22.97 | 2.83 |
| 7 | BENZO(A)PYRENE | UG/KG | 180.00 | 175.37 | 1.03 |
| 7 | BENZO(GHI)PERYLENE | UG/KG | 130.00 | 78.78 | 1.65 |
| 7 | BENZO(K)FLUORANTHENE | UG/KG | 260.00 | 247.31 | 1.05 |
| 7 | CHRYSENE | UG/KG | 150.00 | 108.61 | 1.38 |
| 7 | INDENO(1,2,3-CD)PYRENE | UG/KG | 130.00 | 71.40 | 1.82 |
| 7 | ACENAPHTHYLENE | UG/KG | 32.00 | 22.97 | 1.39 |
| 7 | ANTHRACENE | UG/KG | 65.00 | 55.11 | 1.18 |
| 7 | MERCURY, EXTRACTABLE | MG/KG | 0.07 | 0.04 | 1.49 |
| 8 | PCB-1260 | UG/KG | 97.00 | 13.21 | 7.34 |
| 8 | MERCURY, EXTRACTABLE | MG/KG | 0.07 | 0.04 | 1.49 |
| 9 | PCB-1260 | UG/KG | 150.00 | 13.21 | 11.35 |
| 9 | MERCURY, EXTRACTABLE | MG/KG | 0.07 | 0.04 | 1.62 |

R0063523

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Station and Parameter



Type of Result=Sediment Station type=Basin
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 10 | LINDANE (GAMMA-BHC) | UG/KG | 6.80 | 0.59 | 11.56 |
| 10 | PCB-1260 | UG/KG | 840.00 | 13.21 | 60.87 |
| 10 | BENZO(A)ANTHRACENE | UG/KG | 200.00 | 22.97 | 8.71 |
| 10 | BENZO(A)PYRENE | UG/KG | 540.00 | 175.37 | 3.08 |
| 10 | BENZO(B)FLUORANTHENE | UG/KG | 500.00 | 219.05 | 2.28 |
| 10 | BENZO(GHI)PERYLENE | UG/KG | 340.00 | 78.78 | 4.32 |
| 10 | BENZO(K)FLUORANTHENE | UG/KG | 660.00 | 247.31 | 2.67 |
| 10 | CHRYSENE | UG/KG | 390.00 | 108.61 | 3.59 |
| 10 | INDENO(1,2,3-CD)PYRENE | UG/KG | 360.00 | 71.40 | 5.04 |
| 10 | PYRENE | UG/KG | 340.00 | 180.39 | 1.88 |
| 10 | ACENAPHTHYLENE | UG/KG | 68.00 | 22.97 | 2.96 |
| 10 | ANTHRACENE | UG/KG | 160.00 | 55.11 | 2.90 |
| 10 | PHENANTHRENE | UG/KG | 110.00 | 55.11 | 2.00 |
| 10 | ACID VOLATILE SULFIDE | MG/KG | 590.00 | 490.25 | 1.20 |
| 10 | COPPER, EXTRACTABLE | MG/KG | 140.00 | 104.41 | 1.34 |
| 10 | MERCURY, EXTRACTABLE | MG/KG | 0.05 | 0.04 | 1.03 |
| 10 | COPPER, TOTAL | MG/KG | 210.00 | 192.67 | 1.09 |
| 10 | LEAD, TOTAL | MG/KG | 77.00 | 70.61 | 1.09 |
| 10 | SILVER, TOTAL | MG/KG | 3.40 | 2.97 | 1.14 |
| 11 | PCB-1260 | UG/KG | 310.00 | 13.21 | 23.46 |
| 11 | BENZO(A)ANTHRACENE | UG/KG | 92.00 | 22.97 | 4.01 |
| 11 | BENZO(A)PYRENE | UG/KG | 310.00 | 175.37 | 1.77 |
| 11 | BENZO(B)FLUORANTHENE | UG/KG | 370.00 | 219.05 | 1.69 |
| 11 | BENZO(GHI)PERYLENE | UG/KG | 200.00 | 78.78 | 2.54 |
| 11 | BENZO(K)FLUORANTHENE | UG/KG | 370.00 | 247.31 | 1.50 |
| 11 | CHRYSENE | UG/KG | 150.00 | 108.61 | 1.38 |
| 11 | INDENO(1,2,3-CD)PYRENE | UG/KG | 200.00 | 71.40 | 2.80 |
| 11 | ACENAPHTHYLENE | UG/KG | 37.00 | 22.97 | 1.61 |
| 11 | ANTHRACENE | UG/KG | 73.00 | 55.11 | 1.32 |
| 11 | PHENANTHRENE | UG/KG | 73.00 | 55.11 | 1.32 |
| 11 | MERCURY, EXTRACTABLE | MG/KG | 0.07 | 0.04 | 1.67 |
| 12 | PCB-1260 | UG/KG | 110.00 | 13.21 | 8.33 |
| 12 | BENZO(A)ANTHRACENE | UG/KG | 36.00 | 22.97 | 1.57 |
| 12 | BENZO(GHI)PERYLENE | UG/KG | 91.00 | 78.78 | 1.16 |
| 12 | INDENO(1,2,3-CD)PYRENE | UG/KG | 91.00 | 71.40 | 1.27 |
| 13 | PCB-1260 | UG/KG | 370.00 | 13.21 | 28.01 |
| 13 | BENZO(GHI)PERYLENE | UG/KG | 93.00 | 78.78 | 1.18 |
| 13 | COPPER, EXTRACTABLE | MG/KG | 120.00 | 104.41 | 1.15 |
| 13 | MERCURY, EXTRACTABLE | MG/KG | 0.08 | 0.04 | 1.78 |
| 14 | PCB-1260 | UG/KG | 63.00 | 13.21 | 4.77 |
| 14 | BENZO(A)ANTHRACENE | UG/KG | 32.00 | 22.97 | 1.39 |
| 14 | MERCURY, EXTRACTABLE | MG/KG | 0.06 | 0.04 | 1.44 |
| 15 | PCB-1260 | UG/KG | 120.00 | 13.21 | 9.08 |
| 16 | 4,4'-DDD | UG/KG | 42.00 | 24.05 | 1.75 |
| 16 | 4,4'-DDT | UG/KG | 34.00 | 0.59 | 57.71 |
| 16 | PCB-1260 | UG/KG | 150.00 | 13.21 | 11.35 |
| 16 | MERCURY, EXTRACTABLE | MG/KG | 0.06 | 0.04 | 1.37 |
| 17 | 4,4'-DDD | UG/KG | 33.00 | 24.05 | 1.37 |

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Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Station and Parameter

Type of Result=Sediment Station type=Basin
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 17 | PCB-1260 | UG/KG | 880.00 | 13.21 | 66.61 |
| 17 | BENZO(A)ANTHRACENE | UG/KG | 150.00 | 22.97 | 6.53 |
| 17 | BENZO(A)PYRENE | UG/KG | 500.00 | 175.37 | 2.85 |
| 17 | BENZO(B)FLUORANTHENE | UG/KG | 680.00 | 219.05 | 3.10 |
| 17 | BENZO(GHI)PERYLENE | UG/KG | 380.00 | 78.78 | 4.82 |
| 17 | BENZO(K)FLUORANTHENE | UG/KG | 460.00 | 247.31 | 1.94 |
| 17 | CHRYSENE | UG/KG | 380.00 | 108.61 | 3.50 |
| 17 | INDENO(1,2,3-CD)PYRENE | UG/KG | 400.00 | 71.40 | 5.60 |
| 17 | COPPER, EXTRACTABLE | MG/KG | 330.00 | 104.41 | 3.16 |
| 17 | LEAD, EXTRACTABLE | MG/KG | 190.00 | 79.10 | 2.40 |
| 17 | ZINC, EXTRACTABLE | MG/KG | 580.00 | 265.48 | 2.18 |
| 17 | ARSENIC, TOTAL | MG/KG | 19.00 | 15.93 | 1.19 |
| 17 | CHROMIUM, TOTAL | MG/KG | 88.00 | 65.54 | 1.34 |
| 17 | COPPER, TOTAL | MG/KG | 530.00 | 192.67 | 2.75 |
| 17 | LEAD, TOTAL | MG/KG | 180.00 | 70.61 | 2.55 |
| 17 | MERCURY, TOTAL | MG/KG | 1.80 | 0.71 | 2.52 |
| 17 | SILVER, TOTAL | MG/KG | 3.80 | 2.97 | 1.28 |
| 17 | ZINC, TOTAL | MG/KG | 480.00 | 322.34 | 1.49 |
| 17 | CLAY | PERCENT | 47.98 | 43.61 | 1.10 |
| 18 | PCB-1260 | UG/KG | 200.00 | 13.21 | 15.14 |
| 18 | BENZO(A)ANTHRACENE | UG/KG | 120.00 | 22.97 | 5.22 |
| 18 | BENZO(A)PYRENE | UG/KG | 240.00 | 175.37 | 1.37 |
| 18 | BENZO(B)FLUORANTHENE | UG/KG | 260.00 | 219.05 | 1.19 |
| 18 | BENZO(GHI)PERYLENE | UG/KG | 220.00 | 78.78 | 2.79 |
| 18 | BENZO(K)FLUORANTHENE | UG/KG | 320.00 | 247.31 | 1.29 |
| 18 | CHRYSENE | UG/KG | 220.00 | 108.61 | 2.03 |
| 18 | DIBENZO(A,H)ANTHRACENE | UG/KG | 120.00 | 22.97 | 5.22 |
| 18 | INDENO(1,2,3-CD)PYRENE | UG/KG | 220.00 | 71.40 | 3.08 |
| 19 | PCB-1260 | UG/KG | 56.00 | 13.21 | 4.24 |
| 20 | PCB-1260 | UG/KG | 75.00 | 13.21 | 5.68 |
| 21 | PCB-1260 | UG/KG | 230.00 | 13.21 | 17.41 |
| 21 | BENZO(A)ANTHRACENE | UG/KG | 280.00 | 22.97 | 12.19 |
| 21 | BENZO(A)PYRENE | UG/KG | 440.00 | 175.37 | 2.51 |
| 21 | BENZO(B)FLUORANTHENE | UG/KG | 510.00 | 219.05 | 2.33 |
| 21 | BENZO(GHI)PERYLENE | UG/KG | 300.00 | 78.78 | 3.81 |
| 21 | BENZO(K)FLUORANTHENE | UG/KG | 550.00 | 247.31 | 2.22 |
| 21 | CHRYSENE | UG/KG | 550.00 | 108.61 | 5.06 |
| 21 | FLUORANTHENE | UG/KG | 320.00 | 205.36 | 1.56 |
| 21 | INDENO(1,2,3-CD)PYRENE | UG/KG | 300.00 | 71.40 | 4.20 |
| 21 | PYRENE | UG/KG | 350.00 | 180.39 | 1.94 |
| 21 | ANTHRACENE | UG/KG | 180.00 | 55.11 | 3.27 |
| 21 | PHENANTHRENE | UG/KG | 160.00 | 55.11 | 2.90 |
| 21 | COPPER, EXTRACTABLE | MG/KG | 140.00 | 104.41 | 1.34 |
| 21 | ARSENIC, TOTAL | MG/KG | 16.00 | 15.93 | 1.00 |
| 21 | CHROMIUM, TOTAL | MG/KG | 67.00 | 65.54 | 1.02 |
| 21 | COPPER, TOTAL | MG/KG | 220.00 | 192.67 | 1.14 |
| 21 | LEAD, TOTAL | MG/KG | 78.00 | 70.61 | 1.10 |
| 21 | MERCURY, TOTAL | MG/KG | 0.74 | 0.71 | 1.04 |

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Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Station and Parameter

Type of Result=Sediment Station type=Basin
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 21 | SILVER, TOTAL | MG/KG | 3.00 | 2.97 | 1.01 |
| 21 | CLAY | PERCENT | 46.36 | 43.61 | 1.06 |
| 22 | PCB-1260 | UG/KG | 410.00 | 13.21 | 31.03 |
| 22 | BENZO(A)ANTHRACENE | UG/KG | 130.00 | 22.97 | 5.66 |
| 22 | BENZO(A)PYRENE | UG/KG | 300.00 | 175.37 | 1.71 |
| 22 | BENZO(B)FLUORANTHENE | UG/KG | 410.00 | 219.05 | 1.87 |
| 22 | BENZO(GHI)PERYLENE | UG/KG | 150.00 | 78.78 | 1.90 |
| 22 | BENZO(K)FLUORANTHENE | UG/KG | 300.00 | 247.31 | 1.21 |
| 22 | CHRYSENE | UG/KG | 280.00 | 108.61 | 2.58 |
| 22 | INDENO(1,2,3-CD)PYRENE | UG/KG | 150.00 | 71.40 | 2.10 |
| 22 | PHENANTHRENE | UG/KG | 76.00 | 55.11 | 1.38 |
| 22 | ARSENIC, TOTAL | MG/KG | 17.00 | 15.93 | 1.07 |
| 22 | BERYLLIUM, TOTAL | MG/KG | 1.00 | 0.80 | 1.24 |
| 22 | CHROMIUM, TOTAL | MG/KG | 71.00 | 65.54 | 1.08 |
| 22 | COPPER, TOTAL | MG/KG | 210.00 | 192.67 | 1.09 |
| 22 | LEAD, TOTAL | MG/KG | 89.00 | 70.61 | 1.26 |
| 22 | SILVER, TOTAL | MG/KG | 3.50 | 2.97 | 1.18 |
| 22 | CLAY | PERCENT | 46.45 | 43.61 | 1.07 |
| 23 | PCB-1260 | UG/KG | 160.00 | 13.21 | 12.11 |
| 23 | BENZO(A)ANTHRACENE | UG/KG | 110.00 | 22.97 | 4.79 |
| 23 | BENZO(A)PYRENE | UG/KG | 180.00 | 175.37 | 1.03 |
| 23 | BENZO(B)FLUORANTHENE | UG/KG | 220.00 | 219.05 | 1.00 |
| 23 | BENZO(GHI)PERYLENE | UG/KG | 140.00 | 78.78 | 1.78 |
| 23 | BENZO(K)FLUORANTHENE | UG/KG | 290.00 | 247.31 | 1.17 |
| 23 | CHRYSENE | UG/KG | 230.00 | 108.61 | 2.12 |
| 23 | INDENO(1,2,3-CD)PYRENE | UG/KG | 140.00 | 71.40 | 1.96 |
| 24 | GRAVEL | PERCENT | 16.65 | 0.21 | 80.51 |
| 24 | MEAN GRAIN SIZE | UN | 637.84 | 102.82 | 6.20 |
| 24 | MEDIAN GRAIN SIZE | UN | 397.77 | 119.76 | 3.32 |
| 26 | LINDANE (GAMMA-BHC) | UG/KG | 2.50 | 0.59 | 4.24 |
| 26 | PCB-1260 | UG/KG | 130.00 | 13.21 | 9.84 |
| 26 | BENZO(A)ANTHRACENE | UG/KG | 38.00 | 22.97 | 1.65 |
| 26 | SILVER, TOTAL | MG/KG | 19.00 | 2.97 | 6.39 |
| 27 | PCB-1260 | UG/KG | 430.00 | 13.21 | 32.55 |
| 27 | COPPER, EXTRACTABLE | MG/KG | 160.00 | 104.41 | 1.53 |
| 27 | COPPER, TOTAL | MG/KG | 220.00 | 192.67 | 1.14 |
| 27 | LEAD, TOTAL | MG/KG | 75.00 | 70.61 | 1.06 |
| 27 | MERCURY, TOTAL | MG/KG | 0.87 | 0.71 | 1.22 |
| 27 | SILVER, TOTAL | MG/KG | 3.40 | 2.97 | 1.14 |
| 27 | CLAY | PERCENT | 46.57 | 43.61 | 1.07 |
| 28 | ALDRIN | UG/KG | 2.30 | 0.59 | 3.90 |
| 28 | PCB-1260 | UG/KG | 140.00 | 13.21 | 10.60 |
| 28 | SILVER, TOTAL | MG/KG | 5.20 | 2.97 | 1.75 |
| 30 | PCB-1260 | UG/KG | 91.00 | 13.21 | 3.86 |
| 31 | PHENOL | UG/KG | 94.00 | 45.59 | 2.06 |
| 32 | MEDIAN GRAIN SIZE | UN | 151.40 | 119.76 | 1.26 |
| 33 | PCB-1260 | UG/KG | 31.00 | 13.21 | 2.35 |
| 41 | PCB-1260 | UG/KG | 220.00 | 13.21 | 16.65 |

R0063526

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Station and Parameter

Type of Result=Sediment Station type=Basin
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 41 | BENZO(A)ANTHRACENE | UG/KG | 140.00 | 22.97 | 6.10 |
| 41 | BENZO(A)PYRENE | UG/KG | 340.00 | 175.37 | 1.94 |
| 41 | BENZO(B)FLUORANTHENE | UG/KG | 440.00 | 219.05 | 2.01 |
| 41 | BENZO(GHI)PERYLENE | UG/KG | 160.00 | 78.78 | 2.03 |
| 41 | BENZO(K)FLUORANTHENE | UG/KG | 400.00 | 247.31 | 1.62 |
| 41 | CHRYSENE | UG/KG | 220.00 | 108.61 | 2.03 |
| 41 | DIBENZO(A,H)ANTHRACENE | UG/KG | 80.00 | 22.97 | 3.48 |
| 41 | INDENO(1,2,3-CD)PYRENE | UG/KG | 160.00 | 71.40 | 2.24 |
| 41 | ACENAPHTHYLENE | UG/KG | 40.00 | 22.97 | 1.74 |
| 41 | ANTHRACENE | UG/KG | 80.00 | 55.11 | 1.45 |
| 41 | PHENANTHRENE | UG/KG | 60.00 | 55.11 | 1.09 |
| 41 | COPPER, EXTRACTABLE | MG/KG | 120.00 | 104.41 | 1.15 |
| 41 | MERCURY, EXTRACTABLE | MG/KG | 0.06 | 0.04 | 1.37 |
| 41 | LEAD, TOTAL | MG/KG | 74.00 | 70.61 | 1.05 |
| 41 | MERCURY, TOTAL | MG/KG | 1.10 | 0.71 | 1.56 |

Type of Result=Sediment Station type=Pier

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 42 | SULFIDE, TOTAL | MG/KG | 3600.00 | 421.37 | 8.54 |
| 42 | ACID VOLATILE SULFIDE | MG/KG | 2600.00 | 490.25 | 5.30 |
| 42 | MERCURY, EXTRACTABLE | MG/KG | 0.06 | 0.04 | 1.40 |
| 42 | GRAVEL | PERCENT | 14.08 | 0.21 | 67.79 |
| 43 | BENZO(A)ANTHRACENE | UG/KG | 1600.00 | 22.97 | 69.66 |
| 43 | BENZO(A)PYRENE | UG/KG | 980.00 | 175.37 | 5.59 |
| 43 | BENZO(B)FLUORANTHENE | UG/KG | 1300.00 | 219.05 | 5.93 |
| 43 | BENZO(GHI)PERYLENE | UG/KG | 180.00 | 78.78 | 2.28 |
| 43 | BENZO(K)FLUORANTHENE | UG/KG | 1100.00 | 247.31 | 4.45 |
| 43 | CHRYSENE | UG/KG | 1700.00 | 108.61 | 15.65 |
| 43 | FLUORANTHENE | UG/KG | 3600.00 | 205.36 | 17.53 |
| 43 | INDENO(1,2,3-CD)PYRENE | UG/KG | 220.00 | 71.40 | 3.08 |
| 43 | PYRENE | UG/KG | 2800.00 | 180.39 | 15.52 |
| 43 | ACENAPHTHENE | UG/KG | 180.00 | 22.97 | 7.84 |
| 43 | ANTHRACENE | UG/KG | 650.00 | 55.11 | 11.79 |
| 43 | PHENANTHRENE | UG/KG | 510.00 | 55.11 | 9.25 |
| 43 | SULFIDE, TOTAL | MG/KG | 4400.00 | 421.37 | 10.44 |
| 43 | ACID VOLATILE SULFIDE | MG/KG | 4000.00 | 490.25 | 8.16 |
| 43 | COPPER, EXTRACTABLE | MG/KG | 220.00 | 104.41 | 2.11 |
| 43 | ZINC, EXTRACTABLE | MG/KG | 280.00 | 265.48 | 1.05 |
| 43 | MONOBUTYLTIN | UG/KG | 3.60 | 1.32 | 2.72 |
| 43 | COPPER, TOTAL | MG/KG | 260.00 | 192.67 | 1.35 |
| 43 | LEAD, TOTAL | MG/KG | 80.00 | 70.61 | 1.13 |
| 43 | CLAY | PERCENT | 51.62 | 43.61 | 1.18 |
| 43 | GRAVEL | PERCENT | 0.46 | 0.21 | 2.21 |

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Type of Result=Sediment Station type=Pier
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 44 | BENZO(A)PYRENE | UG/KG | 230.00 | 175.37 | 1.31 |
| 44 | BENZO(B)FLUORANTHENE | UG/KG | 320.00 | 219.05 | 1.46 |
| 44 | BENZO(GHI)PERYLENE | UG/KG | 200.00 | 78.78 | 2.54 |
| 44 | BENZO(K)FLUORANTHENE | UG/KG | 260.00 | 247.31 | 1.05 |
| 44 | CHRYSENE | UG/KG | 200.00 | 108.61 | 1.84 |
| 44 | INDENO(1,2,3-CD)PYRENE | UG/KG | 200.00 | 71.40 | 2.80 |
| 44 | SULFIDE, TOTAL | MG/KG | 3800.00 | 421.37 | 9.02 |
| 44 | ACID VOLATILE SULFIDE | MG/KG | 2600.00 | 490.25 | 5.30 |
| 44 | COPPER, EXTRACTABLE | MG/KG | 120.00 | 104.41 | 1.18 |
| 44 | MERCURY, EXTRACTABLE | MG/KG | 0.09 | 0.04 | 2.01 |
| 44 | BERYLLIUM, TOTAL | MG/KG | 0.88 | 0.80 | 1.10 |
| 44 | LEAD, TOTAL | MG/KG | 79.00 | 70.61 | 1.12 |
| 44 | GRAVEL | PERCENT | 36.77 | 0.21 | 177.82 |
| 45 | BENZO(A)PYRENE | UG/KG | 240.00 | 175.37 | 1.37 |
| 45 | BENZO(B)FLUORANTHENE | UG/KG | 270.00 | 219.05 | 1.23 |
| 45 | CHRYSENE | UG/KG | 170.00 | 108.61 | 1.57 |
| 45 | SULFIDE, TOTAL | MG/KG | 3800.00 | 421.37 | 9.02 |
| 45 | ACID VOLATILE SULFIDE | MG/KG | 2200.00 | 490.25 | 4.49 |
| 45 | COPPER, EXTRACTABLE | MG/KG | 130.00 | 104.41 | 1.25 |
| 45 | MERCURY, EXTRACTABLE | MG/KG | 0.14 | 0.04 | 3.20 |
| 45 | CLAY | PERCENT | 44.06 | 43.61 | 1.01 |
| 45 | GRAVEL | PERCENT | 9.85 | 0.21 | 47.64 |
| 46 | SULFIDE, TOTAL | MG/KG | 4100.00 | 421.37 | 9.73 |
| 46 | ACID VOLATILE SULFIDE | MG/KG | 2400.00 | 490.25 | 4.90 |
| 46 | MERCURY, EXTRACTABLE | MG/KG | 0.08 | 0.04 | 1.88 |
| 46 | CLAY | PERCENT | 46.36 | 43.61 | 1.06 |
| 46 | GRAVEL | PERCENT | 15.39 | 0.21 | 74.45 |
| 47 | PCB-1260 | UG/KG | 340.00 | 13.21 | 25.74 |
| 47 | BENZO(A)ANTHRACENE | UG/KG | 150.00 | 22.97 | 6.53 |
| 47 | BENZO(A)PYRENE | UG/KG | 290.00 | 175.37 | 1.65 |
| 47 | BENZO(B)FLUORANTHENE | UG/KG | 330.00 | 219.05 | 1.51 |
| 47 | BENZO(GHI)PERYLENE | UG/KG | 110.00 | 78.78 | 1.40 |
| 47 | BENZO(K)FLUORANTHENE | UG/KG | 360.00 | 247.31 | 1.46 |
| 47 | CHRYSENE | UG/KG | 330.00 | 108.61 | 3.04 |
| 47 | FLUORANTHENE | UG/KG | 250.00 | 205.36 | 1.22 |
| 47 | INDENO(1,2,3-CD)PYRENE | UG/KG | 110.00 | 71.40 | 1.54 |
| 47 | PYRENE | UG/KG | 250.00 | 180.39 | 1.39 |
| 47 | ANTHRACENE | UG/KG | 150.00 | 55.11 | 2.72 |
| 47 | PHENANTHRENE | UG/KG | 77.00 | 55.11 | 1.40 |
| 47 | PHENOL | UG/KG | 210.00 | 45.59 | 4.61 |
| 47 | COPPER, EXTRACTABLE | MG/KG | 180.00 | 104.41 | 1.72 |
| 47 | MERCURY, EXTRACTABLE | MG/KG | 0.06 | 0.04 | 1.30 |
| 47 | DIBUTYLTIN | UG/KG | 2.50 | 2.39 | 1.05 |
| 47 | MERCURY, TOTAL | MG/KG | 0.88 | 0.71 | 1.23 |
| 47 | GRAVEL | PERCENT | 2.58 | 0.21 | 12.47 |
| 48 | 4,4'-DDD | UG/KG | 36.00 | 24.05 | 1.50 |
| 48 | BENZO(A)ANTHRACENE | UG/KG | 1900.00 | 22.97 | 82.72 |
| 48 | BENZO(A)PYRENE | UG/KG | 1500.00 | 175.37 | 8.55 |

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Type of Result=Sediment Station type=Pier
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 48 | BENZO(B)FLUORANTHENE | UG/KG | 1800.00 | 219.05 | 8.22 |
| 48 | BENZO(GHI)PERYLENE | UG/KG | 440.00 | 78.78 | 5.59 |
| 48 | BENZO(K)FLUORANTHENE | UG/KG | 1300.00 | 247.31 | 5.26 |
| 48 | CHRYSENE | UG/KG | 2100.00 | 108.61 | 19.34 |
| 48 | DIBENZO(A,H)ANTHRACENE | UG/KG | 330.00 | 22.97 | 14.37 |
| 48 | FLUORANTHENE | UG/KG | 4400.00 | 205.36 | 21.43 |
| 48 | INDENO(1,2,3-CD)PYRENE | UG/KG | 550.00 | 71.40 | 7.70 |
| 48 | PYRENE | UG/KG | 3300.00 | 180.39 | 18.29 |
| 48 | ACENAPHTHENE | UG/KG | 360.00 | 22.97 | 15.67 |
| 48 | ACENAPHTHYLENE | UG/KG | 500.00 | 22.97 | 21.77 |
| 48 | ANTHRACENE | UG/KG | 1400.00 | 55.11 | 25.40 |
| 48 | FLUORENE | UG/KG | 550.00 | 22.97 | 23.95 |
| 48 | METHYLNAPHTHALENES | UG/KG | 83.00 | 38.09 | 2.18 |
| 48 | PHENANTHRENE | UG/KG | 2700.00 | 55.11 | 48.99 |
| 48 | SULFIDE, TOTAL | MG/KG | 3900.00 | 421.37 | 9.26 |
| 48 | ACID VOLATILE SULFIDE | MG/KG | 3300.00 | 490.25 | 6.73 |
| 48 | COPPER, EXTRACTABLE | MG/KG | 300.00 | 104.41 | 2.87 |
| 48 | LEAD, EXTRACTABLE | MG/KG | 120.00 | 79.10 | 1.52 |
| 48 | MERCURY, EXTRACTABLE | MG/KG | 0.11 | 0.04 | 3.93 |
| 48 | ZINC, EXTRACTABLE | MG/KG | 410.00 | 265.48 | 1.54 |
| 48 | CHROMIUM, TOTAL | MG/KG | 330.00 | 65.56 | 5.04 |
| 48 | COPPER, TOTAL | MG/KG | 330.00 | 192.67 | 1.71 |
| 48 | LEAD, TOTAL | MG/KG | 94.00 | 70.61 | 1.33 |
| 48 | ZINC, TOTAL | MG/KG | 390.00 | 322.34 | 1.21 |
| 48 | GRAVEL | PERCENT | 8.10 | 0.21 | 39.16 |
| 49 | PCB-1260 | UG/KG | 390.00 | 13.21 | 29.52 |
| 49 | BENZO(A)ANTHRACENE | UG/KG | 500.00 | 22.97 | 21.77 |
| 49 | BENZO(A)PYRENE | UG/KG | 1100.00 | 175.37 | 6.27 |
| 49 | BENZO(B)FLUORANTHENE | UG/KG | 1400.00 | 219.05 | 6.39 |
| 49 | BENZO(GHI)PERYLENE | UG/KG | 340.00 | 78.78 | 4.32 |
| 49 | BENZO(K)FLUORANTHENE | UG/KG | 960.00 | 247.31 | 3.88 |
| 49 | CHRYSENE | UG/KG | 820.00 | 108.61 | 7.55 |
| 49 | DIBENZO(A,H)ANTHRACENE | UG/KG | 270.00 | 22.97 | 11.76 |
| 49 | FLUORANTHENE | UG/KG | 520.00 | 205.36 | 2.53 |
| 49 | INDENO(1,2,3-CD)PYRENE | UG/KG | 360.00 | 71.40 | 5.04 |
| 49 | PYRENE | UG/KG | 2000.00 | 180.39 | 11.09 |
| 49 | ACENAPHTHYLENE | UG/KG | 110.00 | 22.97 | 4.79 |
| 49 | ANTHRACENE | UG/KG | 300.00 | 55.11 | 5.44 |
| 49 | FLUORENE | UG/KG | 46.00 | 22.97 | 2.00 |
| 49 | PHENANTHRENE | UG/KG | 250.00 | 55.11 | 4.54 |
| 49 | SULFIDE, TOTAL | MG/KG | 3000.00 | 421.37 | 7.12 |
| 49 | ACID VOLATILE SULFIDE | MG/KG | 3000.00 | 490.25 | 6.12 |
| 49 | COPPER, EXTRACTABLE | MG/KG | 220.00 | 104.41 | 2.11 |
| 49 | MERCURY, EXTRACTABLE | MG/KG | 0.05 | 0.04 | 1.05 |
| 49 | ZINC, EXTRACTABLE | MG/KG | 270.00 | 265.48 | 1.02 |
| 49 | COPPER, TOTAL | MG/KG | 230.00 | 192.67 | 1.19 |
| 49 | LEAD, TOTAL | MG/KG | 77.00 | 70.61 | 1.09 |
| 49 | GRAVEL | PERCENT | 0.52 | 0.21 | 2.53 |

R0063529

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values which exceed the Upper 95% Confidence Limit
Sorted by Station and Parameter



Type of Result=Sediment Station type=Pier
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 50 | BENZO(A)ANTHRACENE | UG/KG | 1000.00 | 22.97 | 43.54 |
| 50 | BENZO(A)PYRENE | UG/KG | 870.00 | 175.37 | 4.96 |
| 50 | BENZO(B)FLUORANTHENE | UG/KG | 1200.00 | 219.05 | 5.48 |
| 50 | BENZO(GHI)PERYLENE | UG/KG | 220.00 | 78.78 | 2.79 |
| 50 | BENZO(K)FLUORANTHENE | UG/KG | 870.00 | 247.31 | 3.52 |
| 50 | CHRYSENE | UG/KG | 1200.00 | 108.61 | 11.05 |
| 50 | FLUORANTHENE | UG/KG | 2000.00 | 205.36 | 9.74 |
| 50 | INDENO(1,2,3-CD)PYRENE | UG/KG | 240.00 | 71.40 | 3.36 |
| 50 | PYRENE | UG/KG | 1800.00 | 180.39 | 9.98 |
| 50 | ACENAPHTHYLENE | UG/KG | 81.00 | 22.97 | 3.53 |
| 50 | ANTHRACENE | UG/KG | 1200.00 | 55.11 | 21.77 |
| 50 | FLUORENE | UG/KG | 190.00 | 22.97 | 8.27 |
| 50 | PHENANTHRENE | UG/KG | 810.00 | 55.11 | 14.70 |
| 50 | SULFIDE, TOTAL | MG/KG | 4900.00 | 421.37 | 11.63 |
| 50 | ACID VOLATILE SULFIDE | MG/KG | 3800.00 | 490.25 | 7.75 |
| 50 | COPPER, EXTRACTABLE | MG/KG | 160.00 | 104.41 | 1.53 |
| 50 | LEAD, EXTRACTABLE | MG/KG | 89.00 | 79.10 | 1.13 |
| 50 | MERCURY, EXTRACTABLE | MG/KG | 0.08 | 0.04 | 1.24 |
| 50 | ZINC, EXTRACTABLE | MG/KG | 410.00 | 265.48 | 1.54 |
| 50 | LEAD, TOTAL | MG/KG | 84.00 | 70.61 | 1.19 |
| 50 | SILVER, TOTAL | MG/KG | 4.10 | 2.97 | 1.38 |
| 50 | ZINC, TOTAL | MG/KG | 620.00 | 322.34 | 1.92 |
| 50 | GRAVEL | PERCENT | 29.45 | 0.21 | 142.41 |
| 50 | MEDIAN GRAIN SIZE | UN | 411.81 | 119.76 | 3.44 |
| 51 | BENZO(A)PYRENE | UG/KG | 510.00 | 175.37 | 2.91 |
| 51 | BENZO(B)FLUORANTHENE | UG/KG | 620.00 | 219.05 | 2.83 |
| 51 | BENZO(GHI)PERYLENE | UG/KG | 140.00 | 78.78 | 1.78 |
| 51 | BENZO(K)FLUORANTHENE | UG/KG | 620.00 | 247.31 | 2.51 |
| 51 | CHRYSENE | UG/KG | 580.00 | 108.61 | 5.34 |
| 51 | FLUORANTHENE | UG/KG | 250.00 | 205.36 | 1.22 |
| 51 | INDENO(1,2,3-CD)PYRENE | UG/KG | 180.00 | 71.40 | 2.52 |
| 51 | PYRENE | UG/KG | 870.00 | 180.39 | 4.82 |
| 51 | ACENAPHTHYLENE | UG/KG | 72.00 | 22.97 | 3.13 |
| 51 | ANTHRACENE | UG/KG | 290.00 | 55.11 | 5.26 |
| 51 | FLUORENE | UG/KG | 36.00 | 22.97 | 1.57 |
| 51 | PHENANTHRENE | UG/KG | 250.00 | 55.11 | 4.54 |
| 51 | SULFIDE, TOTAL | MG/KG | 5400.00 | 421.37 | 12.82 |
| 51 | ACID VOLATILE SULFIDE | MG/KG | 3600.00 | 490.25 | 7.34 |
| 51 | COPPER, EXTRACTABLE | MG/KG | 170.00 | 104.41 | 1.63 |
| 51 | COPPER, TOTAL | MG/KG | 210.00 | 192.67 | 1.09 |
| 51 | LEAD, TOTAL | MG/KG | 72.00 | 70.61 | 1.02 |
| 51 | GRAVEL | PERCENT | 3.91 | 0.21 | 18.89 |
| 52 | BENZO(A)PYRENE | UG/KG | 430.00 | 175.37 | 2.45 |
| 52 | BENZO(B)FLUORANTHENE | UG/KG | 540.00 | 219.05 | 2.47 |
| 52 | BENZO(GHI)PERYLENE | UG/KG | 140.00 | 78.78 | 1.78 |
| 52 | BENZO(K)FLUORANTHENE | UG/KG | 510.00 | 247.31 | 2.06 |
| 52 | CHRYSENE | UG/KG | 260.00 | 108.61 | 2.39 |
| 52 | INDENO(1,2,3-CD)PYRENE | UG/KG | 140.00 | 71.40 | 1.96 |

R0063530

Type of Result=Sediment Station type=Pier
(continued)

| Station | Analyte name | Units | Station Value | Upper 95% Confidence Limit | Station Value/Upper 95% CL |
|---|---|---|---|---|---|
| 52 | PYRENE | UG/KG | 490.00 | 180.39 | 2.72 |
| 52 | ACENAPHTHYLENE | UG/KG | 29.00 | 22.97 | 1.26 |
| 52 | ANTHRACENE | UG/KG | 110.00 | 55.11 | 2.00 |
| 52 | PHENANTHRENE | UG/KG | 86.00 | 55.11 | 1.56 |
| 52 | SULFIDE, TOTAL | MG/KG | 4300.00 | 421.37 | 10.20 |
| 52 | ACID VOLATILE SULFIDE | MG/KG | 3700.00 | 490.35 | 7.55 |
| 52 | COPPER, EXTRACTABLE | MG/KG | 170.00 | 104.41 | 1.63 |
| 52 | BERYLLIUM, TOTAL | MG/KG | 0.86 | 0.80 | 1.07 |
| 52 | COPPER, TOTAL | MG/KG | 260.00 | 192.67 | 1.35 |
| 52 | LEAD, TOTAL | MG/KG | 89.00 | 70.61 | 1.26 |
| 52 | ZINC, TOTAL | MG/KG | 340.00 | 322.34 | 1.05 |
| 52 | GRAVEL | PERCENT | 9.00 | 0.21 | 43.54 |

R0063531

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VOL 18

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values below the Lower 95% Confidence Limit
Sorted by Station and Parameter



Type of Result=Bioassay Station type=Basin

| Station | Analyte name | Units | Station Value | Lower 95% Confidence Limit | Station Value/Lower 95% CL |
|---|---|---|---|---|---|
| 1 | AMPHIPOD REBURIAL | PERCENT | 0.920 | 0.926 | 0.994 |
| 2 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 2 | ECHINODERM SURVIVAL | PERCENT | 0.337 | 0.640 | 0.527 |
| 3 | AMPHIPOD REBURIAL | PERCENT | 0.882 | 0.926 | 0.953 |
| 4 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 5 | ECHINODERM SURVIVAL | PERCENT | 0.320 | 0.640 | 0.500 |
| 6 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 6 | ECHINODERM SURVIVAL | PERCENT | 0.520 | 0.640 | 0.813 |
| 7 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 8 | AMPHIPOD REBURIAL | PERCENT | 0.920 | 0.926 | 0.994 |
| 8 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.007 | 0.009 | 0.772 |
| 11 | POLYCHAETE SURVIVAL | PERCENT | 0.880 | 0.913 | 0.964 |
| 12 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.003 | 0.009 | 0.331 |
| 13 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.003 | 0.009 | 0.331 |
| 13 | ECHINODERM SURVIVAL | PERCENT | 0.423 | 0.640 | 0.661 |
| 14 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 17 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 17 | ECHINODERM SURVIVAL | PERCENT | 0.463 | 0.640 | 0.724 |
| 21 | POLYCHAETE SURVIVAL | PERCENT | 0.840 | 0.913 | 0.920 |
| 22 | AMPHIPOD REBURIAL | PERCENT | 0.898 | 0.926 | 0.970 |
| 24 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 24 | ECHINODERM SURVIVAL | PERCENT | 0.603 | 0.640 | 0.943 |
| 24 | POLYCHAETE SURVIVAL | PERCENT | 0.840 | 0.913 | 0.920 |
| 25 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 25 | ECHINODERM SURVIVAL | PERCENT | 0.507 | 0.640 | 0.792 |
| 28 | AMPHIPOD REBURIAL | PERCENT | 0.906 | 0.926 | 0.976 |
| 31 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 31 | ECHINODERM SURVIVAL | PERCENT | 0.250 | 0.640 | 0.391 |
| 32 | POLYCHAETE SURVIVAL | PERCENT | 0.880 | 0.913 | 0.964 |
| 33 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.005 | 0.009 | 0.552 |
| 33 | ECHINODERM SURVIVAL | PERCENT | 0.460 | 0.640 | 0.719 |
| 41 | AMPHIPOD REBURIAL | PERCENT | 0.779 | 0.926 | 0.841 |
| 41 | AMPHIPOD SURVIVAL | PERCENT | 0.570 | 0.644 | 0.885 |

R0063532

Bechtel/Navy Clean II
Task 4: Comparison of Station Values to Reference Value
Station Values below the Lower 95% Confidence Limit
Sorted by Station and Parameter

Type of Result=Bioassay Station type=Pier

| Station | Analyte name | Units | Station Value | Lower 95% Confidence Limit | Station Value/Lower 95% CL |
|---|---|---|---|---|---|
| 42 | AMPHIPOD REBURIAL | PERCENT | 0.610 | 0.926 | 0.659 |
| 42 | AMPHIPOD SURVIVAL | PERCENT | 0.290 | 0.644 | 0.450 |
| 42 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 42 | ECHINODERM SURVIVAL | PERCENT | 0.517 | 0.640 | 0.808 |
| 43 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 44 | AMPHIPOD REBURIAL | PERCENT | 0.246 | 0.926 | 0.266 |
| 44 | AMPHIPOD SURVIVAL | PERCENT | 0.163 | 0.644 | 0.253 |
| 44 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.003 | 0.009 | 0.331 |
| 45 | AMPHIPOD REBURIAL | PERCENT | 0.630 | 0.926 | 0.680 |
| 45 | AMPHIPOD SURVIVAL | PERCENT | 0.530 | 0.644 | 0.823 |
| 45 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 45 | ECHINODERM SURVIVAL | PERCENT | 0.363 | 0.640 | 0.567 |
| 46 | AMPHIPOD REBURIAL | PERCENT | 0.452 | 0.926 | 0.488 |
| 46 | AMPHIPOD SURVIVAL | PERCENT | 0.210 | 0.644 | 0.326 |
| 46 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 46 | ECHINODERM SURVIVAL | PERCENT | 0.507 | 0.640 | 0.792 |
| 47 | AMPHIPOD REBURIAL | PERCENT | 0.915 | 0.926 | 0.988 |
| 47 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 47 | POLYCHAETE SURVIVAL | PERCENT | 0.840 | 0.913 | 0.920 |
| 48 | AMPHIPOD REBURIAL | PERCENT | 0.538 | 0.926 | 0.581 |
| 48 | AMPHIPOD SURVIVAL | PERCENT | 0.230 | 0.644 | 0.357 |
| 48 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 48 | POLYCHAETE SURVIVAL | PERCENT | 0.760 | 0.913 | 0.833 |
| 49 | AMPHIPOD REBURIAL | PERCENT | 0.779 | 0.926 | 0.841 |
| 49 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 49 | POLYCHAETE SURVIVAL | PERCENT | 0.840 | 0.913 | 0.920 |
| 50 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 51 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 51 | POLYCHAETE SURVIVAL | PERCENT | 0.880 | 0.913 | 0.964 |
| 52 | AMPHIPOD REBURIAL | PERCENT | 0.919 | 0.926 | 0.993 |
| 52 | ECHINODERM NORMAL DEVELOPMENT | PERCENT | 0.000 | 0.009 | 0.000 |
| 52 | POLYCHAETE SURVIVAL | PERCENT | 0.800 | 0.913 | 0.877 |

R0063533

## Section 4-2. Comparison of Clam Tissue Data to Project Reference Values

Mean concentrations of chemical analytes detected in clam tissue at basin stations and pier stations were compared to project reference values using analysis of variance (ANOVA). The ANOVA results include: 1) a listing of analytes tested, 2) results of Levene's test for homoscedasticity, 3) list of data transformation used for each analyte, 4) list of mean and count (n) for untransformed data for each analyte, 5) ANOVA table and Tukey's multiple range test by analyte, and 6) summary of significant ANOVA results. For the clam data the summary of significant ANOVA results is absent because none of the ANOVA tests showed a significant difference.

Levene's test for homoscedasticity was used as a key for data transformation. When the results of Levene's test of raw data showed homoscedasticity the untransformed data were used in the ANOVA. When the results of Levene's test of the raw data showed no homoscedasticity, but the results of the Levene's test of log transformed data did show homoscedasticity the log transformed data were used in the ANOVA. When the results of the Levene's test of both the raw and log transformed data showed no homoscedasticity the data were rank transformed prior to the ANOVA (also known as a Kruskal-Wallis non-parametric test).

ANOVA results are considered significant when the probability associated with the calculated *F* statistic is less than an alpha of 0.05. Tukey's HSD multiple range test was performed to evaluate differences between the ANOVA cases.

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Bechtel Chem...ry
Chemicals analyzed in ANOVA

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Type of Result=Clam Bioaccumulation

| OBS | Analyte name |
|---|---|
| 1 | 4,4'-DDE |
| 2 | ARSENIC, TOTAL |
| 3 | CHROMIUM, TOTAL |
| 4 | COPPER, TOTAL |
| 5 | LIPIDS |
| 6 | MERCURY, TOTAL |
| 7 | PYRENE |
| 8 | THALLIUM, TOTAL |
| 9 | TRIBUTYLTIN |
| 10 | ZINC, TOTAL |

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VOL 18

Levene''s test for homoscedasticity
for the statype main effect

| OBS | DUMMY | Analyte name | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 4,4'-DDE | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.02 | . | . | |
| 2 | | 4,4'-DDE | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.03 | 5.07952 | 0.03767 | |
| 3 | | 4,4'-DDE | notrans | DIFF | ERROR | ERROR | 8 | 203.67 | . | . | |
| 4 | | 4,4'-DDE | notrans | DIFF | STATYPE | SS3 | 2 | 657.24 | 9.26781 | 0.00826 | |
| 5 | | ARSENIC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 10 | 0.00 | . | . | |
| 6 | | ARSENIC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.00 | 0.42699 | 0.66505 | * |
| 7 | | ARSENIC, TOTAL | notrans | DIFF | ERROR | ERROR | 10 | 0.12 | . | . | |
| 8 | | ARSENIC, TOTAL | notrans | DIFF | STATYPE | SS3 | 2 | 0.01 | 0.44379 | 0.65365 | * |
| 9 | | CHROMIUM, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 11 | 0.00 | . | . | |
| 10 | | CHROMIUM, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.00 | 8.53061 | 0.00580 | |
| 11 | | CHROMIUM, TOTAL | notrans | DIFF | ERROR | ERROR | 11 | 0.01 | . | . | |
| 12 | | CHROMIUM, TOTAL | notrans | DIFF | STATYPE | SS3 | 2 | 0.02 | 8.53061 | 0.00580 | |
| 13 | | COPPER, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.00 | . | . | |
| 14 | | COPPER, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.00 | 4.08297 | 0.06680 | * |
| 15 | | COPPER, TOTAL | notrans | DIFF | ERROR | ERROR | 7 | 0.11 | . | . | |
| 16 | | COPPER, TOTAL | notrans | DIFF | STATYPE | SS3 | 2 | 0.21 | 5.74726 | 0.03336 | |
| 17 | | LIPIDS | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.02 | . | . | |
| 18 | | LIPIDS | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.00 | 0.03528 | 0.96548 | * |
| 19 | | LIPIDS | notrans | DIFF | ERROR | ERROR | 8 | 144459.50 | . | . | |
| 20 | | LIPIDS | notrans | DIFF | STATYPE | SS3 | 2 | 13792.80 | 0.38191 | 0.69436 | * |
| 21 | | MERCURY, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 10 | 0.00 | . | . | |
| 22 | | MERCURY, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.00 | 1.51202 | 0.26685 | * |
| 23 | | MERCURY, TOTAL | notrans | DIFF | ERROR | ERROR | 10 | 0.00 | . | . | |
| 24 | | MERCURY, TOTAL | notrans | DIFF | STATYPE | SS3 | 2 | 0.00 | 1.53319 | 0.26256 | * |
| 25 | | PYRENE | log(x+1) | DIFF | ERROR | ERROR | 11 | 0.20 | . | . | |
| 26 | | PYRENE | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.02 | 0.68276 | 0.52540 | * |
| 27 | | PYRENE | notrans | DIFF | ERROR | ERROR | 11 | 225.69 | . | . | |
| 28 | | PYRENE | notrans | DIFF | STATYPE | SS3 | 2 | 46.62 | 1.13603 | 0.35604 | * |
| 29 | | THALLIUM, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 11 | 0.00 | . | . | |
| 30 | | THALLIUM, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.00 | 6.28571 | 0.01512 | |
| 31 | | THALLIUM, TOTAL | notrans | DIFF | ERROR | ERROR | 11 | 0.04 | . | . | |
| 32 | | THALLIUM, TOTAL | notrans | DIFF | STATYPE | SS3 | 2 | 0.04 | 6.28571 | 0.01512 | |
| 33 | | TRIBUTYLTIN | log(x+1) | DIFF | ERROR | ERROR | 9 | 0.03 | . | . | |
| 34 | | TRIBUTYLTIN | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.04 | 9.00798 | 0.03452 | |
| 35 | | TRIBUTYLTIN | notrans | DIFF | ERROR | ERROR | 9 | 2.70 | . | . | |
| 36 | | TRIBUTYLTIN | notrans | DIFF | STATYPE | SS3 | 2 | 3.96 | 5.93673 | 0.02269 | |
| 37 | | ZINC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 10 | 0.00 | . | . | |
| 38 | | ZINC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 2 | 0.00 | 1.06604 | 0.38047 | * |
| 39 | | ZINC, TOTAL | notrans | DIFF | ERROR | ERROR | 10 | 4.89 | . | . | |
| 40 | | ZINC, TOTAL | notrans | DIFF | STATYPE | SS3 | 2 | 1.15 | 1.17256 | 0.34876 | * |

R0063536

Bechtel Chem...try
Transformations used for each chemical

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| OBS | CHEM | TRANS |
|---|---|---|
| 1 | 4,4'-DDE | rank |
| 2 | ARSENIC, TOTAL | notrans |
| 3 | CHROMIUM, TOTAL | rank |
| 4 | COPPER, TOTAL | log(x+1) |
| 5 | LIPIDS | notrans |
| 6 | MERCURY, TOTAL | notrans |
| 7 | PYRENE | notrans |
| 8 | THALLIUM, TOTAL | rank |
| 9 | TRIBUTYLTIN | rank |
| 10 | ZINC, TOTAL | notrans |

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| OBS | CHEM | STATYPE | MEAN | N |
|---|---|---|---|---|
| 1 | 4,4'-DDE | Basin | 27.40 | 5 |
| 2 | 4,4'-DDE | Pier | 39.60 | 4 |
| 3 | 4,4'-DDE | Reference | 33.76 | 5 |
| 4 | ARSENIC, TOTAL | Basin | 3.00 | 5 |
| 5 | ARSENIC, TOTAL | Pier | 2.85 | 4 |
| 6 | ARSENIC, TOTAL | Reference | 2.88 | 5 |
| 7 | CHROMIUM, TOTAL | Basin | 0.24 | 5 |
| 8 | CHROMIUM, TOTAL | Pier | 0.20 | 4 |
| 9 | CHROMIUM, TOTAL | Reference | 0.28 | 5 |
| 10 | COPPER, TOTAL | Basin | 1.40 | 5 |
| 11 | COPPER, TOTAL | Pier | 1.65 | 4 |
| 12 | COPPER, TOTAL | Reference | 1.32 | 5 |
| 13 | LIPIDS | Basin | 1002.00 | 5 |
| 14 | LIPIDS | Pier | 898.00 | 4 |
| 15 | LIPIDS | Reference | 1073.40 | 5 |
| 16 | MERCURY, TOTAL | Basin | 0.01 | 5 |
| 17 | MERCURY, TOTAL | Pier | 0.01 | 4 |
| 18 | MERCURY, TOTAL | Reference | 0.02 | 5 |
| 19 | PYRENE | Basin | 12.00 | 5 |
| 20 | PYRENE | Pier | 18.75 | 4 |
| 21 | PYRENE | Reference | 7.00 | 5 |
| 22 | THALLIUM, TOTAL | Basin | 0.25 | 5 |
| 23 | THALLIUM, TOTAL | Pier | 0.25 | 4 |
| 24 | THALLIUM, TOTAL | Reference | 0.32 | 5 |
| 25 | TRIBUTYLTIN | Basin | 2.66 | 5 |
| 26 | TRIBUTYLTIN | Pier | 1.68 | 4 |
| 27 | TRIBUTYLTIN | Reference | 2.04 | 5 |
| 28 | ZINC, TOTAL | Basin | 12.60 | 5 |
| 29 | ZINC, TOTAL | Pier | 13.75 | 4 |
| 30 | ZINC, TOTAL | Reference | 12.20 | 5 |

R0063538

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 9.65000000 | 4.82500000 | 0.24 | 0.7875 |
| Error | 11 | 217.35000000 | 19.75909091 | | |
| Corrected Total | 13 | 227.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.042511 | 59.26827 | 4.44511990 | 7.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 9.65000000 | 4.82500000 | 0.24 | 0.7875 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 9.65000000 | 4.82500000 | 0.24 | 0.7875 |

R0063539

Type of Result=Clam Bioaccumulation Analyte name=4,4'-DDE TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 19.75909
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 7.9029
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A<br>A | 8.750 | 4 | Pier |
| A<br>A | 7.300 | 5 | Reference |
| A | 6.700 | 5 | Basin |

R0063540

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.05914286 | 0.02957143 | 0.44 | 0.6544 |
| Error | 11 | 0.73800000 | 0.06709091 | | |
| Corrected Total | 13 | 0.79714286 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.074194 | 8.887911 | 0.25901913 | 2.91428571 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 0.05914286 | 0.02957143 | 0.44 | 0.6544 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 0.05914286 | 0.02957143 | 0.44 | 0.6544 |

R0063541

---------- Type of Result=Clam Bioaccumulation Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 0.067091
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 0.4605
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A<br>A | 3.0000 | 5 | Basin |
| A<br>A | 2.8000 | 5 | Reference |
| A | 2.8500 | 4 | Pier |

R0063542

Type of Result=Clam Bioaccumulation Analyte name=CHROMIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



Type of Result=Clam Bioaccumulation Analyte name=CHROMIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 17.50000000 | 8.75000000 | 0.98 | 0.4051 |
| Error | 11 | 98.00000000 | 8.90909091 | | |
| Corrected Total | 13 | 115.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.151515 | 39.79747 | 2.98481003 | 7.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 17.50000000 | 8.75000000 | 0.98 | 0.4051 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 17.50000000 | 8.75000000 | 0.98 | 0.4051 |

R0063543

Type of Result=Clam Bioaccumulation Analyte name=CHROMIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 8.909091
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 5.3067
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A<br>A | 8.800 | 5 | Reference |
| A<br>A | 7.400 | 5 | Basin |
| A | 6.000 | 4 | Pier |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.00686705 | 0.00343352 | 1.10 | 0.3657 |
| Error | 11 | 0.03421960 | 0.00311087 | | |
| Corrected Total | 13 | 0.04108665 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.167136 | 14.51077 | 0.05577520 | 0.38437100 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 0.00686705 | 0.00343352 | 1.10 | 0.3657 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 0.00686705 | 0.00343352 | 1.10 | 0.3657 |

R0063545

Type of Result=Clam Bioaccumulation Analyte name=COPPER, TOTAL TRANS=log(n+1) DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 0.003111
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 0.0992
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.41704 | 4 | Pier |
| A | | | |
| A | 0.37869 | 5 | Basin |
| A | | | |
| A | 0.36327 | 5 | Reference |

R0063546

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 68505.15714286 | 34252.57857143 | 0.22 | 0.8034 |
| Error | 11 | 1687581.20000000 | 153416.47272727 | | |
| Corrected Total | 13 | 1756086.35714286 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.039010 | 39.25534 | 391.68414919 | 997.78571429 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 68505.15714286 | 34252.57857143 | 0.22 | 0.8034 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 68505.15714286 | 34252.57857143 | 0.22 | 0.8034 |

R0063547

Type of Result=Clam Bioaccumulation Analyte name=LIPIDS TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 153416.5
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 696.37
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A<br>A | 1073.4 | 5 | Reference |
| A<br>A | 1002.0 | 5 | Basin |
| A | 898.0 | 4 | Pier |

R0063548

Type of Result=Class Bioaccumulation Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



Type of Result=Class Bioaccumulation Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependant Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.00014786 | 0.00007393 | 0.82 | 0.4667 |
| Error | 11 | 0.00099500 | 0.00009045 | | |
| Corrected Total | 13 | 0.00114286 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.129375 | 60.52301 | 0.00951076 | 0.01571429 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 0.00014786 | 0.00007393 | 0.82 | 0.4667 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 0.00014786 | 0.00007393 | 0.82 | 0.4667 |

R0063549

Type of Result=Clam Bioaccumulation Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 0.00009
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 0.0169
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A<br>A | 0.020000 | 5 | Reference |
| A<br>A | 0.014000 | 8 | Basin |
| A | 0.012500 | 4 | Pier |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 306.96428571 | 153.48214286 | 2.92 | 0.0963 |
| Error | 11 | 578.75000000 | 52.61363636 | | |
| Corrected Total | 13 | 885.71428571 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.346573 | 59.73492 | 7.25352579 | 12.14285714 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 306.96428571 | 153.48214286 | 2.92 | 0.0963 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 306.96428571 | 153.48214286 | 2.92 | 0.0963 |

R0063551

Type of Result=Clam Bioaccumulation Analyte name=PYRENE TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 52.61364
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 12.896
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A<br>A | 18.750 | 4 | Pier |
| A<br>A | 13.000 | 5 | Basin |
| A | 7.000 | 5 | Reference |

R0063552

Type of Result=Clam Bioaccumulation Analyte name=THALLIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



Type of Result=Clam Bioaccumulation Analyte name=THALLIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 6.30000000 | 3.15000000 | 0.88 | 0.4406 |
| Error | 11 | 39.20000000 | 3.56363636 | | |
| Corrected Total | 13 | 45.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.138462 | 25.17013 | 1.88775961 | 7.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 6.30000000 | 3.15000000 | 0.88 | 0.4406 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 6.30000000 | 3.15000000 | 0.88 | 0.4406 |

R0063553

Type of Result=Clam Bioaccumulation Analyte name=THALLIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 3.563636
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 3.3562
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.619369

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A<br>A | 8.400 | 5 | Reference |
| A<br>A | 7.000 | 4 | Pier |
| A | 7.000 | 5 | Basin |

R0063554

Type of Result=Clam Bioaccumulation Analyte name=TRIBUTYLTIN TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of obeservations in by group = 14



Type of Result=Clam Bioaccumulation Analyte name=TRIBUTYLTIN TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 53.31250000 | 26.65625000 | 1.69 | 0.2285 |
| Error | 11 | 173.18750000 | 15.74431818 | | |
| Corrected Total | 13 | 226.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.235375 | 52.90548 | 3.96791106 | 7.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 53.31250000 | 26.65625000 | 1.69 | 0.2285 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 53.31250000 | 26.65625000 | 1.69 | 0.2285 |

R0063555

Type of Result=Clam Bioaccumulation Analyte name=TRIBUTYLTIN TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 15.74432
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 7.0545
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 10.100 | 5 | Basin |
| A | | | |
| A | 6.375 | 4 | Pier |
| A | | | |
| A | 5.000 | 5 | Reference |

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Type of Result=Clam Bioaccumulation Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 3 | Basin Pier Reference |

Number of observations in by group = 14



Type of Result=Clam Bioaccumulation Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 5.60714286 | 2.80357143 | 1.25 | 0.3253 |
| Error | 11 | 24.75000000 | 2.25000000 | | |
| Corrected Total | 13 | 30.35714286 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.184706 | 11.73186 | 1.50000000 | 12.78571429 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 5.60714286 | 2.80357143 | 1.25 | 0.3253 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 2 | 5.60714286 | 2.80357143 | 1.25 | 0.3253 |

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## Section 4-3. Comparisons of Surface Sediment Toxicity Data to Project Reference Values

Mean values of toxicity bioassays for surface sediment, grouped by sediment evaluation zones (determined from cluster analysis), were compared to project reference values using analysis of variance (ANOVA). The ANOVA results include: 1) a listing of analytes tested, 2) results of Levene's test for homoscedasticity, 3) list of data transformation used for each analyte if any, 4) list of mean and count (n) for untransformed data for each analyte, 5) ANOVA table and Tukey's multiple range test by analyte, and 6) summary of significant ANOVA results.

Levene's test for homoscedasticity was used as a key for data transformation. When the results of Levene's test of raw data showed homoscedasticity the untransformed data were used in the ANOVA. When the results of Levene's test of the raw data showed no homoscedasticity, but the results of the Levene's test of log transformed data did show homoscedasticity the log transformed data were used in the ANOVA. When the results of the Levene's test of both the raw and log transformed data showed no homoscedasticity the data were rank transformed prior to the ANOVA (also known as a Kruskal-Wallis non-parametric test).

ANOVA results are considered significant when the probability associated with the calculated *F* statistic is less than an alpha of 0.05. Tukey's HSD multiple range test was performed to evaluate differences between the ANOVA cases.

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| OBS | Type of Result | Analyte name |
|---|---|---|
| 1 | BIOASSAY | AMPHIPOD REBURIAL |
| 2 | BIOASSAY | AMPHIPOD SURVIVAL |
| 3 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT |
| 4 | BIOASSAY | ECHINODERM SURVIVAL |
| 5 | BIOASSAY | POLYCHAETE GROWTH |
| 6 | BIOASSAY | POLYCHAETE SURVIVAL |

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EB---

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Levene's test for homoscedasticity
for the zone main effect

| OBS | Type of Result | Analyte name | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BIOASSAY | AMPHIPOD REBURIAL | arcsine | DIFF | ERROR | ERROR | 8 | 0.00797 | . | . | |
| 2 | BIOASSAY | AMPHIPOD REBURIAL | arcsine | DIFF | ZONE | SS3 | 8 | 0.21103 | 26.484 | 0.00006 | |
| 3 | BIOASSAY | AMPHIPOD REBURIAL | notrans | DIFF | ERROR | ERROR | 8 | 0.00039 | . | . | |
| 4 | BIOASSAY | AMPHIPOD REBURIAL | notrans | DIFF | ZONE | SS3 | 8 | 0.09307 | 238.435 | 0.00000 | |
| 5 | BIOASSAY | AMPHIPOD SURVIVAL | arcsine | DIFF | ERROR | ERROR | 8 | 0.00169 | . | . | |
| 6 | BIOASSAY | AMPHIPOD SURVIVAL | arcsine | DIFF | ZONE | SS3 | 8 | 0.23946 | 141.537 | 0.00000 | |
| 7 | BIOASSAY | AMPHIPOD SURVIVAL | notrans | DIFF | ERROR | ERROR | 8 | 0.00028 | . | . | |
| 8 | BIOASSAY | AMPHIPOD SURVIVAL | notrans | DIFF | ZONE | SS3 | 8 | 0.16081 | 574.330 | 0.00000 | |
| 9 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | arcsine | DIFF | ERROR | ERROR | 9 | 0.00686 | . | . | |
| 10 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | arcsine | DIFF | ZONE | SS3 | 8 | 0.94308 | 154.681 | 0.00000 | |
| 11 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | notrans | DIFF | ERROR | ERROR | 9 | 0.00249 | . | . | |
| 12 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | notrans | DIFF | ZONE | SS3 | 8 | 0.57258 | 258.555 | 0.00000 | |
| 13 | BIOASSAY | ECHINODERM SURVIVAL | arcsine | DIFF | ERROR | ERROR | 6 | 0.00792 | . | . | |
| 14 | BIOASSAY | ECHINODERM SURVIVAL | arcsine | DIFF | ZONE | SS3 | 8 | 0.08452 | 8.002 | 0.01032 | |
| 15 | BIOASSAY | ECHINODERM SURVIVAL | notrans | DIFF | ERROR | ERROR | 6 | 0.00128 | . | . | |
| 16 | BIOASSAY | ECHINODERM SURVIVAL | notrans | DIFF | ZONE | SS3 | 8 | 0.03688 | 22.077 | 0.00066 | |
| 17 | BIOASSAY | POLYCHAETE GROWTH | log(x+1) | DIFF | ERROR | ERROR | 9 | 0.00008 | . | . | |
| 18 | BIOASSAY | POLYCHAETE GROWTH | log(x+1) | DIFF | ZONE | SS3 | 7 | 0.00013 | 2.005 | 0.16350 | * |
| 19 | BIOASSAY | POLYCHAETE GROWTH | notrans | DIFF | ERROR | ERROR | 9 | 0.00053 | . | . | |
| 20 | BIOASSAY | POLYCHAETE GROWTH | notrans | DIFF | ZONE | SS3 | 7 | 0.00084 | 2.035 | 0.15852 | * |
| 21 | BIOASSAY | POLYCHAETE SURVIVAL | arcsine | DIFF | ERROR | ERROR | 9 | 0.01510 | . | . | |
| 22 | BIOASSAY | POLYCHAETE SURVIVAL | arcsine | DIFF | ZONE | SS3 | 8 | 0.07817 | 9.800 | 0.00923 | |
| 23 | BIOASSAY | POLYCHAETE SURVIVAL | notrans | DIFF | ERROR | ERROR | 9 | 0.00038 | . | . | |
| 24 | BIOASSAY | POLYCHAETE SURVIVAL | notrans | DIFF | ZONE | SS3 | 8 | 0.00300 | 11.258 | 0.00073 | |

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Bechtel Chem...ry
Transformations used for each chemical

15:51 Thursday, August 17, ..95 3

| OBS | MATRIX | CHEM | TRANS |
|---|---|---|---|
| 1 | BIOASSAY | AMPHIPOD REBURIAL | rank |
| 2 | BIOASSAY | AMPHIPOD SURVIVAL | rank |
| 3 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | rank |
| 4 | BIOASSAY | ECHINODERM SURVIVAL | rank |
| 5 | BIOASSAY | POLYCHAETE GROWTH | notrans |
| 6 | BIOASSAY | POLYCHAETE SURVIVAL | rank |

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| OBS | MATRIX | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|---|
| 1 | BIOASSAY | AMPHIPOD REBURIAL | A | 0.95583 | 6 |
| 2 | BIOASSAY | AMPHIPOD REBURIAL | B | 0.94825 | 4 |
| 3 | BIOASSAY | AMPHIPOD REBURIAL | C | 0.95978 | 9 |
| 4 | BIOASSAY | AMPHIPOD REBURIAL | D | 0.95883 | 6 |
| 5 | BIOASSAY | AMPHIPOD REBURIAL | E | 0.91933 | 6 |
| 6 | BIOASSAY | AMPHIPOD REBURIAL | F | 0.96567 | 3 |
| 7 | BIOASSAY | AMPHIPOD REBURIAL | G | 0.63050 | 6 |
| 8 | BIOASSAY | AMPHIPOD REBURIAL | H | 0.80225 | 4 |
| 9 | BIOASSAY | AMPHIPOD REBURIAL | Ref | 0.96400 | 7 |
| 10 | BIOASSAY | AMPHIPOD SURVIVAL | A | 0.86583 | 6 |
| 11 | BIOASSAY | AMPHIPOD SURVIVAL | B | 0.89325 | 6 |
| 12 | BIOASSAY | AMPHIPOD SURVIVAL | C | 0.88889 | 9 |
| 13 | BIOASSAY | AMPHIPOD SURVIVAL | D | 0.89250 | 6 |
| 14 | BIOASSAY | AMPHIPOD SURVIVAL | E | 0.85967 | 6 |
| 15 | BIOASSAY | AMPHIPOD SURVIVAL | F | 0.88000 | 3 |
| 16 | BIOASSAY | AMPHIPOD SURVIVAL | G | 0.45217 | 6 |
| 17 | BIOASSAY | AMPHIPOD SURVIVAL | H | 0.62250 | 6 |
| 18 | BIOASSAY | AMPHIPOD SURVIVAL | Ref | 0.80705 | 7 |
| 19 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | A | 0.38400 | 6 |
| 20 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | B | 0.01925 | 4 |
| 21 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | C | 0.66000 | 9 |
| 22 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | D | 0.14267 | 6 |
| 23 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | E | 0.67983 | 6 |
| 24 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | F | 0.60667 | 3 |
| 25 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | G | 0.00050 | 6 |
| 26 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | H | 0.00000 | 4 |
| 27 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | Ref | 0.65443 | 7 |
| 28 | BIOASSAY | ECHINODERM SURVIVAL | A | 0.65733 | 6 |
| 29 | BIOASSAY | ECHINODERM SURVIVAL | B | 0.53075 | 4 |
| 30 | BIOASSAY | ECHINODERM SURVIVAL | C | 0.84333 | 9 |
| 31 | BIOASSAY | ECHINODERM SURVIVAL | D | 0.77767 | 6 |
| 32 | BIOASSAY | ECHINODERM SURVIVAL | E | 0.88400 | 6 |
| 33 | BIOASSAY | ECHINODERM SURVIVAL | F | 0.81867 | 3 |
| 34 | BIOASSAY | ECHINODERM SURVIVAL | G | 0.60800 | 6 |
| 35 | BIOASSAY | ECHINODERM SURVIVAL | H | 0.82575 | 4 |
| 36 | BIOASSAY | ECHINODERM SURVIVAL | Ref | 0.86757 | 7 |
| 37 | BIOASSAY | POLYCHAETE GROWTH | A | 0.09467 | 6 |
| 38 | BIOASSAY | POLYCHAETE GROWTH | B | 0.11425 | 4 |
| 39 | BIOASSAY | POLYCHAETE GROWTH | C | 0.08767 | 9 |
| 40 | BIOASSAY | POLYCHAETE GROWTH | D | 0.09367 | 6 |
| 41 | BIOASSAY | POLYCHAETE GROWTH | E | 0.09017 | 6 |
| 42 | BIOASSAY | POLYCHAETE GROWTH | F | 0.07800 | 3 |
| 43 | BIOASSAY | POLYCHAETE GROWTH | G | 0.13917 | 6 |
| 44 | BIOASSAY | POLYCHAETE GROWTH | H | 0.13975 | 4 |
| 45 | BIOASSAY | POLYCHAETE GROWTH | Ref | 0.08757 | 7 |
| 46 | BIOASSAY | POLYCHAETE SURVIVAL | A | 0.94000 | 6 |
| 47 | BIOASSAY | POLYCHAETE SURVIVAL | B | 0.95000 | 4 |
| 48 | BIOASSAY | POLYCHAETE SURVIVAL | C | 0.96444 | 9 |
| 49 | BIOASSAY | POLYCHAETE SURVIVAL | D | 0.96500 | 6 |
| 50 | BIOASSAY | POLYCHAETE SURVIVAL | E | 0.94000 | 6 |
| 51 | BIOASSAY | POLYCHAETE SURVIVAL | F | 0.92000 | 3 |
| 52 | BIOASSAY | POLYCHAETE SURVIVAL | G | 0.90000 | 6 |
| 53 | BIOASSAY | POLYCHAETE SURVIVAL | H | 0.88000 | 4 |
| 54 | BIOASSAY | POLYCHAETE SURVIVAL | Ref | 0.96742 | 7 |

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Type of Result=BIOASSAY Analyte name=AMPHIPOD REBURIAL TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Type of Result=BIOASSAY Analyte name=AMPHIPOD REBURIAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4088.03670635 | 511.00458829 | 3.09 | 0.0079 |
| Error | 42 | 6955.96329365 | 165.61817366 | | |
| Corrected Total | 50 | 11044.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.370159 | 49.49720 | 12.86927246 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4088.03670635 | 511.00458829 | 3.09 | 0.0079 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4088.03670635 | 511.00458829 | 3.09 | 0.0079 |

R0063563

Type of Result=BIOASSAY Analyte name=AMPHIPOD REBURIAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 165.6182
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 26.261
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 34.750 | 6 | D |
| | A | | | |
| | A | 34.500 | 3 | F |
| | A | | | |
| B | A | 32.286 | 7 | Ref |
| B | A | | | |
| B | A | 31.056 | 9 | C |
| B | A | | | |
| B | A | 28.083 | 6 | A |
| B | A | | | |
| B | A | 25.500 | 4 | B |
| B | A | | | |
| B | A | 23.833 | 6 | E |
| B | A | | | |
| B | A | 13.875 | 4 | H |
| B | | | | |
| B | | 6.583 | 6 | G |

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Type of Result=BIOASSAY Analyte name=ECHINODERM SURVIVAL TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Type of Result=BIOASSAY Analyte name=ECHINODERM SURVIVAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependant Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3227.48313492 | 403.43539187 | 2.17 | 0.0501 |
| Error | 42 | 7817.51686508 | 186.13135393 | | |
| Corrected Total | 50 | 11045.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.292212 | 52.47306 | 13.64299652 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3227.48313492 | 403.43539187 | 2.17 | 0.0501 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3227.48313492 | 403.43539187 | 2.17 | 0.0501 |

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---------- Type of Result=BIOASSAY Analyte name=ECHINODERM SURVIVAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate then REGWQ.

Alpha= 0.05 df= 42 MSE= 186.1314
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 27.84
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 35.500 | 3 | F |
| A | | | |
| A | 33.833 | 6 | E |
| A | | | |
| A | 31.944 | 9 | C |
| A | | | |
| A | 29.643 | 7 | Ref |
| A | | | |
| A | 28.250 | 6 | D |
| A | | | |
| A | 26.375 | 4 | H |
| A | | | |
| A | 21.083 | 6 | A |
| A | | | |
| A | 13.667 | 6 | O |
| A | | | |
| A | 9.500 | 4 | B |

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---------- Type of Result=BIOASSAY Analyte name=POLYCHAETE GROWTH TRANS=notrans DUBNY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



---------- Type of Result=BIOASSAY Analyte name=POLYCHAETE GROWTH TRANS=notrans DUBNY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 0.02881704 | 0.00360213 | 12.84 | 0.0001 |
| Error | 42 | 0.01177844 | 0.00028044 | | |
| Corrected Total | 50 | 0.04059548 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.709858 | 16.30511 | 0.01676631 | 0.10270588 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 0.02881704 | 0.00360213 | 12.84 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 0.02881704 | 0.00360213 | 12.84 | 0.0001 |

R0063567



VOL 178

Type of Result=BIOASSAY Analyte name=POLYCHAETE GROWTH TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 0.00028
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 0.0342
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 0.15975 | 4 | H |
| | A | | | |
| B | A | 0.13917 | 6 | G |
| B | | | | |
| B | C | 0.11425 | 4 | B |
| | C | | | |
| D | C | 0.09467 | 6 | A |
| D | C | | | |
| D | C | 0.09367 | 6 | D |
| D | C | | | |
| D | C | 0.09017 | 6 | E |
| D | C | | | |
| D | C | 0.08767 | 9 | C |
| D | C | | | |
| D | C | 0.08757 | 7 | Ref |
| D | | | | |
| D | | 0.07800 | 3 | F |

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Bechtel Che... ...ry

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---------- Type of Result=BIOASSAY Analyte name=POLYCHAETE SURVIVAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

Bechtel Chemistry

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---------- Type of Result=BIOASSAY Analyte name=POLYCHAETE SURVIVAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 2055.67559524 | 256.95944940 | 1.29 | 0.2773 |
| Error | 42 | 8398.32440476 | 199.96010488 | | |
| Corrected Total | 50 | 10456.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.196640 | 54.38740 | 14.14072505 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 2055.67559524 | 256.95944940 | 1.29 | 0.2773 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 2055.67559524 | 256.95944940 | 1.29 | 0.2773 |

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VOL 18

---------- Type of Result=BIOASSAY Analyte name=POLYCHAETE SURVIVAL TRANS=rank DUMMY= ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type 1 experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 199.9601
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 28.855
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 32.214 | 7 | Ref |
| A | | | |
| A | 31.833 | 9 | C |
| A | | | |
| A | 31.500 | 6 | D |
| A | | | |
| A | 26.833 | 6 | E |
| A | | | |
| A | 26.500 | 6 | B |
| A | | | |
| A | 23.833 | 6 | A |
| A | | | |
| A | 21.333 | 3 | F |
| A | | | |
| A | 16.375 | 4 | H |
| A | | | |
| A | 14.250 | 6 | G |

Bechtel Che[illegible]try
Significant ANOVA results

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| OBS | Type of Result | Analyte name | TRANS | DUMMY | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BIOASSAY | AMPHIPOD REBURIAL | rank | | VALUE | ZONE | SS1 | 8 | 4088.04 | 3.0854 | .0079180 |
| 2 | BIOASSAY | AMPHIPOD SURVIVAL | rank | | VALUE | ZONE | SS1 | 8 | 6059.88 | 6.4315 | .0000192 |
| 3 | BIOASSAY | ECHINODERM NORMAL DEVELOPMENT | rank | | VALUE | ZONE | SS1 | 8 | 4494.07 | 3.9439 | .0014924 |
| 4 | BIOASSAY | POLYCHAETE GROWTH | notrans | | VALUE | ZONE | SS1 | 8 | 0.03 | 12.8446 | .0000000 |

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VOL 18

## Section 4-4. Comparison of Fish Tissue Data to Project Reference Values

Mean concentrations of chemical analytes detected in fish tissue (California halibut bile, California halibut fillet, white croaker fillet, California halibut whole body, white croaker whole body), at basin stations were compared to project reference values using analysis of variance (ANOVA). The ANOVA results include: 1) a listing of analytes tested, 2) results of Levene's test for homoscedasticity, 3) list of data transformation used for each analyte if any, 4) list of mean and count (n) for untransformed data for each analyte, 5) ANOVA table and Tukey's multiple range test by analyte, and 6) summary of significant ANOVA results.

Levene's test for homoscedasticity was used as a key for data transformation. When the results of Levene's test of raw data showed homoscedasticity the untransformed data were used in the ANOVA. When the results of Levene's test of the raw data showed no homoscedasticity, but the results of the Levene's test of log transformed data did show homoscedasticity the log transformed data were used in the ANOVA. When the results of the Levene's test of both the raw and log transformed data showed no homoscedasticity the data were rank transformed prior to the ANOVA (also known as a Kruskal-Wallis non-parametric test).

ANOVA results are considered significant when the probability associated with the calculated *F* statistic is less than an alpha of 0.05. Tukey's HSD multiple range test was performed to evaluate differences between the ANOVA cases.

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Bechtel Chemistry
Chemicals analysed in ANOVA

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Type of Result=Halibut Bile

| OBS | Analyte name |
|---|---|
| 1 | BENZO(A)PYRENE, EQUIV |
| 2 | NAPHTHALENE, EQUIV |
| 3 | PHENANTHRENE, EQUIV |
| 4 | PYRENE, EQUIV |

Type of Result=Halibut Fillet

| OBS | Analyte name |
|---|---|
| 5 | 4,4'-DDE |
| 6 | ARSENIC, TOTAL |
| 7 | COPPER, TOTAL |
| 8 | DIBUTYLTIN |
| 9 | LIPIDS |
| 10 | MERCURY, TOTAL |
| 11 | SELENIUM, TOTAL |
| 12 | TRIBUTYLTIN |
| 13 | ZINC, TOTAL |

Type of Result=White Croaker Fillet

| OBS | Analyte name |
|---|---|
| 14 | 4,4'-DDD |
| 15 | 4,4'-DDE |
| 16 | ARSENIC, TOTAL |
| 17 | COPPER, TOTAL |
| 18 | ENDOSULFAN II |
| 19 | ENDRIN |
| 20 | LEAD, TOTAL |
| 21 | LIPIDS |
| 22 | MERCURY, TOTAL |
| 23 | SELENIUM, TOTAL |
| 24 | TRIBUTYLTIN |
| 25 | ZINC, TOTAL |

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Type of Result=Halibut Whole Body

| OBS | Analyte name |
|---|---|
| 26 | 4,4'-DDD |
| 27 | 4,4'-DDE |
| 28 | ARSENIC, TOTAL |
| 29 | COPPER, TOTAL |
| 30 | DIBUTYLTIN |
| 31 | ENDOSULFAN II |
| 32 | LEAD, TOTAL |
| 33 | LIPIDS |
| 34 | MERCURY, TOTAL |
| 35 | NICKEL, TOTAL |
| 36 | SELENIUM, TOTAL |
| 37 | TRIBUTYLTIN |
| 38 | ZINC, TOTAL |

Type of Result=White Croaker Whole Body

| OBS | Analyte name |
|---|---|
| 39 | 4,4'-DDD |
| 40 | 4,4'-DDE |
| 41 | ALPHA-BHC (HCH) |
| 42 | ARSENIC, TOTAL |
| 43 | BERYLLIUM, TOTAL |
| 44 | CHROMIUM, TOTAL |
| 45 | COPPER, TOTAL |
| 46 | DIBUTYLTIN |
| 47 | ENDOSULFAN II |
| 48 | ENDRIN |
| 49 | LIPIDS |
| 50 | MERCURY, TOTAL |
| 51 | SELENIUM, TOTAL |
| 52 | TRIBUTYLTIN |
| 53 | ZINC, TOTAL |



VOL 18

Levene''s test for homoscedasticity
for the statype main effect

| OBS | Type of Result | Analyte name | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Halibut Bile | BENZO(A)PYRENE, EQUIV | log(x+1) | DIFF | ERROR | ERROR | 12 | 0.29 | . | . | |
| 2 | Halibut Bile | BENZO(A)PYRENE, EQUIV | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.04 | 1.7665 | 0.20853 | * |
| 3 | Halibut Bile | BENZO(A)PYRENE, EQUIV | notrans | DIFF | ERROR | ERROR | 12 | 1219.59 | . | . | |
| 4 | Halibut Bile | BENZO(A)PYRENE, EQUIV | notrans | DIFF | STATYPE | SS3 | 1 | 150.65 | 1.4823 | 0.24682 | * |
| 5 | Halibut Bile | NAPHTHALENE, EQUIV | log(x+1) | DIFF | ERROR | ERROR | 12 | 0.21 | . | . | |
| 6 | Halibut Bile | NAPHTHALENE, EQUIV | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.0724 | 0.79238 | * |
| 7 | Halibut Bile | NAPHTHALENE, EQUIV | notrans | DIFF | ERROR | ERROR | 12 | 127125.38 | . | . | |
| 8 | Halibut Bile | NAPHTHALENE, EQUIV | notrans | DIFF | STATYPE | SS3 | 1 | 8672.74 | 0.8187 | 0.38338 | * |
| 9 | Halibut Bile | PHENANTHRENE, EQUIV | log(x+1) | DIFF | ERROR | ERROR | 12 | 0.23 | . | . | |
| 10 | Halibut Bile | PHENANTHRENE, EQUIV | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.1944 | 0.66710 | * |
| 11 | Halibut Bile | PHENANTHRENE, EQUIV | notrans | DIFF | ERROR | ERROR | 12 | 85359.69 | . | . | |
| 12 | Halibut Bile | PHENANTHRENE, EQUIV | notrans | DIFF | STATYPE | SS3 | 1 | 4834.07 | 0.6796 | 0.42581 | * |
| 13 | Halibut Bile | PYRENE, EQUIV | log(x+1) | DIFF | ERROR | ERROR | 12 | 0.38 | . | . | |
| 14 | Halibut Bile | PYRENE, EQUIV | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.02 | 0.5595 | 0.46887 | * |
| 15 | Halibut Bile | PYRENE, EQUIV | notrans | DIFF | ERROR | ERROR | 12 | 82703.66 | . | . | |
| 16 | Halibut Bile | PYRENE, EQUIV | notrans | DIFF | STATYPE | SS3 | 1 | 7071.32 | 1.0260 | 0.33108 | * |
| 17 | Halibut Fillet | 4,4'-DDE | log(x+1) | DIFF | ERROR | ERROR | 4 | 0.03 | . | . | |
| 18 | Halibut Fillet | 4,4'-DDE | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.2309 | 0.65592 | * |
| 19 | Halibut Fillet | 4,4'-DDE | notrans | DIFF | ERROR | ERROR | 4 | 194.00 | . | . | |
| 20 | Halibut Fillet | 4,4'-DDE | notrans | DIFF | STATYPE | SS3 | 1 | 21.33 | 0.4399 | 0.56366 | * |
| 21 | Halibut Fillet | ARSENIC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.01 | . | . | |
| 22 | Halibut Fillet | ARSENIC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.8750 | 0.38071 | * |
| 23 | Halibut Fillet | ARSENIC, TOTAL | notrans | DIFF | ERROR | ERROR | 7 | 0.05 | . | . | |
| 24 | Halibut Fillet | ARSENIC, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.01 | 0.8750 | 0.38071 | * |
| 25 | Halibut Fillet | COPPER, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.03 | . | . | |
| 26 | Halibut Fillet | COPPER, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.7408 | 0.41789 | * |
| 27 | Halibut Fillet | COPPER, TOTAL | notrans | DIFF | ERROR | ERROR | 7 | 0.81 | . | . | |
| 28 | Halibut Fillet | COPPER, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.10 | 0.8485 | 0.38763 | * |
| 29 | Halibut Fillet | DIBUTYLTIN | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.02 | . | . | |
| 30 | Halibut Fillet | DIBUTYLTIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.01 | 2.9167 | 0.13142 | * |
| 31 | Halibut Fillet | DIBUTYLTIN | notrans | DIFF | ERROR | ERROR | 7 | 0.30 | . | . | |
| 32 | Halibut Fillet | DIBUTYLTIN | notrans | DIFF | STATYPE | SS3 | 1 | 0.13 | 2.9167 | 0.13142 | * |
| 33 | Halibut Fillet | LIPIDS | log(x+1) | DIFF | ERROR | ERROR | 9 | 0.09 | . | . | |
| 34 | Halibut Fillet | LIPIDS | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.02 | 1.0825 | 0.34580 | * |
| 35 | Halibut Fillet | LIPIDS | notrans | DIFF | ERROR | ERROR | 5 | 1170713.47 | . | . | |
| 36 | Halibut Fillet | LIPIDS | notrans | DIFF | STATYPE | SS3 | 1 | 265569.92 | 1.1342 | 0.33558 | * |
| 37 | Halibut Fillet | MERCURY, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 5 | 0.00 | . | . | |
| 38 | Halibut Fillet | MERCURY, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 1.0207 | 0.35871 | * |
| 39 | Halibut Fillet | MERCURY, TOTAL | notrans | DIFF | ERROR | ERROR | 5 | 0.00 | . | . | |
| 40 | Halibut Fillet | MERCURY, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.9924 | 0.36488 | * |
| 41 | Halibut Fillet | SELENIUM, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.00 | . | . | |
| 42 | Halibut Fillet | SELENIUM, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.01 | 37.3333 | 0.00049 | |
| 43 | Halibut Fillet | SELENIUM, TOTAL | notrans | DIFF | ERROR | ERROR | 7 | 0.02 | . | . | |
| 44 | Halibut Fillet | SELENIUM, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.08 | 37.3333 | 0.00049 | |
| 45 | Halibut Fillet | TRIBUTYLTIN | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.02 | . | . | |
| 46 | Halibut Fillet | TRIBUTYLTIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.01 | 2.9167 | 0.13142 | * |
| 47 | Halibut Fillet | TRIBUTYLTIN | notrans | DIFF | ERROR | ERROR | 7 | 0.30 | . | . | |
| 48 | Halibut Fillet | TRIBUTYLTIN | notrans | DIFF | STATYPE | SS3 | 1 | 0.13 | 2.9167 | 0.13142 | * |
| 49 | Halibut Fillet | ZINC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.05 | . | . | |
| 50 | Halibut Fillet | ZINC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.1558 | 0.70481 | * |
| 51 | Halibut Fillet | ZINC, TOTAL | notrans | DIFF | ERROR | ERROR | 7 | 31.50 | . | . | |

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Levene''s test for homoscedasticity
for the statype main effect

| OBS | Type of Result | Analyte name | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | **Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | Halibut Fillet | ZINC, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 2.00 | 0.444 | 0.52634 | • |
| 53 | White Croaker Fillet | 4,4'-DDD | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.11 | | | |
| 54 | White Croaker Fillet | 4,4'-DDD | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.01 | 0.478 | 0.51503 | • |
| 55 | White Croaker Fillet | 4,4'-DDD | notrans | DIFF | ERROR | ERROR | 6 | 499.17 | | | |
| 56 | White Croaker Fillet | 4,4'-DDD | notrans | DIFF | STATYPE | SS3 | 1 | 500.21 | 6.013 | 0.04965 | |
| 57 | White Croaker Fillet | 4,4'-DDE | log(x+1) | DIFF | ERROR | ERROR | 5 | 0.17 | | | |
| 58 | White Croaker Fillet | 4,4'-DDE | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.03 | 0.953 | 0.37390 | • |
| 59 | White Croaker Fillet | 4,4'-DDE | notrans | DIFF | ERROR | ERROR | 5 | 86376.67 | | | |
| 60 | White Croaker Fillet | 4,4'-DDE | notrans | DIFF | STATYPE | SS3 | 1 | 89400.04 | 5.175 | 0.07200 | • |
| 61 | White Croaker Fillet | ARSENIC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 5 | 0.01 | | | |
| 62 | White Croaker Fillet | ARSENIC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 2.273 | 0.19204 | • |
| 63 | White Croaker Fillet | ARSENIC, TOTAL | notrans | DIFF | ERROR | ERROR | 5 | 0.14 | | | |
| 64 | White Croaker Fillet | ARSENIC, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.06 | 3.278 | 0.19163 | • |
| 65 | White Croaker Fillet | COPPER, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.02 | | | |
| 66 | White Croaker Fillet | COPPER, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.02 | 5.710 | 0.04021 | |
| 67 | White Croaker Fillet | COPPER, TOTAL | notrans | DIFF | ERROR | ERROR | 7 | 0.67 | | | |
| 68 | White Croaker Fillet | COPPER, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.35 | 3.646 | 0.09784 | • |
| 69 | White Croaker Fillet | ENDOSULFAN II | log(x+1) | DIFF | ERROR | ERROR | 4 | 0.00 | | | |
| 70 | White Croaker Fillet | ENDOSULFAN II | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 10.994 | 0.02950 | |
| 71 | White Croaker Fillet | ENDOSULFAN II | notrans | DIFF | ERROR | ERROR | 4 | 1.41 | | | |
| 72 | White Croaker Fillet | ENDOSULFAN II | notrans | DIFF | STATYPE | SS3 | 1 | 3.63 | 10.318 | 0.03253 | |
| 73 | White Croaker Fillet | ENDRIN | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.00 | | | |
| 74 | White Croaker Fillet | ENDRIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.09 | 342.417 | 0.00000 | |
| 75 | White Croaker Fillet | ENDRIN | notrans | DIFF | ERROR | ERROR | 7 | 0.74 | | | |
| 76 | White Croaker Fillet | ENDRIN | notrans | DIFF | STATYPE | SS3 | 1 | 15.68 | 148.324 | 0.00001 | |
| 77 | White Croaker Fillet | LEAD, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.14 | | | |
| 78 | White Croaker Fillet | LEAD, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.06 | 2.917 | 0.13142 | • |
| 79 | White Croaker Fillet | LEAD, TOTAL | notrans | DIFF | ERROR | ERROR | 7 | 5.78 | | | |
| 80 | White Croaker Fillet | LEAD, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 2.41 | 2.917 | 0.13142 | • |
| 81 | White Croaker Fillet | LIPIDS | log(x+1) | DIFF | ERROR | ERROR | 5 | 0.02 | | | |
| 82 | White Croaker Fillet | LIPIDS | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 1.195 | 0.32410 | • |
| 83 | White Croaker Fillet | LIPIDS | notrans | DIFF | ERROR | ERROR | 5 | 225268000.00 | | | |
| 84 | White Croaker Fillet | LIPIDS | notrans | DIFF | STATYPE | SS3 | 1 | 35429142.86 | 0.786 | 0.41579 | • |
| 85 | White Croaker Fillet | MERCURY, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 5 | 0.00 | | | |
| 86 | White Croaker Fillet | MERCURY, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.649 | 0.45707 | • |
| 87 | White Croaker Fillet | MERCURY, TOTAL | notrans | DIFF | ERROR | ERROR | 5 | 0.00 | | | |
| 88 | White Croaker Fillet | MERCURY, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.690 | 0.44615 | • |
| 89 | White Croaker Fillet | SELENIUM, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.00 | | | |
| 90 | White Croaker Fillet | SELENIUM, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 2.917 | 0.13142 | • |
| 91 | White Croaker Fillet | SELENIUM, TOTAL | notrans | DIFF | ERROR | ERROR | 7 | 0.05 | | | |
| 92 | White Croaker Fillet | SELENIUM, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.02 | 2.917 | 0.13142 | • |
| 93 | White Croaker Fillet | TRIBUTYLTIN | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.01 | | | |
| 94 | White Croaker Fillet | TRIBUTYLTIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 2.145 | 0.19341 | • |
| 95 | White Croaker Fillet | TRIBUTYLTIN | notrans | DIFF | ERROR | ERROR | 6 | 2.73 | | | |
| 96 | White Croaker Fillet | TRIBUTYLTIN | notrans | DIFF | STATYPE | SS3 | 1 | 2.66 | 5.860 | 0.05181 | • |
| 97 | White Croaker Fillet | ZINC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.00 | | | |
| 98 | White Croaker Fillet | ZINC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.01 | 8.444 | 0.02713 | |
| 99 | White Croaker Fillet | ZINC, TOTAL | notrans | DIFF | ERROR | ERROR | 6 | 1.39 | | | |
| 100 | White Croaker Fillet | ZINC, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 2.03 | 8.741 | 0.02540 | |
| 101 | Halibut Whole Body | 4,4'-DDD | log(x+1) | DIFF | ERROR | ERROR | 22 | 0.26 | | | |
| 102 | Halibut Whole Body | 4,4'-DDD | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.05 | 4.459 | 0.04631 | |

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Levene's test for homoscedasticity
for the statype main effect

| OBS | Type of Result | Analyte name | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 103 | Halibut Whole Body | 4,4'-DDD | notrans | DIFF | ERROR | ERROR | 22 | 64.09 | . | . | |
| 104 | Halibut Whole Body | 4,4'-DDD | notrans | DIFF | STATYPE | SS3 | 1 | 12.74 | 4.37 | 0.04825 | |
| 105 | Halibut Whole Body | 4,4'-DDE | log(x+1) | DIFF | ERROR | ERROR | 18 | 0.52 | . | . | |
| 106 | Halibut Whole Body | 4,4'-DDE | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.01 | 0.92553 | * |
| 107 | Halibut Whole Body | 4,4'-DDE | notrans | DIFF | ERROR | ERROR | 18 | 76798.41 | . | . | |
| 108 | Halibut Whole Body | 4,4'-DDE | notrans | DIFF | STATYPE | SS3 | 1 | 2361.95 | 0.55 | 0.46646 | * |
| 109 | Halibut Whole Body | ARSENIC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.00 | . | . | |
| 110 | Halibut Whole Body | ARSENIC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 99999.99 | 0.00000 | |
| 111 | Halibut Whole Body | ARSENIC, TOTAL | notrans | DIFF | ERROR | ERROR | 6 | 0.00 | . | . | |
| 112 | Halibut Whole Body | ARSENIC, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.00 | . | . | |
| 113 | Halibut Whole Body | COPPER, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 18 | 0.36 | . | . | |
| 114 | Halibut Whole Body | COPPER, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.98 | 48.90 | 0.00000 | |
| 115 | Halibut Whole Body | COPPER, TOTAL | notrans | DIFF | ERROR | ERROR | 18 | 839.09 | . | . | |
| 116 | Halibut Whole Body | COPPER, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 1224.45 | 26.27 | 0.00007 | |
| 117 | Halibut Whole Body | DIBUTYLTIN | log(x+1) | DIFF | ERROR | ERROR | 21 | 0.11 | . | . | |
| 118 | Halibut Whole Body | DIBUTYLTIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.06 | 11.00 | 0.00328 | |
| 119 | Halibut Whole Body | DIBUTYLTIN | notrans | DIFF | ERROR | ERROR | 21 | 7.26 | . | . | |
| 120 | Halibut Whole Body | DIBUTYLTIN | notrans | DIFF | STATYPE | SS3 | 1 | 1.52 | 4.41 | 0.04807 | |
| 121 | Halibut Whole Body | ENDOSULFAN II | log(x+1) | DIFF | ERROR | ERROR | 22 | 0.58 | . | . | |
| 122 | Halibut Whole Body | ENDOSULFAN II | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.02 | 0.93 | 0.34491 | * |
| 123 | Halibut Whole Body | ENDOSULFAN II | notrans | DIFF | ERROR | ERROR | 22 | 232.80 | . | . | |
| 124 | Halibut Whole Body | ENDOSULFAN II | notrans | DIFF | STATYPE | SS3 | 1 | 19.72 | 1.86 | 0.18596 | * |
| 125 | Halibut Whole Body | LEAD, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 22 | 0.12 | . | . | |
| 126 | Halibut Whole Body | LEAD, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.03 | 5.34 | 0.03066 | |
| 127 | Halibut Whole Body | LEAD, TOTAL | notrans | DIFF | ERROR | ERROR | 22 | 2.50 | . | . | |
| 128 | Halibut Whole Body | LEAD, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.46 | 4.06 | 0.05638 | * |
| 129 | Halibut Whole Body | LIPIDS | log(x+1) | DIFF | ERROR | ERROR | 18 | 0.33 | . | . | |
| 130 | Halibut Whole Body | LIPIDS | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.02 | 1.03 | 0.32370 | * |
| 131 | Halibut Whole Body | LIPIDS | notrans | DIFF | ERROR | ERROR | 18 | 225072339.58 | . | . | |
| 132 | Halibut Whole Body | LIPIDS | notrans | DIFF | STATYPE | SS3 | 1 | 15983414.26 | 1.28 | 0.27306 | * |
| 133 | Halibut Whole Body | MERCURY, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 17 | 0.00 | . | . | |
| 134 | Halibut Whole Body | MERCURY, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 4.38 | 0.05157 | * |
| 135 | Halibut Whole Body | MERCURY, TOTAL | notrans | DIFF | ERROR | ERROR | 17 | 0.00 | . | . | |
| 136 | Halibut Whole Body | MERCURY, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.00 | 4.47 | 0.04964 | |
| 137 | Halibut Whole Body | NICKEL, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 22 | 0.16 | . | . | |
| 138 | Halibut Whole Body | NICKEL, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.11 | 15.29 | 0.00075 | |
| 139 | Halibut Whole Body | NICKEL, TOTAL | notrans | DIFF | ERROR | ERROR | 22 | 27.72 | . | . | |
| 140 | Halibut Whole Body | NICKEL, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 13.61 | 10.80 | 0.00337 | |
| 141 | Halibut Whole Body | SELENIUM, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 22 | 0.02 | . | . | |
| 142 | Halibut Whole Body | SELENIUM, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 2.73 | 0.11245 | * |
| 143 | Halibut Whole Body | SELENIUM, TOTAL | notrans | DIFF | ERROR | ERROR | 22 | 0.30 | . | . | |
| 144 | Halibut Whole Body | SELENIUM, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.04 | 2.73 | 0.11245 | * |
| 145 | Halibut Whole Body | TRIBUTYLTIN | log(x+1) | DIFF | ERROR | ERROR | 19 | 0.48 | . | . | |
| 146 | Halibut Whole Body | TRIBUTYLTIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.09 | 3.35 | 0.08293 | * |
| 147 | Halibut Whole Body | TRIBUTYLTIN | notrans | DIFF | ERROR | ERROR | 19 | 182.60 | . | . | |
| 148 | Halibut Whole Body | TRIBUTYLTIN | notrans | DIFF | STATYPE | SS3 | 1 | 9.83 | 1.02 | 0.32495 | * |
| 149 | Halibut Whole Body | ZINC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 18 | 0.18 | . | . | |
| 150 | Halibut Whole Body | ZINC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.03 | 2.64 | 0.12133 | * |
| 151 | Halibut Whole Body | ZINC, TOTAL | notrans | DIFF | ERROR | ERROR | 18 | 647.01 | . | . | |
| 152 | Halibut Whole Body | ZINC, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 140.75 | 3.92 | 0.06334 | * |
| 153 | White Croaker Whole Body | 4,4'-DDD | log(x+1) | DIFF | ERROR | ERROR | 16 | 0.32 | . | . | |

R0063577

Levene''s test for homoscedasticity
for the statype main effect

| OBS | Type of Result | Analyte name | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 154 | White Croaker Whole Body | 4,4'-DDD | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.0825 | 0.77768 | * |
| 155 | White Croaker Whole Body | 4,4'-DDD | notrans | DIFF | ERROR | ERROR | 16 | 612.65 | | | |
| 156 | White Croaker Whole Body | 4,4'-DDD | notrans | DIFF | STATYPE | SS3 | 1 | 81.60 | 2.1311 | 0.16369 | * |
| 157 | White Croaker Whole Body | 4,4'-DDE | log(x+1) | DIFF | ERROR | ERROR | 15 | 0.22 | | | |
| 158 | White Croaker Whole Body | 4,4'-DDE | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.0001 | 0.99419 | * |
| 159 | White Croaker Whole Body | 4,4'-DDE | notrans | DIFF | ERROR | ERROR | 15 | 308979.75 | | | |
| 160 | White Croaker Whole Body | 4,4'-DDE | notrans | DIFF | STATYPE | SS3 | 1 | 4379.88 | 0.2126 | 0.65133 | * |
| 161 | White Croaker Whole Body | ALPHA-BHC (HCH) | log(x+1) | DIFF | ERROR | ERROR | 19 | 0.06 | | | |
| 162 | White Croaker Whole Body | ALPHA-BHC (HCH) | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.01 | 1.7988 | 0.19567 | * |
| 163 | White Croaker Whole Body | ALPHA-BHC (HCH) | notrans | DIFF | ERROR | ERROR | 19 | 7.18 | | | |
| 164 | White Croaker Whole Body | ALPHA-BHC (HCH) | notrans | DIFF | STATYPE | SS3 | 1 | 0.68 | 1.7988 | 0.19567 | * |
| 165 | White Croaker Whole Body | ARSENIC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 15 | 0.01 | | | |
| 166 | White Croaker Whole Body | ARSENIC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.0072 | 0.93334 | * |
| 167 | White Croaker Whole Body | ARSENIC, TOTAL | notrans | DIFF | ERROR | ERROR | 15 | 0.20 | | | |
| 168 | White Croaker Whole Body | ARSENIC, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.0783 | 0.78342 | * |
| 169 | White Croaker Whole Body | BERYLLIUM, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 19 | 0.00 | | | |
| 170 | White Croaker Whole Body | BERYLLIUM, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 1.7988 | 0.19567 | * |
| 171 | White Croaker Whole Body | BERYLLIUM, TOTAL | notrans | DIFF | ERROR | ERROR | 19 | 0.00 | | | |
| 172 | White Croaker Whole Body | BERYLLIUM, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.00 | 1.7988 | 0.19567 | * |
| 173 | White Croaker Whole Body | CHROMIUM, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 19 | 0.01 | | | |
| 174 | White Croaker Whole Body | CHROMIUM, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.01 | 8.2405 | 0.00979 | |
| 175 | White Croaker Whole Body | CHROMIUM, TOTAL | notrans | DIFF | ERROR | ERROR | 19 | 0.15 | | | |
| 176 | White Croaker Whole Body | CHROMIUM, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.06 | 7.9756 | 0.01084 | |
| 177 | White Croaker Whole Body | COPPER, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 16 | 0.04 | | | |
| 178 | White Croaker Whole Body | COPPER, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.3816 | 0.54543 | * |
| 179 | White Croaker Whole Body | COPPER, TOTAL | notrans | DIFF | ERROR | ERROR | 16 | 2.31 | | | |
| 180 | White Croaker Whole Body | COPPER, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.44 | 3.0713 | 0.09883 | * |
| 181 | White Croaker Whole Body | DIBUTYLTIN | log(x+1) | DIFF | ERROR | ERROR | 13 | 0.01 | | | |
| 182 | White Croaker Whole Body | DIBUTYLTIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.03 | 48.0448 | 0.00001 | |
| 183 | White Croaker Whole Body | DIBUTYLTIN | notrans | DIFF | ERROR | ERROR | 13 | 0.19 | | | |
| 184 | White Croaker Whole Body | DIBUTYLTIN | notrans | DIFF | STATYPE | SS3 | 1 | 0.49 | 24.6205 | 0.00005 | |
| 185 | White Croaker Whole Body | ENDOSULFAN II | log(x+1) | DIFF | ERROR | ERROR | 14 | 0.21 | | | |
| 186 | White Croaker Whole Body | ENDOSULFAN II | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.35 | 23.6358 | 0.00025 | |
| 187 | White Croaker Whole Body | ENDOSULFAN II | notrans | DIFF | ERROR | ERROR | 14 | 276.52 | | | |
| 188 | White Croaker Whole Body | ENDOSULFAN II | notrans | DIFF | STATYPE | SS3 | 1 | 205.35 | 10.3969 | 0.00612 | |
| 189 | White Croaker Whole Body | ENDRIN | log(x+1) | DIFF | ERROR | ERROR | 19 | 0.56 | | | |
| 190 | White Croaker Whole Body | ENDRIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.13 | 4.4392 | 0.04864 | |
| 191 | White Croaker Whole Body | ENDRIN | notrans | DIFF | ERROR | ERROR | 19 | 613.70 | | | |
| 192 | White Croaker Whole Body | ENDRIN | notrans | DIFF | STATYPE | SS3 | 1 | 71.90 | 2.2261 | 0.15212 | * |
| 193 | White Croaker Whole Body | LIPIDS | log(x+1) | DIFF | ERROR | ERROR | 15 | 0.08 | | | |
| 194 | White Croaker Whole Body | LIPIDS | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 0.6311 | 0.43934 | * |
| 195 | White Croaker Whole Body | LIPIDS | notrans | DIFF | ERROR | ERROR | 15 | 996456731.91 | | | |
| 196 | White Croaker Whole Body | LIPIDS | notrans | DIFF | STATYPE | SS3 | 1 | 8625927.33 | 0.1298 | 0.72361 | * |
| 197 | White Croaker Whole Body | MERCURY, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 17 | 0.00 | | | |
| 198 | White Croaker Whole Body | MERCURY, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 1.8346 | 0.19332 | * |
| 199 | White Croaker Whole Body | MERCURY, TOTAL | notrans | DIFF | ERROR | ERROR | 17 | 0.00 | | | |
| 200 | White Croaker Whole Body | MERCURY, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.00 | 1.7559 | 0.20267 | * |
| 201 | White Croaker Whole Body | SELENIUM, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 15 | 0.01 | | | |
| 202 | White Croaker Whole Body | SELENIUM, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.00 | 5.3995 | 0.03460 | |
| 203 | White Croaker Whole Body | SELENIUM, TOTAL | notrans | DIFF | ERROR | ERROR | 15 | 0.17 | | | |
| 204 | White Croaker Whole Body | SELENIUM, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 0.06 | 4.9112 | 0.04256 | |

R0063578

Levene''s test for homoscedasticity
for the statype main effect

| OBS | Type of Result | Analyte name | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 205 | White Croaker Whole Body | TRIBUTYLTIN | log(x+1) | DIFF | ERROR | ERROR | 15 | 0.1573 | . | . | |
| 206 | White Croaker Whole Body | TRIBUTYLTIN | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.0238 | 2.2738 | 0.15235 | * |
| 207 | White Croaker Whole Body | TRIBUTYLTIN | notrans | DIFF | ERROR | ERROR | 15 | 57.1050 | . | . | |
| 208 | White Croaker Whole Body | TRIBUTYLTIN | notrans | DIFF | STATYPE | SS3 | 1 | 2.1593 | 0.5662 | 0.46344 | * |
| 209 | White Croaker Whole Body | ZINC, TOTAL | log(x+1) | DIFF | ERROR | ERROR | 17 | 0.0068 | . | . | |
| 210 | White Croaker Whole Body | ZINC, TOTAL | log(x+1) | DIFF | STATYPE | SS3 | 1 | 0.0041 | 10.7125 | 0.00448 | |
| 211 | White Croaker Whole Body | ZINC, TOTAL | notrans | DIFF | ERROR | ERROR | 17 | 5.7855 | . | . | |
| 212 | White Croaker Whole Body | ZINC, TOTAL | notrans | DIFF | STATYPE | SS3 | 1 | 3.3574 | 9.8655 | 0.00596 | |

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| OBS | MATRIX | CHEM | TRANS |
|---|---|---|---|
| 1 | Halibut Bile | BENZO(A)PYRENE, EQUIV | notrans |
| 2 | Halibut Bile | NAPHTHALENE, EQUIV | notrans |
| 3 | Halibut Bile | PHENANTHRENE, EQUIV | notrans |
| 4 | Halibut Bile | PYRENE, EQUIV | notrans |
| 5 | Halibut Fillet | 4,4'-DDE | notrans |
| 6 | Halibut Fillet | ARSENIC, TOTAL | notrans |
| 7 | Halibut Fillet | COPPER, TOTAL | notrans |
| 8 | Halibut Fillet | DIBUTYLTIN | notrans |
| 9 | Halibut Fillet | LIPIDS | notrans |
| 10 | Halibut Fillet | MERCURY, TOTAL | notrans |
| 11 | Halibut Fillet | SELENIUM, TOTAL | rank |
| 12 | Halibut Fillet | TRIBUTYLTIN | notrans |
| 13 | Halibut Fillet | ZINC, TOTAL | notrans |
| 14 | White Croaker Fillet | 4,4'-DDD | log(x+1) |
| 15 | White Croaker Fillet | 4,4'-DDE | notrans |
| 16 | White Croaker Fillet | ARSENIC, TOTAL | notrans |
| 17 | White Croaker Fillet | COPPER, TOTAL | notrans |
| 18 | White Croaker Fillet | ENDOSULFAN II | rank |
| 19 | White Croaker Fillet | ENDRIN | rank |
| 20 | White Croaker Fillet | LEAD, TOTAL | notrans |
| 21 | White Croaker Fillet | LIPIDS | notrans |
| 22 | White Croaker Fillet | MERCURY, TOTAL | notrans |
| 23 | White Croaker Fillet | SELENIUM, TOTAL | notrans |
| 24 | White Croaker Fillet | TRIBUTYLTIN | notrans |
| 25 | White Croaker Fillet | ZINC, TOTAL | rank |
| 26 | Halibut Whole Body | 4,4'-DDD | rank |
| 27 | Halibut Whole Body | 4,4'-DDE | notrans |
| 28 | Halibut Whole Body | ARSENIC, TOTAL | rank |
| 29 | Halibut Whole Body | COPPER, TOTAL | rank |
| 30 | Halibut Whole Body | DIBUTYLTIN | rank |
| 31 | Halibut Whole Body | ENDOSULFAN II | notrans |
| 32 | Halibut Whole Body | LEAD, TOTAL | notrans |
| 33 | Halibut Whole Body | LIPIDS | notrans |
| 34 | Halibut Whole Body | MERCURY, TOTAL | log(x+1) |
| 35 | Halibut Whole Body | NICKEL, TOTAL | rank |
| 36 | Halibut Whole Body | SELENIUM, TOTAL | notrans |
| 37 | Halibut Whole Body | TRIBUTYLTIN | notrans |
| 38 | Halibut Whole Body | ZINC, TOTAL | notrans |
| 39 | White Croaker Whole Body | 4,4'-DDD | notrans |
| 40 | White Croaker Whole Body | 4,4'-DDE | notrans |
| 41 | White Croaker Whole Body | ALPHA-BHC (HCH) | notrans |
| 42 | White Croaker Whole Body | ARSENIC, TOTAL | notrans |
| 43 | White Croaker Whole Body | BERYLLIUM, TOTAL | notrans |
| 44 | White Croaker Whole Body | CHROMIUM, TOTAL | rank |
| 45 | White Croaker Whole Body | COPPER, TOTAL | notrans |
| 46 | White Croaker Whole Body | DIBUTYLTIN | rank |
| 47 | White Croaker Whole Body | ENDOSULFAN II | rank |
| 48 | White Croaker Whole Body | ENDRIN | notrans |
| 49 | White Croaker Whole Body | LIPIDS | notrans |
| 50 | White Croaker Whole Body | MERCURY, TOTAL | notrans |
| 51 | White Croaker Whole Body | SELENIUM, TOTAL | rank |
| 52 | White Croaker Whole Body | TRIBUTYLTIN | notrans |
| 53 | White Croaker Whole Body | ZINC, TOTAL | rank |

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| OBS | MATRIX | CHEM | STATYPE | MEAN | N |
|---|---|---|---|---|---|
| 1 | Halibut Bile | BENZO(A)PYRENE, EQUIV | Basin | 15.61 | 12 |
| 2 | Halibut Bile | BENZO(A)PYRENE, EQUIV | Reference | 0.45 | 6 |
| 3 | Halibut Bile | NAPHTHALENE, EQUIV | Basin | 235.45 | 12 |
| 4 | Halibut Bile | NAPHTHALENE, EQUIV | Reference | 144.57 | 6 |
| 5 | Halibut Bile | PHENANTHRENE, EQUIV | Basin | 167.90 | 12 |
| 6 | Halibut Bile | PHENANTHRENE, EQUIV | Reference | 113.95 | 6 |
| 7 | Halibut Bile | PYRENE, EQUIV | Basin | 115.85 | 12 |
| 8 | Halibut Bile | PYRENE, EQUIV | Reference | 61.93 | 6 |
| 9 | Halibut Fillet | 4,4'-DDE | Basin | 57.50 | 6 |
| 10 | Halibut Fillet | 4,4'-DDE | Reference | 22.10 | 3 |
| 11 | Halibut Fillet | ARSENIC, TOTAL | Basin | 0.31 | 6 |
| 12 | Halibut Fillet | ARSENIC, TOTAL | Reference | 0.37 | 3 |
| 13 | Halibut Fillet | COPPER, TOTAL | Basin | 0.83 | 6 |
| 14 | Halibut Fillet | COPPER, TOTAL | Reference | 1.00 | 3 |
| 15 | Halibut Fillet | DIBUTYLTIN | Basin | 0.65 | 6 |
| 16 | Halibut Fillet | DIBUTYLTIN | Reference | 0.50 | 3 |
| 17 | Halibut Fillet | LIPIDS | Basin | 1350.83 | 6 |
| 18 | Halibut Fillet | LIPIDS | Reference | 1670.00 | 3 |
| 19 | Halibut Fillet | MERCURY, TOTAL | Basin | 0.08 | 6 |
| 20 | Halibut Fillet | MERCURY, TOTAL | Reference | 0.05 | 3 |
| 21 | Halibut Fillet | SELENIUM, TOTAL | Basin | 0.25 | 6 |
| 22 | Halibut Fillet | SELENIUM, TOTAL | Reference | 0.40 | 3 |
| 23 | Halibut Fillet | TRIBUTYLTIN | Basin | 0.65 | 6 |
| 24 | Halibut Fillet | TRIBUTYLTIN | Reference | 0.50 | 3 |
| 25 | Halibut Fillet | ZINC, TOTAL | Basin | 7.50 | 6 |
| 26 | Halibut Fillet | ZINC, TOTAL | Reference | 9.00 | 3 |
| 27 | White Croaker Fillet | 4,4'-DDD | Basin | 34.33 | 6 |
| 28 | White Croaker Fillet | 4,4'-DDD | Reference | 13.50 | 3 |
| 29 | White Croaker Fillet | 4,4'-DDE | Basin | 338.67 | 6 |
| 30 | White Croaker Fillet | 4,4'-DDE | Reference | 1000.00 | 3 |
| 31 | White Croaker Fillet | ARSENIC, TOTAL | Basin | 0.81 | 6 |
| 32 | White Croaker Fillet | ARSENIC, TOTAL | Reference | 1.10 | 3 |
| 33 | White Croaker Fillet | COPPER, TOTAL | Basin | 0.92 | 6 |
| 34 | White Croaker Fillet | COPPER, TOTAL | Reference | 0.50 | 3 |
| 35 | White Croaker Fillet | ENDOSULFAN II | Basin | 28.25 | 6 |
| 36 | White Croaker Fillet | ENDOSULFAN II | Reference | 2.50 | 3 |
| 37 | White Croaker Fillet | ENDRIN | Basin | 5.30 | 6 |
| 38 | White Croaker Fillet | ENDRIN | Reference | 2.50 | 3 |
| 39 | White Croaker Fillet | LEAD, TOTAL | Basin | 0.91 | 6 |
| 40 | White Croaker Fillet | LEAD, TOTAL | Reference | 0.25 | 3 |
| 41 | White Croaker Fillet | LIPIDS | Basin | 47550.00 | 6 |
| 42 | White Croaker Fillet | LIPIDS | Reference | 69033.33 | 3 |
| 43 | White Croaker Fillet | MERCURY, TOTAL | Basin | 0.06 | 6 |
| 44 | White Croaker Fillet | MERCURY, TOTAL | Reference | 0.03 | 3 |
| 45 | White Croaker Fillet | SELENIUM, TOTAL | Basin | 0.31 | 6 |
| 46 | White Croaker Fillet | SELENIUM, TOTAL | Reference | 0.25 | 3 |
| 47 | White Croaker Fillet | TRIBUTYLTIN | Basin | 4.95 | 6 |
| 48 | White Croaker Fillet | TRIBUTYLTIN | Reference | 9.00 | 3 |
| 49 | White Croaker Fillet | ZINC, TOTAL | Basin | 7.67 | 6 |
| 50 | White Croaker Fillet | ZINC, TOTAL | Reference | 15.00 | 3 |
| 51 | Halibut Whole Body | 4,4'-DDD | Basin | 2.91 | 15 |
| 52 | Halibut Whole Body | 4,4'-DDD | Reference | 3.96 | 9 |
| 53 | Halibut Whole Body | 4,4'-DDE | Basin | 101.83 | 15 |
| 54 | Halibut Whole Body | 4,4'-DDE | Reference | 102.00 | 9 |
| 55 | Halibut Whole Body | ARSENIC, TOTAL | Basin | 0.34 | 15 |

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| OBS | MATRIX | CHEM | STATYPE | MEAN | N |
|---|---|---|---|---|---|
| 56 | Halibut Whole Body | ARSENIC, TOTAL | Reference | 0.33 | 9 |
| 57 | Halibut Whole Body | COPPER, TOTAL | Basin | 3.33 | 15 |
| 58 | Halibut Whole Body | COPPER, TOTAL | Reference | 12.06 | 9 |
| 59 | Halibut Whole Body | DIBUTYLTIN | Basin | 2.24 | 15 |
| 60 | Halibut Whole Body | DIBUTYLTIN | Reference | 1.52 | 9 |
| 61 | Halibut Whole Body | ENDOSULFAN II | Basin | 4.37 | 15 |
| 62 | Halibut Whole Body | ENDOSULFAN II | Reference | 3.27 | 9 |
| 63 | Halibut Whole Body | LEAD, TOTAL | Basin | 0.35 | 15 |
| 64 | Halibut Whole Body | LEAD, TOTAL | Reference | 0.60 | 9 |
| 65 | Halibut Whole Body | LIPIDS | Basin | 7987.33 | 15 |
| 66 | Halibut Whole Body | LIPIDS | Reference | 8056.67 | 9 |
| 67 | Halibut Whole Body | MERCURY, TOTAL | Basin | 0.03 | 15 |
| 68 | Halibut Whole Body | MERCURY, TOTAL | Reference | 0.02 | 9 |
| 69 | Halibut Whole Body | NICKEL, TOTAL | Basin | 1.50 | 15 |
| 70 | Halibut Whole Body | NICKEL, TOTAL | Reference | 2.50 | 9 |
| 71 | Halibut Whole Body | SELENIUM, TOTAL | Basin | 0.29 | 15 |
| 72 | Halibut Whole Body | SELENIUM, TOTAL | Reference | 0.25 | 9 |
| 73 | Halibut Whole Body | TRIBUTYLTIN | Basin | 6.95 | 15 |
| 74 | Halibut Whole Body | TRIBUTYLTIN | Reference | 4.23 | 9 |
| 75 | Halibut Whole Body | ZINC, TOTAL | Basin | 14.73 | 15 |
| 76 | Halibut Whole Body | ZINC, TOTAL | Reference | 19.11 | 9 |
| 77 | White Croaker Whole Body | 4,4'-DDD | Basin | 21.60 | 15 |
| 78 | White Croaker Whole Body | 4,4'-DDD | Reference | 19.35 | 6 |
| 79 | White Croaker Whole Body | 4,4'-DDE | Basin | 285.67 | 15 |
| 80 | White Croaker Whole Body | 4,4'-DDE | Reference | 290.17 | 6 |
| 81 | White Croaker Whole Body | ALPHA-BHC (HCH) | Basin | 2.71 | 15 |
| 82 | White Croaker Whole Body | ALPHA-BHC (HCH) | Reference | 2.50 | 6 |
| 83 | White Croaker Whole Body | ARSENIC, TOTAL | Basin | 1.21 | 15 |
| 84 | White Croaker Whole Body | ARSENIC, TOTAL | Reference | 0.82 | 6 |
| 85 | White Croaker Whole Body | BERYLLIUM, TOTAL | Basin | 0.05 | 15 |
| 86 | White Croaker Whole Body | BERYLLIUM, TOTAL | Reference | 0.05 | 6 |
| 87 | White Croaker Whole Body | CHROMIUM, TOTAL | Basin | 0.33 | 15 |
| 88 | White Croaker Whole Body | CHROMIUM, TOTAL | Reference | 0.25 | 6 |
| 89 | White Croaker Whole Body | COPPER, TOTAL | Basin | 2.53 | 15 |
| 90 | White Croaker Whole Body | COPPER, TOTAL | Reference | 1.00 | 6 |
| 91 | White Croaker Whole Body | DIBUTYLTIN | Basin | 1.57 | 15 |
| 92 | White Croaker Whole Body | DIBUTYLTIN | Reference | 0.50 | 6 |
| 93 | White Croaker Whole Body | ENDOSULFAN II | Basin | 11.13 | 15 |
| 94 | White Croaker Whole Body | ENDOSULFAN II | Reference | 8.08 | 6 |
| 95 | White Croaker Whole Body | ENDRIN | Basin | 5.06 | 15 |
| 96 | White Croaker Whole Body | ENDRIN | Reference | 2.50 | 6 |
| 97 | White Croaker Whole Body | LIPIDS | Basin | 46147.33 | 15 |
| 98 | White Croaker Whole Body | LIPIDS | Reference | 34970.00 | 6 |
| 99 | White Croaker Whole Body | MERCURY, TOTAL | Basin | 0.06 | 15 |
| 100 | White Croaker Whole Body | MERCURY, TOTAL | Reference | 0.06 | 6 |
| 101 | White Croaker Whole Body | SELENIUM, TOTAL | Basin | 0.73 | 15 |
| 102 | White Croaker Whole Body | SELENIUM, TOTAL | Reference | 0.56 | 6 |
| 103 | White Croaker Whole Body | TRIBUTYLTIN | Basin | 9.70 | 15 |
| 104 | White Croaker Whole Body | TRIBUTYLTIN | Reference | 1.78 | 6 |
| 105 | White Croaker Whole Body | ZINC, TOTAL | Basin | 11.53 | 15 |
| 106 | White Croaker Whole Body | ZINC, TOTAL | Reference | 13.83 | 6 |

R0063582

Type of Result=Halibut Bile Analyte name=BENZO(A)PYRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 18



Type of Result=Halibut Bile Analyte name=BENZO(A)PYRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 205.11013611 | 205.11013611 | 1.05 | 0.3215 |
| Error | 16 | 3135.09077500 | 195.94317344 | | |
| Corrected Total | 17 | 3340.20091111 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.061407 | 105.8670 | 13.99797033 | 13.22222222 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 205.11013611 | 205.11013611 | 1.05 | 0.3215 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 205.11013611 | 205.11013611 | 1.05 | 0.3215 |

R0063583

Type of Result=Halibut Bile Analyte name=BENZO(A)PYRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 16 MSE= 195.9432
Critical Value of Studentized Range= 2.998
Minimum Significant Difference= 14.837
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 15.609 | 12 | Basin |
| A | | | |
| A | 8.468 | 6 | Reference |

R0063584

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 18



General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 33039.12111111 | 33039.12111111 | 1.28 | 0.2745 |
| Error | 16 | 412915.28333333 | 25807.20520833 | | |
| Corrected Total | 17 | 445954.40444444 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.074086 | 78.30459 | 160.64621131 | 205.15555556 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 33039.12111111 | 33039.12111111 | 1.28 | 0.2745 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 33039.12111111 | 33039.12111111 | 1.28 | 0.2745 |

R0063585

---------- Type of Result=Halibut Bile Analyte name=NAPHTHALENE, EQUIV TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 16 MSE= 25807.21
Critical Value of Studentized Range= 2.998
Minimum Significant Difference= 170.27
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 235.45 | 12 | Basin |
| A | | | |
| A | 144.57 | 6 | Reference |

R0063586

VOL 18

Type of Result=Halibut Bile Analyte name=PHENANTHRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 18



Type of Result=Halibut Bile Analyte name=PHENANTHRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 11642.41000000 | 11642.41000000 | 0.73 | 0.4059 |
| Error | 16 | 255579.97500000 | 15973.74843750 | | |
| Corrected Total | 17 | 267222.38500000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.043568 | 84.30503 | 126.38729540 | 149.91666667 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 11642.41000000 | 11642.41000000 | 0.73 | 0.4059 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 11642.41000000 | 11642.41000000 | 0.73 | 0.4059 |

R0063587



VOL 178

Type of Result=Halibut Bile Analyte name=PHENANTHRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 16 MSE= 15973.75
Critical Value of Studentized Range= 2.998
Minimum Significant Difference= 133.96
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 167.90 | 12 | Basin |
| A | | | |
| A | 113.95 | 6 | Reference |

R0063588

VOL 18

Type of Result=Halibut Bile Analyte name=PYRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 18



Type of Result=Halibut Bile Analyte name=PYRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 11628.02777778 | 11628.02777778 | 1.00 | 0.3332 |
| Error | 16 | 186824.32333333 | 11676.52020833 | | |
| Corrected Total | 17 | 198452.35111111 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.058594 | 110.4009 | 108.05794838 | 97.87777778 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 11628.02777778 | 11628.02777778 | 1.00 | 0.3332 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 11628.02777778 | 11628.02777778 | 1.00 | 0.3332 |

R0063589



VOL 178

Type of Result=Halibut Bile Analyte name=PYRENE, EQUIV TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 16 MSE= 11676.52
Critical Value of Studentized Range= 2.998
Minimum Significant Difference= 114.53
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 115.85 | 12 | Basin |
| A | | | |
| A | 61.93 | 6 | Reference |

R0063590

VOL 18

---------- Type of Result=Halibut Fillet Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



---------- Type of Result=Halibut Fillet Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 2506.32000000 | 2506.32000000 | 0.69 | 0.4342 |
| Error | 7 | 25499.16000000 | 3642.73714286 | | |
| Corrected Total | 8 | 28005.48000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.089494 | 132.0680 | 60.35509210 | 45.70000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 2506.32000000 | 2506.32000000 | 0.69 | 0.4342 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 2506.32000000 | 2506.32000000 | 0.69 | 0.4342 |

R0063591

VOL 18

---------- Type of Result=Halibut Fillet Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 3642.737
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 100.92
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 97.90 | 6 | Basin |
| A | | | |
| A | 22.10 | 3 | Reference |

R0063592

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Type of Result=Halibut Fillet Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



Type of Result=Halibut Fillet Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.00680556 | 0.00680556 | 0.26 | 0.6263 |
| Error | 7 | 0.18375000 | 0.02625000 | | |
| Corrected Total | 8 | 0.19055556 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.035716 | 49.62938 | 0.16201852 | 0.32777778 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00680556 | 0.00680556 | 0.26 | 0.6263 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00680556 | 0.00680556 | 0.26 | 0.6263 |

R0063593

Type of Result=Halibut Fillet Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.02625
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.2709
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.3667 | 3 | Reference |
| A | | | |
| A | 0.3083 | 6 | Basin |

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---------- Type of Result=Halibut Fillet Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



---------- Type of Result=Halibut Fillet Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.05555556 | 0.05555556 | 0.12 | 0.7427 |
| Error | 7 | 3.33333333 | 0.47619048 | | |
| Corrected Total | 8 | 3.38888889 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.016393 | 77.63238 | 0.69006556 | 0.88888889 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.05555556 | 0.05555556 | 0.12 | 0.7427 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.05555556 | 0.05555556 | 0.12 | 0.7427 |

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Type of Result=Halibut Fillet Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.47619
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 1.1538
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 1.0000 | 3 | Reference |
| A | | | |
| A | 0.8333 | 6 | Basin |

R0063596

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Type of Result=Halibut Fillet Analyte name=DIBUTYLTIN TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9

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Type of Result=Halibut Fillet Analyte name=DIBUTYLTIN TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.04500000 | 0.04500000 | 0.47 | 0.5145 |
| Error | 7 | 0.67500000 | 0.09642857 | | |
| Corrected Total | 8 | 0.72000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.062500 | 51.75492 | 0.31052950 | 0.60000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.04500000 | 0.04500000 | 0.47 | 0.5165 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.04500000 | 0.04500000 | 0.47 | 0.5165 |

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Type of Result=Halibut Fillet Analyte name=DIBUTYLTIN TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.096429
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.5192
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.6500 | 6 | Basin |
| A | | | |
| A | 0.5000 | 3 | Reference |

R0063598

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Type of Result=Halibut Fillet Analyte name=LIPIDS TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



Type of Result=Halibut Fillet Analyte name=LIPIDS TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 203734.72222222 | 203734.72222222 | 0.40 | 0.5453 |
| Error | 7 | 3531568.83333334 | 504509.83333333 | | |
| Corrected Total | 8 | 3735303.55555556 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.054543 | 48.76266 | 710.28855639 | 1457.22222222 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 203734.72222222 | 203734.72222222 | 0.40 | 0.5453 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 203734.72222222 | 203734.72222222 | 0.40 | 0.5453 |

R0063599

Type of Result=Halibut Fillet Analyte name=LIPIDS TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 504509.8
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 1187.6
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 1670.0 | 3 | Reference |
| A | | | |
| A | 1350.8 | 6 | Basin |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.00200556 | 0.00200556 | 0.71 | 0.4270 |
| Error | 7 | 0.01975000 | 0.00282143 | | |
| Corrected Total | 8 | 0.02175556 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.092184 | 78.36952 | 0.05311712 | 0.06777778 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00200556 | 0.00200556 | 0.71 | 0.4270 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00200556 | 0.00200556 | 0.71 | 0.4270 |

R0063601

Type of Result=Halibut Fillet Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.002821
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.0888
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.07833 | 6 | Basin |
| A | | | |
| A | 0.04667 | 3 | Reference |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 4.50000000 | 4.50000000 | 2.33 | 0.1705 |
| Error | 7 | 13.50000000 | 1.92857143 | | |
| Corrected Total | 8 | 18.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.250000 | 27.77460 | 1.38873015 | 5.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 4.50000000 | 4.50000000 | 2.33 | 0.1705 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 4.50000000 | 4.50000000 | 2.33 | 0.1705 |

R0063603

---------- Type of Result=Halibut Fillet Analyte name=SELENIUM, TOTAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 1.928571
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 2.322
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 6.0000 | 3 | Reference |
| A | | | |
| A | 4.5000 | 6 | Basin |

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---------- Type of Result=Halibut Fillet Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9

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---------- Type of Result=Halibut Fillet Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.04500000 | 0.04500000 | 0.47 | 0.5165 |
| Error | 7 | 0.67500000 | 0.09642857 | | |
| Corrected Total | 8 | 0.72000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.062500 | 51.75492 | 0.31052950 | 0.60000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.04500000 | 0.04500000 | 0.47 | 0.5165 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.04500000 | 0.04500000 | 0.47 | 0.5165 |

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1229

Type of Result=Halibut Fillet Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.096429
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.5192
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATTYPE |
|---|---|---|---|
| A | 0.6900 | 6 | Basin |
| A | | | |
| A | 0.5000 | 3 | Reference |

R0063606

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Type of Result=Halibut Fillet Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



Type of Result=Halibut Fillet Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 4.50000000 | 4.50000000 | 0.24 | 0.6420 |
| Error | 7 | 133.50000000 | 19.07142857 | | |
| Corrected Total | 8 | 138.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.032609 | 84.98886 | 4.36708468 | 5.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 4.50000000 | 4.50000000 | 0.24 | 0.6420 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 4.50000000 | 4.50000000 | 0.24 | 0.6420 |

R0063607



VOL 18

---------- Type of Result=Halibut Fillet Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 19.07143
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 7.302
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 9.000 | 3 | Reference |
| A | | | |
| A | 7.500 | 6 | Basin |

R0063608

VOL 18

Type of Result=White Croaker Fillet Analyte name=4,4'-DDD TRANS=log(N+1) DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



Type of Result=White Croaker Fillet Analyte name=4,4'-DDD TRANS=log(N+1) DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.33107422 | 0.33107422 | 2.51 | 0.1573 |
| Error | 7 | 0.92432195 | 0.13204599 | | |
| Corrected Total | 8 | 1.25539616 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.263721 | 27.61764 | 0.36338133 | 1.30629816 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.33107422 | 0.33107422 | 2.51 | 0.1573 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.33107422 | 0.33107422 | 2.51 | 0.1573 |

R0063609

Type of Result=White Croaker Fillet Analyte name=4,4'-DDD TRANS=log(x+1) DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.132046
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.6076
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 1.4619 | 6 | Basin |
| A | | | |
| A | 1.0351 | 3 | Reference |

R0063610

VOL 18

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---------- Type of Result=White Croaker Fillet Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9

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---------- Type of Result=White Croaker Fillet Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 882677.55555556 | 882677.55555556 | 4.94 | 0.0616 |
| Error | 7 | 1249977.33333333 | 178568.19047619 | | |
| Corrected Total | 8 | 2132654.88888889 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.413887 | 75.85081 | 422.57329598 | 557.11111111 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 882677.55555556 | 882677.55555556 | 4.94 | 0.0616 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 882677.55555556 | 882677.55555556 | 4.94 | 0.0616 |

R0063611

VOL 18

Type of Result=White Croaker Fillet Analyte name=4,4'-DDE TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 178568.2
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 706.57
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 1000.0 | 3 | Reference |
| A | | | |
| A | 335.7 | 6 | Basin |

VOL 18

R0063612

Type of Result=White Croaker Fillet Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



Type of Result=White Croaker Fillet Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.15125000 | 0.15125000 | 1.31 | 0.2902 |
| Error | 7 | 0.80875000 | 0.11553571 | | |
| Corrected Total | 8 | 0.96000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.157552 | 37.08059 | 0.33990545 | 0.91666667 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.15125000 | 0.15125000 | 1.31 | 0.2902 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.15125000 | 0.15125000 | 1.31 | 0.2902 |

R0063613

---------- Type of Result=White Crosker Fillet Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.115536
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.5683
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 1.1000 | 3 | Reference |
| A | | | |
| A | 0.8250 | 6 | Basin |

---------- Type of Result=White Crosker Fillet Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



---------- Type of Result=White Crosker Fillet Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.34722222 | 0.34722222 | 1.42 | 0.2718 |
| Error | 7 | 1.70833333 | 0.24404762 | | |
| Corrected Total | 8 | 2.05555556 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.168919 | 63.51580 | 0.49401176 | 0.77777778 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.34722222 | 0.34722222 | 1.42 | 0.2718 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.34722222 | 0.34722222 | 1.42 | 0.2718 |

R0063615

Type of Result=White Croaker Fillet Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.244048
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.826
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.9167 | 6 | Basin |
| A | | | |
| A | 0.5000 | 3 | Reference |

R0063616

Type of Result=White Croaker Fillet Analyte name=ENDOSULFAN II TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATTYPE | 2 | Basin Reference |

Number of observations in by group = 9



Type of Result=White Croaker Fillet Analyte name=ENDOSULFAN II TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 28.12500000 | 28.12500000 | 7.33 | 0.0303 |
| Error | 7 | 26.87500000 | 3.83928571 | | |
| Corrected Total | 8 | 55.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.511364 | 39.18819 | 1.95940953 | 5.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATTYPE | 1 | 28.12500000 | 28.12500000 | 7.33 | 0.0303 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATTYPE | 1 | 28.12500000 | 28.12500000 | 7.33 | 0.0303 |

R0063617



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Type of Result=White Croaker Fillet Analyte name=ENDOSULFAN II TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 3.039286
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 3.2762
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 6.250 | 6 | Basin |
| B | 2.500 | 3 | Reference |

R0063618

2472 VOL 18

Type of Result=White Croaker Fillet Analyte name=ENDRIN TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



Type of Result=White Croaker Fillet Analyte name=ENDRIN TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 10.12500000 | 10.12500000 | 2.19 | 0.1825 |
| Error | 7 | 32.37500000 | 4.62500000 | | |
| Corrected Total | 8 | 42.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.238235 | 43.01163 | 2.15058132 | 5.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 10.12500000 | 10.12500000 | 2.19 | 0.1825 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 10.12500000 | 10.12500000 | 2.19 | 0.1825 |

R0063619

VOL 18

Type of Result=White Croaker Fillet Analyte name=ENDRIN TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 4.625
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 3.5959
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 9.750 | 8 | Basin |
| A | | | |
| A | 3.500 | 3 | Reference |

R0063620

VOL 18

---------- Type of Result=White Croaker Fillet Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



---------- Type of Result=White Croaker Fillet Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.86680556 | 0.86680556 | 0.47 | 0.5165 |
| Error | 7 | 13.00208333 | 1.85744048 | | |
| Corrected Total | 8 | 13.86888889 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.062500 | 197.8373 | 1.36287948 | 0.68888889 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.86680556 | 0.86680556 | 0.47 | 0.5165 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.86680556 | 0.86680556 | 0.47 | 0.5165 |

R0063621

VOL 18

---------- Type of Result=White Croaker Fillet Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 1.85744
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 2.2788
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.9083 | 6 | Basin |
| A | | | |
| A | 0.2500 | 3 | Reference |

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1246

R0063622

Type of Result=White Croaker Fillet Analyte name=LIPIDS TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



Type of Result=White Croaker Fillet Analyte name=LIPIDS TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 611333888.88888300 | 611333888.88888300 | 4.37 | 0.0748 |
| Error | 7 | 978481666.66666900 | 139783095.23809500 | | |
| Corrected Total | 8 | 1589815555.55555000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.384531 | 22.14965 | 1182[illegible].99011410 | 53377.77777778 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 611333888.88888700 | 611333888.88888700 | 4.37 | 0.0748 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 611333888.88888700 | 611333888.88888700 | 4.37 | 0.0748 |

---------- Type of Result=White Croaker Fillet Analyte name=LIPIDS TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 1.3978E8
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 19769
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 65033 | 3 | Reference |
| A | | | |
| A | 47550 | 4 | Basin |



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---------- Type of Result=White Croaker Fillet Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



---------- Type of Result=White Croaker Fillet Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.00142222 | 0.00142222 | 5.74 | 0.0477 |
| Error | 7 | 0.00173333 | 0.00024762 | | |
| Corrected Total | 8 | 0.00315556 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.450704 | 32.93564 | 0.01573592 | 0.04777778 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00142222 | 0.00142222 | 5.74 | 0.0477 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00142222 | 0.00142222 | 5.74 | 0.0477 |

Type of Result=White Croaker Fillet Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.000248
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.0263
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.05667 | 6 | Basin |
| B | 0.03000 | 3 | Reference |

R0063626

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9



General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.00680556 | 0.00680556 | 0.47 | 0.5165 |
| Error | 7 | 0.10208333 | 0.01458333 | | |
| Corrected Total | 8 | 0.10888889 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.062500 | 41.80205 | 0.12076147 | 0.28888889 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00680556 | 0.00680556 | 0.47 | 0.5165 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00680556 | 0.00680556 | 0.47 | 0.5165 |

R0063627



AOI 18

---------- Type of Result=White Croaker Fillet Analyte name=SELENIUM, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 0.014583
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 0.2019
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.30833 | 6 | Basin |
| A | | | |
| A | 0.25000 | 3 | Reference |

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Type of Result=White Croaker Fillet Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9

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Type of Result=White Croaker Fillet Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 32.80500000 | 32.80500000 | 9.97 | 0.0160 |
| Error | 7 | 23.03500000 | 3.29071429 | | |
| Corrected Total | 8 | 55.84000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.587482 | 28.79417 | 1.81403260 | 6.30000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 32.80500000 | 32.80500000 | 9.97 | 0.0160 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 32.80500000 | 32.80500000 | 9.97 | 0.0160 |

R0063629

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Type of Result=White Croaker Fillet Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 7 MSE= 3.290714
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 3.0332
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 9.000 | 3 | Reference |
| B | 4.950 | 6 | Basin |

R0063630

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VOL 18

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Type of Result=White Crooker Fillet Analyte name=ZINC, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 9

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Type of Result=White Crooker Fillet Analyte name=ZINC, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 40.50000000 | 40.50000000 | 16.68 | 0.0047 |
| Error | 7 | 17.00000000 | 2.42857143 | | |
| Corrected Total | 8 | 57.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.704348 | 31.16775 | 1.55838744 | 5.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 40.50000000 | 40.50000000 | 16.68 | 0.0047 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 40.50000000 | 40.50000000 | 16.68 | 0.0047 |

R0063631

5552--

VOL 178

Type of Result=White Croaker Fillet Analyte name=ZINC, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than BROMQ.

Alpha= 0.05 df= 7 MSE= 2.428571
Critical Value of Studentized Range= 3.344
Minimum Significant Difference= 2.6057
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 8.000 | 3 | Reference |
| B | 3.500 | 6 | Basin |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 19.60000000 | 19.60000000 | 1.20 | 0.2859 |
| Error | 22 | 360.40000000 | 16.38181818 | | |
| Corrected Total | 23 | 380.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.051579 | 32.37957 | 4.04744588 | 12.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 19.60000000 | 19.60000000 | 1.20 | 0.2859 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 19.60000000 | 19.60000000 | 1.20 | 0.2859 |

R0063633

Type of Result=Halibut Whole Body Analyte name=4,4'-DDD TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 16.38182
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 3.5392
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 13.667 | 9 | Reference |
| A | | | |
| A | 11.800 | 15 | Basin |

R0063634

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Type of Result=Halibut Whole Body Analyte name=4,4'-DDE TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24

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Type of Result=Halibut Whole Body Analyte name=4,4'-DDE TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 1.22500000 | 1.22500000 | 0.00 | 0.9908 |
| Error | 22 | 199581.73333333 | 9071.89696970 | | |
| Corrected Total | 23 | 199582.95833333 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.000006 | 93.64671 | 95.24650634 | 101.70833333 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 1.22500000 | 1.22500000 | 0.00 | 0.9908 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 1.22500000 | 1.22500000 | 0.00 | 0.9908 |

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Type of Result=Halibut Whole Body Analyte name=4,4'-DDE TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 9071.897
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 83.285
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 102.00 | 9 | Reference |
| A | | | |
| A | 101.53 | 15 | Basin |

R0063636

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Type of Result=Halibut Whole Body Analyte name=ARSENIC, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24

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Type of Result=Halibut Whole Body Analyte name=ARSENIC, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 1.60000000 | 1.60000000 | 0.05 | 0.8198 |
| Error | 22 | 662.40000000 | 30.10909091 | | |
| Corrected Total | 23 | 664.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.002410 | 43.89740 | 5.48717513 | 12.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 1.60000000 | 1.60000000 | 0.05 | 0.8198 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 1.60000000 | 1.60000000 | 0.05 | 0.8198 |

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R0063637

Type of Result=Halibut Whole Body Analyte name=ARSENIC, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= .10909
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 4.7981
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 12.700 | 15 | Basin |
| A | | | |
| A | 12.167 | 9 | Reference |

R0063638

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---------- Type of Result=Halibut Whole Body Analyte name=COPPER, TOTAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24



---------- Type of Result=Halibut Whole Body Analyte name=COPPER, TOTAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 74.71111111 | 74.71111111 | 1.69 | 0.2071 |
| Error | 22 | 972.78888889 | 44.21767677 | | |
| Corrected Total | 23 | 1047.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.071323 | 53.19710 | 6.64963734 | 12.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 74.71111111 | 74.71111111 | 1.69 | 0.2071 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 74.71111111 | 74.71111111 | 1.69 | 0.2071 |

---------- Type of Result=Halibut Whole Body Analyte name=COPPER, TOTAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 44.21768
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 5.0146
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 14.778 | 9 | Reference |
| A | | | |
| A | 11.133 | 15 | Basin |

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R0063640

Type of Result=Halibut Whole Body Analyte name=DIBUTYLTIN TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24



Type of Result=Halibut Whole Body Analyte name=DIBUTYLTIN TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 149.51111111 | 149.51111111 | 3.37 | 0.0799 |
| Error | 22 | 975.98888889 | 44.36313131 | | |
| Corrected Total | 23 | 1125.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.132840 | 53.28452 | 6.66056539 | 12.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 149.51111111 | 149.51111111 | 3.37 | 0.0799 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 149.51111111 | 149.51111111 | 3.37 | 0.0799 |

R0063641

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VOL 18

Type of Result=Halibut Whole Body Analyte name=DIBUTYLTIN TRANS=rank DUMMY=

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 44.36313
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 5.0241
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 14.433 | 15 | Basin |
| A | | | |
| A | 9.278 | 9 | Reference |

R0063642

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Type of Result=Halibut Whole Body Analyte name=ENDOSULFAN II TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24



Type of Result=Halibut Whole Body Analyte name=ENDOSULFAN II TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 6.80625000 | 6.80625000 | 0.37 | 0.5501 |
| Error | 22 | 406.55333333 | 18.47969697 | | |
| Corrected Total | 23 | 413.35958333 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.016466 | 108.7157 | 4.29880181 | 3.95416667 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 6.80625000 | 6.80625000 | 0.37 | 0.5501 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 6.80625000 | 6.80625000 | 0.37 | 0.5501 |

R0063643

Type of Result=Halibut Whole Body Analyte name=ENDOSULFAN II TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 18.4797
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 3.759
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 4.367 | 15 | Basin |
| A | | | |
| A | 3.267 | 9 | Reference |

R0063644

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---------- Type of Result=Halibut Whole Body Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24

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---------- Type of Result=Halibut Whole Body Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.36100000 | 0.36100000 | 1.61 | 0.2184 |
| Error | 22 | 4.94733333 | 0.22487879 | | |
| Corrected Total | 23 | 5.30833333 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.068006 | 107.3692 | 0.47421386 | 0.44166667 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.36100000 | 0.36100000 | 1.61 | 0.2164 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.36100000 | 0.36100000 | 1.61 | 0.2184 |

R0063645

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Type of Result=Halibut Whole Body Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 0.224879
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 0.4147
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.6000 | 9 | Reference |
| A | | | |
| A | 0.3467 | 15 | Basin |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 27040.00000000 | 27040.00000000 | 0.00 | 0.9742 |
| Error | 22 | 556249493.33333300 | 25284067.87878780 | | |
| Corrected Total | 23 | 556276533.33333300 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.000049 | 62.74950 | 5028.32654854 | 8013.33333333 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 27040.00000000 | 27040.00000000 | 0.00 | 0.9742 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 27040.00000000 | 27040.00000000 | 0.00 | 0.9742 |

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Type of Result=Halibut Whole Body Analyte name=LIPIDS TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 25284068
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 6396.9
WARNING: Cell sizes are not equal.
Harmonic Mean of Cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 8057 | 9 | Reference |
| A | | | |
| A | 7987 | 15 | Basin |

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Type of Result=Halibut Whole Body Analyte name=MERCURY, TOTAL TRANS=log(x+1) DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24

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Type of Result=Halibut Whole Body Analyte name=MERCURY, TOTAL TRANS=log(x+1) DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.00007474 | 0.00007474 | 2.68 | 0.1157 |
| Error | 22 | 0.00061283 | 0.00002786 | | |
| Corrected Total | 23 | 0.00068757 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.108696 | 42.99043 | 0.00527787 | 0.01227685 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00007474 | 0.00007474 | 2.68 | 0.1157 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00007474 | 0.00007474 | 2.68 | 0.1157 |

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Type of Result=Halibut Whole Body Analyte name=MERCURY, TOTAL TRANS=log(x+1) DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 0.000028
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 0.0046
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.013644 | 15 | Basin |
| A | | | |
| A | 0.009999 | 9 | Reference |

R0063650

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Bechtel Chemistry

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---------- Type of Result=Halibut Whole Body Analyte name=NICKEL, TOTAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24

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---------- Type of Result=Halibut Whole Body Analyte name=NICKEL, TOTAL TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 40.00000000 | 40.00000000 | 3.92 | 0.0604 |
| Error | 22 | 224.50000000 | 10.20454545 | | |
| Corrected Total | 23 | 264.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.151229 | 25.55564 | 3.19445542 | 12.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 40.00000000 | 40.00000000 | 3.92 | 0.0604 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 40.00000000 | 40.00000000 | 3.92 | 0.0604 |

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General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 10.20455
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 2.7933
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 14.167 | 9 | Reference |
| A | | | |
| A | 11.500 | 15 | Basin |

R0063652

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.01056250 | 0.01056250 | 0.59 | 0.4509 |
| Error | 22 | 0.39433333 | 0.01792424 | | |
| Corrected Total | 23 | 0.40489583 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.026087 | 48.31812 | 0.13388145 | 0.27708333 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.01056250 | 0.01056250 | 0.59 | 0.4509 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.01056250 | 0.01056250 | 0.59 | 0.4509 |

R0063653

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 0.017924
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 0.1171
WARNING: Cell sizes are not equal.
Harmonic Mean of Cell Sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.29333 | 15 | Basin |
| A | | | |
| A | 0.25000 | 9 | Reference |

R0063654

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Type of Result=Halibut Whole Body Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24

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Type of Result=Halibut Whole Body Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 41.61600000 | 41.61600000 | 2.00 | 0.1718 |
| Error | 22 | 458.87733333 | 20.85806061 | | |
| Corrected Total | 23 | 500.49333333 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.083150 | 76.97296 | 4.56706258 | 5.93333333 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 41.61600000 | 41.61600000 | 2.00 | 0.1718 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 41.61600000 | 41.61600000 | 2.00 | 0.1718 |

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General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 20.85806
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 3.9935
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 6.953 | 15 | Basin |
| A | 4.233 | 9 | Reference |

R0063656

Bechtel Chemistry

Type of Result=Halibut Whole Body Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=. 15:53 Thursday, August 17, 1995 122

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 24

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Type of Result=Halibut Whole Body Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=. 15:53 Thursday, August 17, 1995 123

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 107.80277778 | 107.80277778 | 1.48 | 0.2360 |
| Error | 22 | 1597.82222222 | 72.62828283 | | |
| Corrected Total | 23 | 1705.62500000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.063204 | 52.04611 | 8.52222288 | 16.37500000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 107.80277778 | 107.80277778 | 1.48 | 0.2360 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 107.80277778 | 107.80277778 | 1.48 | 0.2360 |

R0063657



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Type of Result=Halibut Whole Body Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 22 MSE= 72.62828
Critical Value of Studentized Range= 2.933
Minimum Significant Difference= 7.452
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 11.25

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | W | STATYPE |
|---|---|---|---|
| A | 19.111 | 9 | Reference |
| A | | | |
| A | 14.733 | 15 | Basin |

R0063658

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Bechtel Chemistry

15:53 Thursday, August 17, 1995 125

Type of Result=White Croaker Whole Body Analyte name=4,4'-DDD TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

15:53 Thursday, August 17, 1995 126

Type of Result=White Croaker Whole Body Analyte name=4,4'-DDD TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 21.69642857 | 21.69642857 | 0.05 | 0.8206 |
| Error | 19 | 7800.67500000 | 410.56184211 | | |
| Corrected Total | 20 | 7822.37142857 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.002774 | 96.68458 | 20.26232568 | 20.95714286 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 21.69642857 | 21.69642857 | 0.05 | 0.8206 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 21.69642857 | 21.69642857 | 0.05 | 0.8206 |

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R0063659

Type of Result=White Croaker Whole Body Analyte name=4,4'-DDD TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 410.9618
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 20.486
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 21.600 | 15 | Basin |
| A | | | |
| A | 19.350 | 6 | Reference |

R0063660

---------- Type of Result=White Croaker Whole Body Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21



---------- Type of Result=White Croaker Whole Body Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 32812.50000000 | 32812.50000000 | 0.71 | 0.4100 |
| Error | 19 | 878544.16666667 | 46239.16666667 | | |
| Corrected Total | 20 | 911356.66666667 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.036004 | 59.62096 | 215.03294321 | 360.66666667 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 32812.50000000 | 32812.50000000 | 0.71 | 0.4100 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 32812.50000000 | 32812.50000000 | 0.71 | 0.4100 |

R0063661

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Type of Result=White Croaker Whole Body Analyte name=4,4'-DDE TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 46239.17
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 217.4
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 385.7 | 15 | Basin |
| A | | | |
| A | 298.2 | 6 | Reference |

R0063662

Bechtel Chemistry

15:53 Thursday, August 17, 1995 131

Type of Result=White Croaker Whole Body Analyte name=ALPHA-BHC (HCH) TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

15:53 Thursday, August 17, 1995 132

Type of Result=White Croaker Whole Body Analyte name=ALPHA-BHC (HCH) TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analy

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.19504762 | 0.19504762 | 0.39 | 0.5409 |
| Error | 19 | 9.55733333 | 0.50301754 | | |
| Corrected Total | 20 | 9.75238095 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.020000 | 26.73965 | 0.70923730 | 2.65238095 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.19504762 | 0.19504762 | 0.39 | 0.5409 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.19504762 | 0.19504762 | 0.39 | 0.5409 |

R0063663



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Bechtel Chemistry

15:53 Thursday, August 17, 1995 133

Type of Result=White Croaker Whole Body Analyte name=ALPHA-BHC (HCH) TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 0.503018
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 0.7171
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 2.7133 | 15 | Basin |
| A | | | |
| A | 2.5000 | 6 | Reference |

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Bechtel Chemistry

15:53 Thursday, August 17, 1995 134

Type of Result=White Croaker Whole Body Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

15:53 Thursday, August 17, 1995 135

Type of Result=White Croaker Whole Body Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.67433333 | 0.67433333 | 8.99 | 0.0074 |
| Error | 19 | 1.42566667 | 0.07503509 | | |
| Corrected Total | 20 | 2.10000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.321111 | 24.90230 | 0.27392533 | 1.10000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.67433333 | 0.67433333 | 8.99 | 0.0074 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.67433333 | 0.67433333 | 8.99 | 0.0074 |

R0063665

5802--

VOL 178

Type of Result=White Crosker Whole Body Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 0.075035
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 0.2769
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 1.2133 | 15 | Basin |
| B | 0.8167 | 6 | Reference |

R0063666

Type of Result=White Croaker Whole Body Analyte name=BERYLLIUM, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21



Type of Result=White Croaker Whole Body Analyte name=BERYLLIUM, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.00004762 | 0.00004762 | 0.39 | 0.5409 |
| Error | 19 | 0.00233333 | 0.00012281 | | |
| Corrected Total | 20 | 0.00238095 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.020000 | 21.15623 | 0.01108183 | 0.05238095 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00004762 | 0.00004762 | 0.39 | 0.5409 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00004762 | 0.00004762 | 0.39 | 0.5409 |

R0063667



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Bechtel Chemistry

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---------- Type of Result=White Crosker Whole Body Analyte name=BERYLLIUM, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 0.000123
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 0.0112
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.053333 | 15 | Basin |
| A | | | |
| A | 0.050000 | 6 | Reference |

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Bechtel Chemistry

15:53 Thursday, August 17, 1995 140

Type of Result=White Croaker Whole Body Analyte name=CHROMIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

15:53 Thursday, August 17, 1995 141

Type of Result=White Croaker Whole Body Analyte name=CHROMIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 18.90000000 | 18.90000000 | 1.35 | 0.2598 |
| Error | 19 | 266.10000000 | 14.00526316 | | |
| Corrected Total | 20 | 285.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.066316 | 34.02146 | 3.74236064 | 11.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 18.90000000 | 18.90000000 | 1.35 | 0.2598 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 18.90000000 | 18.90000000 | 1.35 | 0.2598 |

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Type of Result=White Croaker Whole Body Analyte name=CHROMIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 14.00526
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 3.7836
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 11.600 | 15 | Basin |
| A | | | |
| A | 9.500 | 6 | Reference |

R0063670

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Bechtel Chemistry

15:53 Thursday, August 17, 1995 143

Type of Result=White Croaker Whole Body Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

15:53 Thursday, August 17, 1995 144

Type of Result=White Croaker Whole Body Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 10.07619048 | 10.07619048 | 12.57 | 0.0022 |
| Error | 19 | 15.23333333 | 0.80175439 | | |
| Corrected Total | 20 | 25.30952381 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.398119 | 42.73515 | 0.89540739 | 2.09523810 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 10.07619048 | 10.07619048 | 12.57 | 0.0022 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 10.07619048 | 10.07619048 | 12.57 | 0.0022 |

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R0063671

Type of Result=White Croaker Whole Body Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 0.801754
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 0.9053
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 2.5333 | 15 | Basin |
| B | 1.0000 | 6 | Reference |

R0063672

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Bechtel Chemistry

Type of Result=White Croaker Whole Body Analyte name=DIBUTYLTIN TRANS=rank DUMMY=' ' 15:53 Thursday, August 17, 1995 146

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 1 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

Type of Result=White Croaker Whole Body Analyte name=DIBUTYLTIN TRANS=rank DUMMY=' ' 15:53 Thursday, August 17, 1995 147

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 210.00000000 | 210.00000000 | 8.88 | 0.0077 |
| Error | 19 | 449.50000000 | 23.65789474 | | |
| Corrected Total | 20 | 659.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.318423 | 44.21762 | 4.86393819 | 11.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 210.00000000 | 210.00000000 | 8.88 | 0.0077 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 210.00000000 | 210.00000000 | 8.88 | 0.0077 |

R0063673

-1502-

VOL 18

Bechtel Chemistry

15:53 Thursday, August 17, 1995 148

Type of Result=White Croaker Whole Body Analyte name=DIBUTYLTIN TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 23.65789
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 4.9176
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 13.000 | 15 | Basin |
| B | 6.000 | 6 | Reference |

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R0063674

Bechtel Chemistry

15:53 Thursday, August 17, 1995 149

---------- Type of Result=White Croaker Whole Body Analyte name=ENDOSULFAN II TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

15:53 Thursday, August 17, 1995 150

---------- Type of Result=White Croaker Whole Body Analyte name=ENDOSULFAN II TRANS=rank DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.93333333 | 0.93333333 | 0.03 | 0.8583 |
| Error | 19 | 541.06666667 | 28.47719298 | | |
| Corrected Total | 20 | 542.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.001722 | 48.51275 | 5.33640263 | 11.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.93333333 | 0.93333333 | 0.03 | 0.8583 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.93333333 | 0.93333333 | 0.03 | 0.8583 |

R0063675

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15:53 Thursday, August 17, 1995 151

Type of Result=White Croaker Whole Body Analyte name=ENDOSULFAN II TRANS=rank DUMMY=

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 20.47719
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 5.3952
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.871429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 11.133 | 15 | Basin |
| A | | | |
| A | 10.667 | 6 | Reference |

R0063676

VOL 18

Bechtel Chemistry

15:53 Thursday, August 17, 1995 152

Type of Result=White Croaker Whole Body Analyte name=ENDRIN TRANS=notrans DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

15:53 Thursday, August 17, 1995 153

Type of Result=White Croaker Whole Body Analyte name=ENDRIN TRANS=notrans DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 28.08685714 | 28.08685714 | 0.62 | 0.4420 |
| Error | 19 | 865.35600000 | 45.54505263 | | |
| Corrected Total | 20 | 893.44285714 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.031437 | 155.9107 | 6.74870748 | 4.32857143 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 28.08685714 | 28.08685714 | 0.62 | 0.4420 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 28.08685714 | 28.08685714 | 0.62 | 0.4420 |

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R0063677

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 45.54505
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 6.8231
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 5.060 | 15 | Basin |
| A | | | |
| A | 2.500 | 6 | Reference |

R0063678

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Type of Result=White Croaker Whole Body Analyte name=LIPIDS TRANS=notrans DUMMY=' ' 15:53 Thursday, August 17, 1995 195

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

Bechtel Chemistry

Type of Result=White Croaker Whole Body Analyte name=LIPIDS TRANS=notrans DUMMY=' ' 15:53 Thursday, August 17, 1995 196

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 535426201.90475400 | 535426201.90475400 | 1.43 | 0.2465 |
| Error | 19 | 7115671493.33333000 | 374509025.96491200 | | |
| Corrected Total | 20 | 7651097695.23809000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.069980 | 45.05360 | 19352.23568389 | 42953.80952381 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 535426201.90476200 | 535426201.90476200 | 1.43 | 0.2465 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 535426201.90476200 | 535426201.90476200 | 1.43 | 0.2465 |

R0063679

Type of Result=White Crosker Whole Body Analyte name=LIPIDS TRANS=notrans DUMMY=

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 3.7451E8
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 19566
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 46147 | 15 | Basin |
| A | | | |
| A | 34970 | 6 | Reference |

R0063680

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21



General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 0.00000429 | 0.00000429 | 0.01 | 0.9395 |
| Error | 19 | 0.01377667 | 0.00072509 | | |
| Corrected Total | 20 | 0.01378095 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.000311 | 46.73360 | 0.02692745 | 0.05761905 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00000429 | 0.00000429 | 0.01 | 0.9395 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 0.00000429 | 0.00000429 | 0.01 | 0.9395 |

R0063681

Type of Result=White Croaker Whole Body Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 0.000725
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 0.0272
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 0.05833 | 6 | Reference |
| A | | | |
| A | 0.05733 | 15 | Basin |

R0063682

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21



General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 84.23333333 | 84.23333333 | 2.47 | 0.1322 |
| Error | 19 | 646.76666667 | 34.04035088 | | |
| Corrected Total | 20 | 731.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.115230 | 53.04010 | 5.83441093 | 11.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 84.23333333 | 84.23333333 | 2.47 | 0.1322 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 84.23333333 | 84.23333333 | 2.47 | 0.1322 |

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Type of Result=White Croaker Whole Body Analyte name=SELENIUM, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 34.04035
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 5.0987
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 12.267 | 15 | Basin |
| A | | | |
| A | 7.833 | 8 | Reference |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 268.60119048 | 268.60119048 | 19.17 | 0.0003 |
| Error | 19 | 266.22833333 | 14.01201754 | | |
| Corrected Total | 20 | 534.82952381 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.502218 | 50.32556 | 3.74326295 | 7.43809524 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 268.60119048 | 268.60119048 | 19.17 | 0.0003 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 268.60119048 | 268.60119048 | 19.17 | 0.0003 |

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---------- Type of Result=White Croaker Whole Body Analyte name=TRIBUTYLTIN TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 14.01202
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 3.7845
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 9.700 | 15 | Basin |
| B | 1.783 | 6 | Reference |

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Type of Result=White Crosker Whole Body Analyte name=ZINC, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| STATYPE | 2 | Basin Reference |

Number of observations in by group = 21

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Type of Result=White Crosker Whole Body Analyte name=ZINC, TOTAL TRANS=rank DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 1 | 210.00000000 | 210.00000000 | 7.57 | 0.0127 |
| Error | 19 | 527.00000000 | 27.73684211 | | |
| Corrected Total | 20 | 737.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.284939 | 47.87798 | 5.26657784 | 11.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 210.00000000 | 210.00000000 | 7.57 | 0.0127 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| STATYPE | 1 | 210.00000000 | 210.00000000 | 7.57 | 0.0127 |

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Type of Result=White Croaker Whole Body Analyte name=ZINC, TOTAL TRANS=rank DUMMY=

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 19 MSE= 27.73684
Critical Value of Studentized Range= 2.960
Minimum Significant Difference= 5.3247
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 8.571429

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 16.000 | 6 | Reference |
| B | 9.000 | 15 | Basin |

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Significant ANOVA results

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| OBS | Type of Result | Analyte name | TRANS | DUMMY | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | White Croaker Fillet | ENDOSULFAN II | rank | | VALUE | STATYPE | SS1 | 1 | 28.125 | 7.3256 | 0.030349 |
| 2 | White Croaker Fillet | MERCURY, TOTAL | notrans | | VALUE | STATYPE | SS1 | 1 | 0.001 | 5.7436 | 0.047705 |
| 3 | White Croaker Fillet | TRIBUTYLTIN | notrans | | VALUE | STATYPE | SS1 | 1 | 32.805 | 9.9690 | 0.015987 |
| 4 | White Croaker Fillet | ZINC, TOTAL | rank | | VALUE | STATYPE | SS1 | 1 | 40.500 | 16.6765 | 0.004668 |
| 5 | White Croaker Whole Body | ARSENIC, TOTAL | notrans | | VALUE | STATYPE | SS1 | 1 | 0.674 | 8.9869 | 0.007397 |
| 6 | White Croaker Whole Body | COPPER, TOTAL | notrans | | VALUE | STATYPE | SS1 | 1 | 10.076 | 12.5677 | 0.002162 |
| 7 | White Croaker Whole Body | DIBUTYLTIN | rank | | VALUE | STATYPE | SS1 | 1 | 210.000 | 8.8765 | 0.007706 |
| 8 | White Croaker Whole Body | TRIBUTYLTIN | notrans | | VALUE | STATYPE | SS1 | 1 | 268.601 | 19.1693 | 0.000323 |
| 9 | White Croaker Whole Body | ZINC, TOTAL | rank | | VALUE | STATYPE | SS1 | 1 | 210.000 | 7.9712 | 0.012692 |

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## Section 4-5. Comparison of Surface Sediment Data to Project Reference Values

Mean concentrations of chemical analytes analyzed in surface sediment at basin stations were compared to project reference values using analysis of variance (ANOVA) by sediment evaluation zones (determined from cluster analysis). Chemical analytes were not screened for frequency of detection before the ANOVA test was performed, therefore, use of the following tables should include a step to exclude results of testing for analytes that were not found at detectable levels at any of the basin stations.

The ANOVA results include: 1) a listing of analytes tested, 2) results of Levene's test for homoscedasticity, 3) list of data transformation used for each analyte if any, 4) list of mean and count (n) for untransformed data for each analyte, 5) ANOVA table and Tukey's multiple range test by analyte, and 6) summary of significant ANOVA results.

Levene's test for homoscedasticity was used as a key for data transformation. When the results of Levene's test of raw data showed homoscedasticity the untransformed data were used in the ANOVA. When the results of Levene's test of the raw data showed no homoscedasticity, but the results of the Levene's test of log transformed data did show homoscedasticity the log transformed data were used in the ANOVA. When the results of the Levene's test of both the raw and log transformed data showed no homoscedasticity the data were rank transformed prior to the ANOVA (also known as a Kruskal-Wallis non-parametric test).

ANOVA results are considered significant when the probability associated with the calculated *F* statistic is less than an alpha of 0.05. Tukey's HSD multiple range test was performed to evaluate differences between the ANOVA cases.

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| OBS | Analyte name |
|---|---|
| 1 | 1,2,4-TRICHLOROBENZENE |
| 2 | 1,4-DICHLOROBENZENE |
| 3 | 2,4-DINITROPHENOL |
| 4 | 2-CHLOROPHENOL |
| 5 | 3- AND 4-METHYLPHENOL |
| 6 | 4,4'-DDD |
| 7 | 4,4'-DDE |
| 8 | 4,4'-DDT |
| 9 | ACENAPHTHENE |
| 10 | ACENAPHTHYLENE |
| 11 | ACID VOLATILE SULFIDE |
| 12 | ALDRIN |
| 13 | ALPHA-BHC (HCH) |
| 14 | ANTHRACENE |
| 15 | ARSENIC, TOTAL |
| 16 | BENZIDINE |
| 17 | BENZO(A)ANTHRACENE |
| 18 | BENZO(A)PYRENE |
| 19 | BENZO(B)FLUORANTHENE |
| 20 | BENZO(GHI)PERYLENE |
| 21 | BENZO(K)FLUORANTHENE |
| 22 | BERYLLIUM, TOTAL |
| 23 | BETA-BHC (HCH) |
| 24 | BIS(2-ETHYLHEXYL)PHTHALATE |
| 25 | CADMIUM, EXTRACTABLE |
| 26 | CADMIUM, EXTRACTABLE / AVS |
| 27 | CADMIUM, TOTAL |
| 28 | CHLORDANE |
| 29 | CHROMIUM, TOTAL |
| 30 | CHRYSENE |
| 31 | CLAY |
| 32 | COPPER, EXTRACTABLE |
| 33 | COPPER, EXTRACTABLE / AVS |
| 34 | COPPER, TOTAL |
| 35 | DELTA-BHC (HCH) |
| 36 | DI-N-OCTYLPHTHALATE |
| 37 | DIBENZO(A,H)ANTHRACENE |
| 38 | DIBUTYLTIN |
| 39 | DIELDRIN |
| 40 | ENDOSULFAN I |
| 41 | ENDOSULFAN II |
| 42 | ENDOSULFAN SULFATE |
| 43 | ENDRIN |
| 44 | ENDRIN ALDEHYDE |
| 45 | FINES |
| 46 | FLUORANTHENE |
| 47 | FLUORENE |
| 48 | GRAVEL |
| 49 | HEPTACHLOR |
| 50 | HEPTACHLOR EPOXIDE |
| 51 | INDENO(1,2,3-CD)PYRENE |
| 52 | LEAD, EXTRACTABLE |
| 53 | LEAD, EXTRACTABLE / AVS |
| 54 | LEAD, TOTAL |
| 55 | LINDANE (GAMMA-BHC) |

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| OBS | Analyte name |
|---|---|
| 56 | MEAN GRAIN SIZE |
| 57 | MEDIAN GRAIN SIZE |
| 58 | MERCURY, EXTRACTABLE |
| 59 | MERCURY, EXTRACTABLE / AVS |
| 60 | MERCURY, TOTAL |
| 61 | METHOXYCHLOR |
| 62 | METHYLNAPHTHALENES |
| 63 | MONOBUTYLTIN |
| 64 | N-NITROSODI-N-PROPYLAMINE |
| 65 | N-NITROSODIMETHYLAMINE |
| 66 | NICKEL, TOTAL |
| 67 | PCB-1016 |
| 68 | PCB-1221 |
| 69 | PCB-1232 |
| 70 | PCB-1242 |
| 71 | PCB-1248 |
| 72 | PCB-1254 |
| 73 | PCB-1260 |
| 74 | PHENANTHRENE |
| 75 | PHENOL |
| 76 | PYRENE |
| 77 | SAND |
| 78 | SELENIUM, TOTAL |
| 79 | SILT |
| 80 | SILVER, TOTAL |
| 81 | SULFIDE, TOTAL |
| 82 | TOTAL ORGANIC CARBON |
| 83 | TOXAPHENE |
| 84 | TRIBUTYLTIN |
| 85 | ZINC, EXTRACTABLE |
| 86 | ZINC, EXTRACTABLE / AVS |
| 87 | ZINC, TOTAL |

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Levene''s test for homoscedasticity
for the zone main effect

| OBS | Analyte name | DUMMY | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,2,4 TRICHLOROBENZENE | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.47 | . | . | |
| 2 | 1,2,4-TRICHLOROBENZENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.47 | 4.22 | 0.00134 | |
| 3 | 1,2,4-TRICHLOROBENZENE | | notrans | DIFF | ERROR | ERROR | 34 | 2464.51 | . | . | |
| 4 | 1,2,4-TRICHLOROBENZENE | | notrans | DIFF | ZONE | SS3 | 8 | 3981.86 | 6.87 | 0.00002 | |
| 5 | 1,4-DICHLOROBENZENE | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.47 | . | . | |
| 6 | 1,4-DICHLOROBENZENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.47 | 4.22 | 0.00134 | |
| 7 | 1,4-DICHLOROBENZENE | | notrans | DIFF | ERROR | ERROR | 34 | 2464.51 | . | . | |
| 8 | 1,4-DICHLOROBENZENE | | notrans | DIFF | ZONE | SS3 | 8 | 3981.86 | 6.87 | 0.00002 | |
| 9 | 2,4-DINITROPHENOL | | log(x+1) | DIFF | ERROR | ERROR | 35 | 0.51 | . | . | |
| 10 | 2,4-DINITROPHENOL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.45 | 3.86 | 0.00241 | |
| 11 | 2,4-DINITROPHENOL | | notrans | DIFF | ERROR | ERROR | 35 | 2583.46 | . | . | |
| 12 | 2,4-DINITROPHENOL | | notrans | DIFF | ZONE | SS3 | 8 | 3945.22 | 6.68 | 0.00003 | |
| 13 | 2-CHLOROPHENOL | | log(x+1) | DIFF | ERROR | ERROR | 35 | 0.41 | . | . | |
| 14 | 2 CHLOROPHENOL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.51 | 5.47 | 0.00017 | |
| 15 | 2-CHLOROPHENOL | | notrans | DIFF | ERROR | ERROR | 35 | 5610.64 | . | . | |
| 16 | 2-CHLOROPHENOL | | notrans | DIFF | ZONE | SS3 | 8 | 13675.58 | 10.66 | 0.00000 | |
| 17 | 3- AND 4-METHYLPHENOL | | log(x+1) | DIFF | ERROR | ERROR | 35 | 0.53 | . | . | |
| 18 | 3- AND 4-METHYLPHENOL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.61 | 5.06 | 0.00032 | |
| 19 | 3- AND 4-METHYLPHENOL | | notrans | DIFF | ERROR | ERROR | 35 | 24464.26 | . | . | |
| 20 | 3- AND 4-METHYLPHENOL | | notrans | DIFF | ZONE | SS3 | 8 | 53546.04 | 9.58 | 0.00000 | |
| 21 | 4,4'-DDD | | log(x+1) | DIFF | ERROR | ERROR | 14 | 0.09 | . | . | |
| 22 | 4,4'-DDD | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.12 | 2.18 | 0.09687 | • |
| 23 | 4,4'-DDD | | notrans | DIFF | ERROR | ERROR | 14 | 292.01 | . | . | |
| 24 | 4,4'-DDD | | notrans | DIFF | ZONE | SS3 | 8 | 317.13 | 1.90 | 0.14012 | • |
| 25 | 4,4'-DDE | | log(x+1) | DIFF | ERROR | ERROR | 9 | 0.03 | . | . | |
| 26 | 4,4'-DDE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.07 | 2.38 | 0.10932 | • |
| 27 | 4,4'-DDE | | notrans | DIFF | ERROR | ERROR | 9 | 1078.92 | . | . | |
| 28 | 4,4'-DDE | | notrans | DIFF | ZONE | SS3 | 8 | 2548.50 | 2.66 | 0.08352 | • |
| 29 | 4,4'-DDT | | log(x+1) | DIFF | ERROR | ERROR | 41 | 1.03 | . | . | |
| 30 | 4,4'-DDT | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.51 | 2.52 | 0.02517 | |
| 31 | 4,4'-DDT | | notrans | DIFF | ERROR | ERROR | 41 | 605.28 | . | . | |
| 32 | 4,4'-DDT | | notrans | DIFF | ZONE | SS3 | 8 | 318.78 | 2.70 | 0.01748 | |
| 33 | ACENAPHTHENE | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.51 | . | . | |
| 34 | ACENAPHTHENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 1.31 | 10.80 | 0.00000 | |
| 35 | ACENAPHTHENE | | notrans | DIFF | ERROR | ERROR | 34 | 18652.01 | . | . | |
| 36 | ACENAPHTHENE | | notrans | DIFF | ZONE | SS3 | 8 | 54197.63 | 12.35 | 0.00000 | |
| 37 | ACENAPHTHYLENE | | log(x+1) | DIFF | ERROR | ERROR | 37 | 0.77 | . | . | |
| 38 | ACENAPHTHYLENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.34 | 2.04 | 0.06863 | • |
| 39 | ACENAPHTHYLENE | | notrans | DIFF | ERROR | ERROR | 37 | 40361.06 | . | . | |
| 40 | ACENAPHTHYLENE | | notrans | DIFF | ZONE | SS3 | 8 | 85094.52 | 9.75 | 0.00000 | |
| 41 | ACID VOLATILE SULFIDE | | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.00 | . | . | |
| 42 | ACID VOLATILE SULFIDE | | log(x+1) | DIFF | ZONE | SS3 | 7 | 0.06 | 99999.99 | 0.00000 | |
| 43 | ACID VOLATILE SULFIDE | | notrans | DIFF | ERROR | ERROR | 6 | 0.00 | . | . | |
| 44 | ACID VOLATILE SULFIDE | | notrans | DIFF | ZONE | SS3 | 7 | 464746.43 | 99999.99 | 0.00000 | |
| 45 | ALDRIN | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.07 | . | . | |
| 46 | ALDRIN | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.04 | 2.78 | 0.01474 | |
| 47 | ALDRIN | | notrans | DIFF | ERROR | ERROR | 41 | 1.85 | . | . | |
| 48 | ALDRIN | | notrans | DIFF | ZONE | SS3 | 8 | 0.96 | 2.66 | 0.01904 | |
| 49 | ALPHA-BHC (HCH) | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 50 | ALPHA-BHC (HCH) | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 51 | ALPHA-BHC (HCH) | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |

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Levene''s test for homoscedasticity
for the zone main effect

| OBS | Analyte name | DUMMY | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | ALPHA BHC (HCH) | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.514 | 0.00000 | |
| 53 | ANTHRACENE | | log(x+1) | DIFF | ERROR | ERROR | 33 | 0.60 | . | . | |
| 54 | ANTHRACENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.14 | 0.979 | 0.46956 | * |
| 55 | ANTHRACENE | | notrans | DIFF | ERROR | ERROR | 33 | 68249.18 | . | . | |
| 56 | ANTHRACENE | | notrans | DIFF | ZONE | SS3 | 8 | 212822.26 | 12.863 | 0.00000 | |
| 57 | ARSENIC, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.01 | . | . | |
| 58 | ARSENIC, TOTAL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 2.266 | 0.13424 | * |
| 59 | ARSENIC, TOTAL | | notrans | DIFF | ERROR | ERROR | 8 | 4.95 | . | . | |
| 60 | ARSENIC, TOTAL | | notrans | DIFF | ZONE | SS3 | 8 | 14.93 | 3.013 | 0.06979 | * |
| 61 | BENZIDINE | | log(x+1) | DIFF | ERROR | ERROR | 11 | 0.02 | . | . | |
| 62 | BENZIDINE | | log(x+1) | DIFF | ZONE | SS3 | 5 | 0.05 | 4.710 | 0.01520 | |
| 63 | BENZIDINE | | notrans | DIFF | ERROR | ERROR | 11 | 523.55 | . | . | |
| 64 | BENZIDINE | | notrans | DIFF | ZONE | SS3 | 5 | 1465.51 | 6.158 | 0.00585 | |
| 65 | BENZO(A)ANTHRACENE | | log(x+1) | DIFF | ERROR | ERROR | 29 | 0.36 | . | . | |
| 66 | BENZO(A)ANTHRACENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.26 | 2.571 | 0.02971 | |
| 67 | BENZO(A)ANTHRACENE | | notrans | DIFF | ERROR | ERROR | 29 | 1260.82 | . | . | |
| 68 | BENZO(A)ANTHRACENE | | notrans | DIFF | ZONE | SS3 | 8 | 38022.88 | 109.320 | 0.00000 | |
| 69 | BENZO(A)PYRENE | | log(x+1) | DIFF | ERROR | ERROR | 12 | 0.22 | . | . | |
| 70 | BENZO(A)PYRENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.40 | 2.801 | 0.05266 | * |
| 71 | BENZO(A)PYRENE | | notrans | DIFF | ERROR | ERROR | 12 | 1143.31 | . | . | |
| 72 | BENZO(A)PYRENE | | notrans | DIFF | ZONE | SS3 | 8 | 7375.11 | 9.676 | 0.00034 | |
| 73 | BENZO(B)FLUORANTHENE | | log(x+1) | DIFF | ERROR | ERROR | 15 | 0.26 | . | . | |
| 74 | BENZO(B)FLUORANTHENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.48 | 3.440 | 0.01881 | |
| 75 | BENZO(B)FLUORANTHENE | | notrans | DIFF | ERROR | ERROR | 15 | 9479.31 | . | . | |
| 76 | BENZO(B)FLUORANTHENE | | notrans | DIFF | ZONE | SS3 | 8 | 12717.06 | 2.515 | 0.05883 | * |
| 77 | BENZO(GHI)PERYLENE | | log(x+1) | DIFF | ERROR | ERROR | 17 | 0.22 | . | . | |
| 78 | BENZO(GHI)PERYLENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.25 | 2.403 | 0.06128 | * |
| 79 | BENZO(GHI)PERYLENE | | notrans | DIFF | ERROR | ERROR | 17 | 1466.59 | . | . | |
| 80 | BENZO(GHI)PERYLENE | | notrans | DIFF | ZONE | SS3 | 8 | 25274.88 | 36.622 | 0.00000 | |
| 81 | BENZO(K)FLUORANTHENE | | log(x+1) | DIFF | ERROR | ERROR | 14 | 0.22 | . | . | |
| 82 | BENZO(K)FLUORANTHENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.60 | 4.826 | 0.00515 | |
| 83 | BENZO(K)FLUORANTHENE | | notrans | DIFF | ERROR | ERROR | 14 | 3145.63 | . | . | |
| 84 | BENZO(K)FLUORANTHENE | | notrans | DIFF | ZONE | SS3 | 8 | 18165.80 | 10.106 | 0.00012 | |
| 85 | BERYLLIUM, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.00 | . | . | |
| 86 | BERYLLIUM, TOTAL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.01 | 11.535 | 0.00116 | |
| 87 | BERYLLIUM, TOTAL | | notrans | DIFF | ERROR | ERROR | 8 | 0.01 | . | . | |
| 88 | BERYLLIUM, TOTAL | | notrans | DIFF | ZONE | SS3 | 8 | 0.09 | 12.447 | 0.00089 | |
| 89 | BETA-BHC (HCH) | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 90 | BETA-BHC (HCH) | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.071 | 0.00000 | |
| 91 | BETA-BHC (HCH) | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 92 | BETA-BHC (HCH) | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.514 | 0.00000 | |
| 93 | BIS(2-ETHYLHEXYL)PHTHALATE | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.63 | . | . | |
| 94 | BIS(2-ETHYLHEXYL)PHTHALATE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.64 | 4.301 | 0.00118 | |
| 95 | BIS(2-ETHYLHEXYL)PHTHALATE | | notrans | DIFF | ERROR | ERROR | 34 | 81291.02 | . | . | |
| 96 | BIS(2-ETHYLHEXYL)PHTHALATE | | notrans | DIFF | ZONE | SS3 | 8 | 119307.07 | 6.238 | 0.00006 | |
| 97 | CADMIUM, EXTRACTABLE | | log(x+1) | DIFF | ERROR | ERROR | 22 | 0.03 | . | . | |
| 98 | CADMIUM, EXTRACTABLE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.01 | 0.798 | 0.61051 | * |
| 99 | CADMIUM, EXTRACTABLE | | notrans | DIFF | ERROR | ERROR | 22 | 0.55 | . | . | |
| 100 | CADMIUM, EXTRACTABLE | | notrans | DIFF | ZONE | SS3 | 8 | 0.33 | 1.630 | 0.17330 | * |
| 101 | CADMIUM, EXTRACTABLE / AVS | | log(x+1) | DIFF | ERROR | ERROR | 17 | 0.00 | . | . | |
| 102 | CADMIUM, EXTRACTABLE / AVS | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.00 | 7.331 | 0.00030 | |

R0063695

Levene''s test for homoscedasticity
for the zone main effect

| OBS | Analyte name | DUMMY | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 103 | CADMIUM, EXTRACTABLE / AVS | | notrans | DIFF | ERROR | ERROR | 17 | 0.00 | . | . | |
| 104 | CADMIUM, EXTRACTABLE / AVS | | notrans | DIFF | ZONE | SS3 | 8 | 0.01 | 8.2360 | 0.00015 | |
| 105 | CADMIUM, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.00 | . | . | * |
| 106 | CADMIUM, TOTAL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.00 | 16.9913 | 0.00137 | |
| 107 | CADMIUM, TOTAL | | notrans | DIFF | ERROR | ERROR | 6 | 0.00 | . | . | |
| 108 | CADMIUM, TOTAL | | notrans | DIFF | ZONE | SS3 | 8 | 0.01 | 15.0002 | 0.00194 | |
| 109 | CHLORDANE | | log(x+1) | DIFF | ERROR | ERROR | 38 | 0.01 | . | . | |
| 110 | CHLORDANE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.01 | 4.5454 | 0.00061 | |
| 111 | CHLORDANE | | notrans | DIFF | ERROR | ERROR | 38 | 0.34 | . | . | |
| 112 | CHLORDANE | | notrans | DIFF | ZONE | SS3 | 8 | 0.32 | 4.5397 | 0.00062 | |
| 113 | CHROMIUM, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.01 | . | . | |
| 114 | CHROMIUM, TOTAL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 1.8148 | 0.24177 | |
| 115 | CHROMIUM, TOTAL | | notrans | DIFF | ERROR | ERROR | 6 | 154.59 | . | . | * |
| 116 | CHROMIUM, TOTAL | | notrans | DIFF | ZONE | SS3 | 8 | 357.19 | 1.7329 | 0.25953 | * |
| 117 | CHRYSENE | | log(x+1) | DIFF | ERROR | ERROR | 12 | 0.21 | . | . | |
| 118 | CHRYSENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.55 | 4.0543 | 0.01488 | |
| 119 | CHRYSENE | | notrans | DIFF | ERROR | ERROR | 12 | 1035.86 | . | . | |
| 120 | CHRYSENE | | notrans | DIFF | ZONE | SS3 | 8 | 42361.47 | 61.3425 | 0.00000 | |
| 121 | CLAY | | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.01 | . | . | |
| 122 | CLAY | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 3.0374 | 0.08051 | * |
| 123 | CLAY | | notrans | DIFF | ERROR | ERROR | 7 | 47.05 | . | . | |
| 124 | CLAY | | notrans | DIFF | ZONE | SS3 | 8 | 157.44 | 2.9280 | 0.08735 | * |
| 125 | COPPER, EXTRACTABLE | | log(x+1) | DIFF | ERROR | ERROR | 9 | 0.02 | . | . | |
| 126 | COPPER, EXTRACTABLE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.07 | 3.8307 | 0.03069 | |
| 127 | COPPER, EXTRACTABLE | | notrans | DIFF | ERROR | ERROR | 9 | 1531.70 | . | . | |
| 128 | COPPER, EXTRACTABLE | | notrans | DIFF | ZONE | SS3 | 8 | 4042.35 | 2.9690 | 0.06276 | * |
| 129 | COPPER, EXTRACTABLE / AVS | | log(x+1) | DIFF | ERROR | ERROR | 4 | 0.01 | . | . | |
| 130 | COPPER, EXTRACTABLE / AVS | | log(x+1) | DIFF | ZONE | SS3 | 7 | 0.03 | 2.1099 | 0.24541 | * |
| 131 | COPPER, EXTRACTABLE / AVS | | notrans | DIFF | ERROR | ERROR | 4 | 0.21 | . | . | |
| 132 | COPPER, EXTRACTABLE / AVS | | notrans | DIFF | ZONE | SS3 | 7 | 0.54 | 1.4494 | 0.37828 | * |
| 133 | COPPER, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 10 | 0.04 | . | . | |
| 134 | COPPER, TOTAL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.06 | 1.7736 | 0.19513 | * |
| 135 | COPPER, TOTAL | | notrans | DIFF | ERROR | ERROR | 10 | 4376.25 | . | . | |
| 136 | COPPER, TOTAL | | notrans | DIFF | ZONE | SS3 | 8 | 9540.45 | 2.7308 | 0.06957 | * |
| 137 | DELTA BHC (HCH) | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 138 | DELTA-BHC (HCH) | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.0705 | 0.00000 | |
| 139 | DELTA-BHC (HCH) | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 140 | DELTA-BHC (HCH) | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.5141 | 0.00000 | |
| 141 | DI-N-OCTYLPHTHALATE | | log(x+1) | DIFF | ERROR | ERROR | 31 | 0.42 | . | . | |
| 142 | DI-N-OCTYLPHTHALATE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.61 | 5.6951 | 0.00017 | |
| 143 | DI-N-OCTYLPHTHALATE | | notrans | DIFF | ERROR | ERROR | 31 | 12555.73 | . | . | |
| 144 | DI-N-OCTYLPHTHALATE | | notrans | DIFF | ZONE | SS3 | 8 | 26358.25 | 8.1348 | 0.00001 | |
| 145 | DIBENZO(A,H)ANTHRACENE | | log(x+1) | DIFF | ERROR | ERROR | 26 | 0.35 | . | . | |
| 146 | DIBENZO(A,H)ANTHRACENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.83 | 7.6374 | 0.00003 | |
| 147 | DIBENZO(A,H)ANTHRACENE | | notrans | DIFF | ERROR | ERROR | 26 | 9656.20 | . | . | |
| 148 | DIBENZO(A,H)ANTHRACENE | | notrans | DIFF | ZONE | SS3 | 8 | 42368.20 | 14.2599 | 0.00000 | |
| 149 | DIBUTYLTIN | | log(x+1) | DIFF | ERROR | ERROR | 42 | 0.10 | . | . | |
| 150 | DIBUTYLTIN | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.04 | 2.1679 | 0.05003 | * |
| 151 | DIBUTYLTIN | | notrans | DIFF | ERROR | ERROR | 42 | 11.70 | . | . | |
| 152 | DIBUTYLTIN | | notrans | DIFF | ZONE | SS3 | 8 | 8.66 | 3.8826 | 0.00168 | |
| 153 | DIELDRIN | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |

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Levene''s test for homoscedasticity
for the zone main effect

| OBS | Analyte name | DUMMY | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 154 | DIELDRIN | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 155 | DIELDRIN | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 156 | DIELDRIN | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.51 | 0.00000 | |
| 157 | ENDOSULFAN I | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 158 | ENDOSULFAN I | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 159 | ENDOSULFAN I | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 160 | ENDOSULFAN I | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.51 | 0.00000 | |
| 161 | ENDOSULFAN II | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 162 | ENDOSULFAN II | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 163 | ENDOSULFAN II | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 164 | ENDOSULFAN II | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.51 | 0.00000 | |
| 165 | ENDOSULFAN SULFATE | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 166 | ENDOSULFAN SULFATE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 167 | ENDOSULFAN SULFATE | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 168 | ENDOSULFAN SULFATE | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.51 | 0.00000 | |
| 169 | ENDRIN | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 170 | ENDRIN | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 171 | ENDRIN | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 172 | ENDRIN | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.51 | 0.00000 | |
| 173 | ENDRIN ALDEHYDE | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 174 | ENDRIN ALDEHYDE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 175 | ENDRIN ALDEHYDE | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 176 | ENDRIN ALDEHYDE | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.51 | 0.00000 | |
| 177 | FINES | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.00 | . | . | |
| 178 | FINES | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 11.75 | 0.00109 | |
| 179 | FINES | | notrans | DIFF | ERROR | ERROR | 8 | 45.30 | . | . | |
| 180 | FINES | | notrans | DIFF | ZONE | SS3 | 8 | 324.23 | 7.16 | 0.00581 | |
| 181 | FLUORANTHENE | | log(x+1) | DIFF | ERROR | ERROR | 20 | 0.33 | . | . | |
| 182 | FLUORANTHENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.49 | 3.72 | 0.00811 | |
| 183 | FLUORANTHENE | | notrans | DIFF | ERROR | ERROR | 20 | 12697.06 | . | . | |
| 184 | FLUORANTHENE | | notrans | DIFF | ZONE | SS3 | 8 | 264947.42 | 52.17 | 0.00000 | |
| 185 | FLUORENE | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.66 | . | . | |
| 186 | FLUORENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.86 | 5.52 | 0.00017 | |
| 187 | FLUORENE | | notrans | DIFF | ERROR | ERROR | 34 | 59370.12 | . | . | |
| 188 | FLUORENE | | notrans | DIFF | ZONE | SS3 | 8 | 100588.99 | 7.20 | 0.00002 | |
| 189 | GRAVEL | | log(x+1) | DIFF | ERROR | ERROR | 5 | 0.00 | . | . | |
| 190 | GRAVEL | | log(x+1) | DIFF | ZONE | SS3 | 7 | 0.16 | 55320.68 | 0.00000 | |
| 191 | GRAVEL | | notrans | DIFF | ERROR | ERROR | 5 | 0.00 | . | . | |
| 192 | GRAVEL | | notrans | DIFF | ZONE | SS3 | 7 | 212.63 | 99999.99 | 0.00000 | |
| 193 | HEPTACHLOR | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 194 | HEPTACHLOR | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 195 | HEPTACHLOR | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 196 | HEPTACHLOR | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.51 | 0.00000 | |
| 197 | HEPTACHLOR EPOXIDE | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.00 | . | . | |
| 198 | HEPTACHLOR EPOXIDE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.02 | 53.07 | 0.00000 | |
| 199 | HEPTACHLOR EPOXIDE | | notrans | DIFF | ERROR | ERROR | 41 | 0.02 | . | . | |
| 200 | HEPTACHLOR EPOXIDE | | notrans | DIFF | ZONE | SS3 | 8 | 0.27 | 82.51 | 0.00000 | |
| 201 | INDENO(1,2,3-CD)PYRENE | | log(x+1) | DIFF | ERROR | ERROR | 18 | 0.43 | . | . | |
| 202 | INDENO(1,2,3-CD)PYRENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.38 | 1.99 | 0.10799 | |
| 203 | INDENO(1,2,3-CD)PYRENE | | notrans | DIFF | ERROR | ERROR | 18 | 4458.78 | . | . | |
| 204 | INDENO(1,2,3-CD)PYRENE | | notrans | DIFF | ZONE | SS3 | 8 | 42600.04 | 21.40 | 0.00000 | |

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VOL 18

Levene''s test for homoscedasticity
for the zone main effect

| OBS | Analyte name | DUMMY | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 205 | LEAD, EXTRACTABLE | | log(x+1) | DIFF | ERROR | ERROR | 9 | 0.02 | . | . | |
| 206 | LEAD, EXTRACTABLE | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.02 | 1.2497 | 0.37109 | * |
| 207 | LEAD, EXTRACTABLE | | notrans | DIFF | ERROR | ERROR | 9 | 298.92 | . | . | |
| 208 | LEAD, EXTRACTABLE | | notrans | DIFF | ZONE | SSJ | 8 | 288.61 | 1.0862 | 0.44804 | * |
| 209 | LEAD, EXTRACTABLE / AVS | | log(x+1) | DIFF | ERROR | ERROR | 4 | 0.00 | . | . | |
| 210 | LEAD, EXTRACTABLE / AVS | | log(x+1) | DIFF | ZONE | SSJ | 7 | 0.00 | 0.5304 | 0.78215 | * |
| 211 | LEAD, EXTRACTABLE / AVS | | notrans | DIFF | ERROR | ERROR | 4 | 0.02 | . | . | |
| 212 | LEAD, EXTRACTABLE / AVS | | notrans | DIFF | ZONE | SSJ | 7 | 0.02 | 0.5863 | 0.74793 | * |
| 213 | LEAD, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.01 | . | . | |
| 214 | LEAD, TOTAL | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.02 | 1.7879 | 0.21641 | * |
| 215 | LEAD, TOTAL | | notrans | DIFF | ERROR | ERROR | 8 | 228.80 | . | . | |
| 216 | LEAD, TOTAL | | notrans | DIFF | ZONE | SSJ | 8 | 374.46 | 1.6366 | 0.25077 | * |
| 217 | LINDANE (GAMMA-BHC) | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.12 | . | . | |
| 218 | LINDANE (GAMMA-BHC) | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.28 | 11.8128 | 0.00000 | |
| 219 | LINDANE (GAMMA-BHC) | | notrans | DIFF | ERROR | ERROR | 41 | 5.24 | . | . | |
| 220 | LINDANE (GAMMA-BHC) | | notrans | DIFF | ZONE | SSJ | 8 | 21.16 | 20.7171 | 0.00000 | |
| 221 | MEAN GRAIN SIZE | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.10 | . | . | |
| 222 | MEAN GRAIN SIZE | | log(x+1) | DIFF | ZONE | SSJ | 7 | 0.39 | 4.6614 | 0.02304 | |
| 223 | MEAN GRAIN SIZE | | notrans | DIFF | ERROR | ERROR | 8 | 759.76 | . | . | |
| 224 | MEAN GRAIN SIZE | | notrans | DIFF | ZONE | SSJ | 7 | 4355.90 | 6.5523 | 0.00833 | |
| 225 | MEDIAN GRAIN SIZE | | log(x+1) | DIFF | ERROR | ERROR | 10 | 0.20 | . | . | |
| 226 | MEDIAN GRAIN SIZE | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.30 | 1.9295 | 0.16323 | * |
| 227 | MEDIAN GRAIN SIZE | | notrans | DIFF | ERROR | ERROR | 10 | 1438.48 | . | . | |
| 228 | MEDIAN GRAIN SIZE | | notrans | DIFF | ZONE | SSJ | 8 | 4616.87 | 4.0119 | 0.02197 | |
| 229 | MERCURY, EXTRACTABLE | | log(x+1) | DIFF | ERROR | ERROR | 16 | 0.00 | . | . | |
| 230 | MERCURY, EXTRACTABLE | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.00 | 4.3593 | 0.00594 | |
| 231 | MERCURY, EXTRACTABLE | | notrans | DIFF | ERROR | ERROR | 16 | 0.00 | . | . | |
| 232 | MERCURY, EXTRACTABLE | | notrans | DIFF | ZONE | SSJ | 8 | 0.00 | 4.3543 | 0.00597 | |
| 233 | MERCURY, EXTRACTABLE / AVS | | log(x+1) | DIFF | ERROR | ERROR | 16 | 0.00 | . | . | |
| 234 | MERCURY, EXTRACTABLE / AVS | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.00 | 13.6098 | 0.00001 | |
| 235 | MERCURY, EXTRACTABLE / AVS | | notrans | DIFF | ERROR | ERROR | 16 | 0.00 | . | . | |
| 236 | MERCURY, EXTRACTABLE / AVS | | notrans | DIFF | ZONE | SSJ | 8 | 0.00 | 13.6181 | 0.00001 | |
| 237 | MERCURY, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.00 | . | . | |
| 238 | MERCURY, TOTAL | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.00 | 1.3569 | 0.36500 | * |
| 239 | MERCURY, TOTAL | | notrans | DIFF | ERROR | ERROR | 6 | 0.03 | . | . | |
| 240 | MERCURY, TOTAL | | notrans | DIFF | ZONE | SSJ | 8 | 0.07 | 1.5492 | 0.30561 | * |
| 241 | METHOXYCHLOR | | log(x+1) | DIFF | ERROR | ERROR | 38 | 0.01 | . | . | |
| 242 | METHOXYCHLOR | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.01 | 4.5454 | 0.00061 | |
| 243 | METHOXYCHLOR | | notrans | DIFF | ERROR | ERROR | 38 | 0.34 | . | . | |
| 244 | METHOXYCHLOR | | notrans | DIFF | ZONE | SSJ | 8 | 0.32 | 4.5397 | 0.00062 | |
| 245 | METHYLNAPHTHALENES | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.62 | . | . | |
| 246 | METHYLNAPHTHALENES | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.60 | 4.6770 | 0.00063 | |
| 247 | METHYLNAPHTHALENES | | notrans | DIFF | ERROR | ERROR | 34 | 4580.80 | . | . | |
| 248 | METHYLNAPHTHALENES | | notrans | DIFF | ZONE | SSJ | 8 | 14246.28 | 13.2175 | 0.00000 | |
| 249 | MONOBUTYLTIN | | log(x+1) | DIFF | ERROR | ERROR | 42 | 0.04 | . | . | |
| 250 | MONOBUTYLTIN | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.06 | 4.9392 | 0.00024 | |
| 251 | MONOBUTYLTIN | | notrans | DIFF | ERROR | ERROR | 42 | 1.58 | . | . | |
| 252 | MONOBUTYLTIN | | notrans | DIFF | ZONE | SSJ | 8 | 2.32 | 7.6998 | 0.00000 | |
| 253 | N-NITROSODI-N-PROPYLAMINE | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.47 | . | . | |
| 254 | N-NITROSODI-N-PROPYLAMINE | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.47 | 4.2247 | 0.00134 | |
| 255 | N-NITROSODI-N-PROPYLAMINE | | notrans | DIFF | ERROR | ERROR | 34 | 2464.51 | . | . | |

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Levene's test for homoscedasticity
for the zone main effect

| OBS | Analyte name | DUMMY | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 256 | N-NITROSODI-N-PROPYLAMINE | | notrans | DIFF | ZONE | SS3 | 8 | 3981.86 | 6.8666 | 0.00002 | |
| 257 | N-NITROSODIMETHYLAMINE | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.47 | . | . | |
| 258 | N-NITROSODIMETHYLAMINE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.47 | 4.2247 | 0.00134 | |
| 259 | N-NITROSODIMETHYLAMINE | | notrans | DIFF | ERROR | ERROR | 34 | 2466.51 | . | . | |
| 260 | N-NITROSODIMETHYLAMINE | | notrans | DIFF | ZONE | SS3 | 8 | 3981.86 | 6.8666 | 0.00002 | |
| 261 | NICKEL, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.00 | . | . | |
| 262 | NICKEL, TOTAL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.03 | 28.0049 | 0.00005 | |
| 263 | NICKEL, TOTAL | | notrans | DIFF | ERROR | ERROR | 8 | 5.20 | . | . | |
| 264 | NICKEL, TOTAL | | notrans | DIFF | ZONE | SS3 | 8 | 143.06 | 27.5124 | 0.00005 | |
| 265 | PCB-1016 | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.09 | . | . | |
| 266 | PCB-1016 | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.05 | 3.1853 | 0.00668 | |
| 267 | PCB-1016 | | notrans | DIFF | ERROR | ERROR | 41 | 47.10 | . | . | |
| 268 | PCB-1016 | | notrans | DIFF | ZONE | SS3 | 8 | 29.71 | 3.2329 | 0.00608 | |
| 269 | PCB-1221 | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.09 | . | . | |
| 270 | PCB-1221 | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.05 | 3.1853 | 0.00668 | |
| 271 | PCB-1221 | | notrans | DIFF | ERROR | ERROR | 41 | 47.10 | . | . | |
| 272 | PCB-1221 | | notrans | DIFF | ZONE | SS3 | 8 | 29.71 | 3.2329 | 0.00608 | |
| 273 | PCB-1232 | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.09 | . | . | |
| 274 | PCB-1232 | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.05 | 3.1853 | 0.00668 | |
| 275 | PCB-1232 | | notrans | DIFF | ERROR | ERROR | 41 | 47.10 | . | . | |
| 276 | PCB-1232 | | notrans | DIFF | ZONE | SS3 | 8 | 29.71 | 3.2329 | 0.00608 | |
| 277 | PCB-1242 | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.09 | . | . | |
| 278 | PCB-1242 | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.05 | 3.1853 | 0.00668 | |
| 279 | PCB-1242 | | notrans | DIFF | ERROR | ERROR | 41 | 47.10 | . | . | |
| 280 | PCB-1242 | | notrans | DIFF | ZONE | SS3 | 8 | 29.71 | 3.2329 | 0.00608 | |
| 281 | PCB-1248 | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.09 | . | . | |
| 282 | PCB-1248 | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.05 | 3.1853 | 0.00668 | |
| 283 | PCB-1248 | | notrans | DIFF | ERROR | ERROR | 41 | 47.10 | . | . | |
| 284 | PCB-1248 | | notrans | DIFF | ZONE | SS3 | 8 | 29.71 | 3.2329 | 0.00608 | |
| 285 | PCB-1254 | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.09 | . | . | |
| 286 | PCB-1254 | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.05 | 3.1853 | 0.00668 | |
| 287 | PCB-1254 | | notrans | DIFF | ERROR | ERROR | 41 | 47.10 | . | . | |
| 288 | PCB-1254 | | notrans | DIFF | ZONE | SS3 | 8 | 29.71 | 3.2329 | 0.00608 | |
| 289 | PCB-1260 | | log(x+1) | DIFF | ERROR | ERROR | 19 | 0.12 | . | . | |
| 290 | PCB-1260 | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.19 | 4.0104 | 0.00615 | |
| 291 | PCB-1260 | | notrans | DIFF | ERROR | ERROR | 19 | 25875.44 | . | . | |
| 292 | PCB-1260 | | notrans | DIFF | ZONE | SS3 | 8 | 36440.70 | 3.3447 | 0.01462 | |
| 293 | PHENANTHRENE | | log(x+1) | DIFF | ERROR | ERROR | 32 | 0.49 | . | . | |
| 294 | PHENANTHRENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.24 | 1.9627 | 0.08428 | * |
| 295 | PHENANTHRENE | | notrans | DIFF | ERROR | ERROR | 32 | 363870.93 | . | . | |
| 296 | PHENANTHRENE | | notrans | DIFF | ZONE | SS3 | 8 | 2207330.30 | 24.2650 | 0.00000 | |
| 297 | PHENOL | | log(x+1) | DIFF | ERROR | ERROR | 34 | 0.56 | . | . | |
| 298 | PHENOL | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.50 | 3.8101 | 0.00274 | |
| 299 | PHENOL | | notrans | DIFF | ERROR | ERROR | 34 | 13465.69 | . | . | |
| 300 | PHENOL | | notrans | DIFF | ZONE | SS3 | 8 | 14751.71 | 4.6559 | 0.00066 | |
| 301 | PYRENE | | log(x+1) | DIFF | ERROR | ERROR | 19 | 0.20 | . | . | |
| 302 | PYRENE | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.24 | 2.8267 | 0.03005 | |
| 303 | PYRENE | | notrans | DIFF | ERROR | ERROR | 19 | 72497.73 | . | . | |
| 304 | PYRENE | | notrans | DIFF | ZONE | SS3 | 8 | 205885.62 | 6.7447 | 0.00032 | |
| 305 | SAND | | log(x+1) | DIFF | ERROR | ERROR | 9 | 0.05 | . | . | |
| 306 | SAND | | log(x+1) | DIFF | ZONE | SS3 | 8 | 0.07 | 1.4046 | 0.31057 | * |

R0063699

Levene''s test for homoscedasticity
for the zone main effect

| OBS | Analyte name | DUMMY | TRANS | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F | *=Normal Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 307 | SAND | | notrans | DIFF | ERROR | ERROR | 9 | 275.74 | . | . | |
| 308 | SAND | | notrans | DIFF | ZONE | SSJ | 8 | 993.86 | 4.0548 | 0.02589 | |
| 309 | SELENIUM, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 29 | 0.01 | . | . | |
| 310 | SELENIUM, TOTAL | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.03 | 15.2869 | 0.00000 | |
| 311 | SELENIUM, TOTAL | | notrans | DIFF | ERROR | ERROR | 29 | 0.14 | . | . | |
| 312 | SELENIUM, TOTAL | | notrans | DIFF | ZONE | SSJ | 8 | 0.67 | 17.1914 | 0.00000 | |
| 313 | SILT | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.01 | . | . | |
| 314 | SILT | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.07 | 12.7532 | 0.00082 | |
| 315 | SILT | | notrans | DIFF | ERROR | ERROR | 8 | 78.91 | . | . | |
| 316 | SILT | | notrans | DIFF | ZONE | SSJ | 8 | 626.43 | 7.9389 | 0.00414 | |
| 317 | SILVER, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.17 | . | . | |
| 318 | SILVER, TOTAL | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.14 | 0.8458 | 0.59077 | * |
| 319 | SILVER, TOTAL | | notrans | DIFF | ERROR | ERROR | 8 | 96.99 | . | . | |
| 320 | SILVER, TOTAL | | notrans | DIFF | ZONE | SSJ | 8 | 60.25 | 0.7037 | 0.68457 | * |
| 321 | SULFIDE, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 6 | 0.17 | . | . | |
| 322 | SULFIDE, TOTAL | | log(x+1) | DIFF | ZONE | SSJ | 7 | 0.65 | 3.3763 | 0.07971 | * |
| 323 | SULFIDE, TOTAL | | notrans | DIFF | ERROR | ERROR | 5 | 3172.00 | . | . | |
| 324 | SULFIDE, TOTAL | | notrans | DIFF | ZONE | SSJ | 7 | 7623.69 | 1.7167 | 0.28550 | * |
| 325 | TOTAL ORGANIC CARBON | | log(x+1) | DIFF | ERROR | ERROR | 8 | 0.01 | . | . | |
| 326 | TOTAL ORGANIC CARBON | | log(x+1) | DIFF | ZONE | SSJ | 7 | 0.01 | 3.1251 | 0.06641 | * |
| 327 | TOTAL ORGANIC CARBON | | notrans | DIFF | ERROR | ERROR | 8 | 0.17 | . | . | |
| 328 | TOTAL ORGANIC CARBON | | notrans | DIFF | ZONE | SSJ | 7 | 0.43 | 2.9448 | 0.07662 | * |
| 329 | TOXAPHENE | | log(x+1) | DIFF | ERROR | ERROR | 41 | 0.09 | . | . | |
| 330 | TOXAPHENE | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.05 | 3.1853 | 0.00668 | |
| 331 | TOXAPHENE | | notrans | DIFF | ERROR | ERROR | 41 | 47.10 | . | . | |
| 332 | TOXAPHENE | | notrans | DIFF | ZONE | SSJ | 8 | 29.71 | 3.2329 | 0.00608 | |
| 333 | TRIBUTYLTIN | | log(x+1) | DIFF | ERROR | ERROR | 40 | 0.56 | . | . | |
| 334 | TRIBUTYLTIN | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.85 | 7.5937 | 0.00000 | |
| 335 | TRIBUTYLTIN | | notrans | DIFF | ERROR | ERROR | 40 | 296.37 | . | . | |
| 336 | TRIBUTYLTIN | | notrans | DIFF | ZONE | SSJ | 8 | 397.51 | 6.7064 | 0.00002 | |
| 337 | ZINC, EXTRACTABLE | | log(x+1) | DIFF | ERROR | ERROR | 9 | 0.01 | . | . | |
| 338 | ZINC, EXTRACTABLE | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.09 | 12.7680 | 0.00045 | |
| 339 | ZINC, EXTRACTABLE | | notrans | DIFF | ERROR | ERROR | 9 | 1027.20 | . | . | |
| 340 | ZINC, EXTRACTABLE | | notrans | DIFF | ZONE | SSJ | 8 | 3408.80 | 3.7334 | 0.03311 | |
| 341 | ZINC, EXTRACTABLE / AVS | | log(x+1) | DIFF | ERROR | ERROR | 4 | 0.01 | . | . | |
| 342 | ZINC, EXTRACTABLE / AVS | | log(x+1) | DIFF | ZONE | SSJ | 7 | 0.01 | 0.5908 | 0.74519 | * |
| 343 | ZINC, EXTRACTABLE / AVS | | notrans | DIFF | ERROR | ERROR | 4 | 0.40 | . | . | |
| 344 | ZINC, EXTRACTABLE / AVS | | notrans | DIFF | ZONE | SSJ | 7 | 0.50 | 0.7266 | 0.66655 | * |
| 345 | ZINC, TOTAL | | log(x+1) | DIFF | ERROR | ERROR | 7 | 0.01 | . | . | |
| 346 | ZINC, TOTAL | | log(x+1) | DIFF | ZONE | SSJ | 8 | 0.02 | 4.1311 | 0.03876 | |
| 347 | ZINC, TOTAL | | notrans | DIFF | ERROR | ERROR | 7 | 881.48 | . | . | |
| 348 | ZINC, TOTAL | | notrans | DIFF | ZONE | SSJ | 8 | 4408.29 | 4.3759 | 0.03351 | |

R0063700

VOL 18

| OBS | CHEM | TRANS |
|---|---|---|
| 1 | 1,2,4-TRICHLOROBENZENE | rank |
| 2 | 1,4-DICHLOROBENZENE | rank |
| 3 | 2,4-DINITROPHENOL | rank |
| 4 | 2-CHLOROPHENOL | rank |
| 5 | 3- AND 4-METHYLPHENOL | rank |
| 6 | 4,4'-DDD | notrans |
| 7 | 4,4'-DDE | notrans |
| 8 | 4,4'-DDT | rank |
| 9 | ACENAPHTHENE | rank |
| 10 | ACENAPHTHYLENE | log(x+1) |
| 11 | ACID VOLATILE SULFIDE | rank |
| 12 | ALDRIN | rank |
| 13 | ALPHA-BHC (HCH) | rank |
| 14 | ANTHRACENE | log(x+1) |
| 15 | ARSENIC, TOTAL | notrans |
| 16 | BENZIDINE | rank |
| 17 | BENZO(A)ANTHRACENE | rank |
| 18 | BENZO(A)PYRENE | log(x+1) |
| 19 | BENZO(B)FLUORANTHENE | notrans |
| 20 | BENZO(GHI)PERYLENE | log(x+1) |
| 21 | BENZO(K)FLUORANTHENE | rank |
| 22 | BERYLLIUM, TOTAL | rank |
| 23 | BETA-BHC (HCH) | rank |
| 24 | BIS(2-ETHYLHEXYL)PHTHALATE | rank |
| 25 | CADMIUM, EXTRACTABLE | notrans |
| 26 | CADMIUM, EXTRACTABLE / AVS | rank |
| 27 | CADMIUM, TOTAL | rank |
| 28 | CHLORDANE | rank |
| 29 | CHROMIUM, TOTAL | notrans |
| 30 | CHRYSENE | rank |
| 31 | CLAY | notrans |
| 32 | COPPER, EXTRACTABLE | notrans |
| 33 | COPPER, EXTRACTABLE / AVS | notrans |
| 34 | COPPER, TOTAL | notrans |
| 35 | DELTA-BHC (HCH) | rank |
| 36 | DI-N-OCTYLPHTHALATE | rank |
| 37 | DIBENZO(A,H)ANTHRACENE | rank |
| 38 | DIBUTYLTIN | log(x+1) |
| 39 | DIELDRIN | rank |
| 40 | ENDOSULFAN I | rank |
| 41 | ENDOSULFAN II | rank |
| 42 | ENDOSULFAN SULFATE | rank |
| 43 | ENDRIN | rank |
| 44 | ENDRIN ALDEHYDE | rank |
| 45 | FINES | rank |
| 46 | FLUORANTHENE | rank |
| 47 | FLUORENE | rank |
| 48 | GRAVEL | rank |
| 49 | HEPTACHLOR | rank |
| 50 | HEPTACHLOR EPOXIDE | rank |
| 51 | INDENO(1,2,3-CD)PYRENE | log(x+1) |
| 52 | LEAD, EXTRACTABLE | notrans |
| 53 | LEAD, EXTRACTABLE / AVS | notrans |
| 54 | LEAD, TOTAL | notrans |
| 55 | LINDANE (GAMMA-BHC) | rank |

R0063701

| OBS | CHEM | TRANS |
|---|---|---|
| 56 | MEAN GRAIN SIZE | rank |
| 57 | MEDIAN GRAIN SIZE | log(x+1) |
| 58 | MERCURY, EXTRACTABLE | rank |
| 59 | MERCURY, EXTRACTABLE / AVS | rank |
| 60 | MERCURY, TOTAL | notrans |
| 61 | METHOXYCHLOR | rank |
| 62 | METHYLNAPHTHALENES | rank |
| 63 | MONOBUTYLTIN | rank |
| 64 | N-NITROSODI-N-PROPYLAMINE | rank |
| 65 | N-NITROSODIMETHYLAMINE | rank |
| 66 | NICKEL, TOTAL | rank |
| 67 | PCB-1016 | rank |
| 68 | PCB-1221 | rank |
| 69 | PCB-1232 | rank |
| 70 | PCB-1242 | rank |
| 71 | PCB-1248 | rank |
| 72 | PCB-1254 | rank |
| 73 | PCB-1260 | rank |
| 74 | PHENANTHRENE | log(x+1) |
| 75 | PHENOL | rank |
| 76 | PYRENE | rank |
| 77 | SAND | log(x+1) |
| 78 | SELENIUM, TOTAL | rank |
| 79 | SILT | rank |
| 80 | SILVER, TOTAL | notrans |
| 81 | SULFIDE, TOTAL | notrans |
| 82 | TOTAL ORGANIC CARBON | notrans |
| 83 | TOXAPHENE | rank |
| 84 | TRIBUTYLTIN | rank |
| 85 | ZINC, EXTRACTABLE | rank |
| 86 | ZINC, EXTRACTABLE / AVS | notrans |
| 87 | ZINC, TOTAL | rank |

R0063702

| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 1 | 1,2,4-TRICHLOROBENZENE | A | 14.167 | 6 |
| 2 | 1,2,4-TRICHLOROBENZENE | B | 10.000 | 3 |
| 3 | 1,2,4-TRICHLOROBENZENE | C | 19.286 | 7 |
| 4 | 1,2,4-TRICHLOROBENZENE | D | 10.000 | 3 |
| 5 | 1,2,4-TRICHLOROBENZENE | E | 26.000 | 5 |
| 6 | 1,2,4-TRICHLOROBENZENE | F | 50.000 | 2 |
| 7 | 1,2,4-TRICHLOROBENZENE | G | 55.833 | 6 |
| 8 | 1,2,4-TRICHLOROBENZENE | H | 15.000 | 4 |
| 9 | 1,2,4-TRICHLOROBENZENE | Ref | 11.190 | 7 |
| 10 | 1,4-DICHLOROBENZENE | A | 14.167 | 6 |
| 11 | 1,4-DICHLOROBENZENE | B | 10.000 | 3 |
| 12 | 1,4-DICHLOROBENZENE | C | 19.286 | 7 |
| 13 | 1,4-DICHLOROBENZENE | D | 10.000 | 3 |
| 14 | 1,4-DICHLOROBENZENE | E | 26.000 | 5 |
| 15 | 1,4-DICHLOROBENZENE | F | 50.000 | 2 |
| 16 | 1,4-DICHLOROBENZENE | G | 55.833 | 6 |
| 17 | 1,4-DICHLOROBENZENE | H | 15.000 | 4 |
| 18 | 1,4-DICHLOROBENZENE | Ref | 11.190 | 7 |
| 19 | 2,4-DINITROPHENOL | A | 14.167 | 6 |
| 20 | 2,4-DINITROPHENOL | B | 10.000 | 3 |
| 21 | 2,4-DINITROPHENOL | C | 18.125 | 8 |
| 22 | 2,4-DINITROPHENOL | D | 10.000 | 3 |
| 23 | 2,4-DINITROPHENOL | E | 26.000 | 5 |
| 24 | 2,4-DINITROPHENOL | F | 50.000 | 2 |
| 25 | 2,4-DINITROPHENOL | G | 55.833 | 6 |
| 26 | 2,4-DINITROPHENOL | H | 15.000 | 4 |
| 27 | 2,4-DINITROPHENOL | Ref | 11.190 | 7 |
| 28 | 2-CHLOROPHENOL | A | 21.667 | 6 |
| 29 | 2-CHLOROPHENOL | B | 15.000 | 3 |
| 30 | 2-CHLOROPHENOL | C | 40.000 | 8 |
| 31 | 2-CHLOROPHENOL | D | 16.667 | 3 |
| 32 | 2-CHLOROPHENOL | E | 53.000 | 5 |
| 33 | 2-CHLOROPHENOL | F | 125.000 | 2 |
| 34 | 2-CHLOROPHENOL | G | 110.833 | 6 |
| 35 | 2-CHLOROPHENOL | H | 28.750 | 4 |
| 36 | 2-CHLOROPHENOL | Ref | 23.810 | 7 |
| 37 | 3- AND 4-METHYLPHENOL | A | 38.333 | 6 |
| 38 | 3- AND 4-METHYLPHENOL | B | 21.667 | 3 |
| 39 | 3- AND 4-METHYLPHENOL | C | 58.750 | 8 |
| 40 | 3- AND 4-METHYLPHENOL | D | 25.000 | 3 |
| 41 | 3- AND 4-METHYLPHENOL | E | 80.000 | 5 |
| 42 | 3- AND 4-METHYLPHENOL | F | 175.000 | 2 |
| 43 | 3- AND 4-METHYLPHENOL | G | 215.833 | 6 |
| 44 | 3- AND 4-METHYLPHENOL | H | 41.250 | 4 |
| 45 | 3- AND 4-METHYLPHENOL | Ref | 38.095 | 7 |
| 46 | 4,4'-DDD | A | 3.050 | 6 |
| 47 | 4,4'-DDD | B | 1.700 | 2 |
| 48 | 4,4'-DDD | C | 12.833 | 9 |
| 49 | 4,4'-DDD | D | 10.350 | 6 |
| 50 | 4,4'-DDD | E | 11.058 | 6 |
| 51 | 4,4'-DDD | F | 21.333 | 3 |
| 52 | 4,4'-DDD | G | 0.750 | 6 |
| 53 | 4,4'-DDD | H | 16.500 | 3 |
| 54 | 4,4'-DDD | Ref | 12.571 | 7 |
| 55 | 4,4'-DDE | A | 32.167 | 6 |

R0063703

Bechtel Che...stry
Mean untransformed values

11:34 Friday, August 18, 1995 13

| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 56 | 4,4'-DDE | B | 19.00 | 4 |
| 57 | 4,4'-DDE | C | 54.33 | 9 |
| 58 | 4,4'-DDE | D | 48.28 | 6 |
| 59 | 4,4'-DDE | E | 87.50 | 6 |
| 60 | 4,4'-DDE | F | 120.00 | 3 |
| 61 | 4,4'-DDE | G | 99.33 | 6 |
| 62 | 4,4'-DDE | H | 70.00 | 4 |
| 63 | 4,4'-DDE | Ref | 119.14 | 7 |
| 64 | 4,4'-DDT | A | 0.41 | 6 |
| 65 | 4,4'-DDT | B | 0.39 | 4 |
| 66 | 4,4'-DDT | C | 4.18 | 9 |
| 67 | 4,4'-DDT | D | 0.43 | 6 |
| 68 | 4,4'-DDT | E | 0.48 | 6 |
| 69 | 4,4'-DDT | F | 0.50 | 3 |
| 70 | 4,4'-DDT | G | 0.75 | 6 |
| 71 | 4,4'-DDT | H | 0.50 | 3 |
| 72 | 4,4'-DDT | Ref | 0.47 | 7 |
| 73 | ACENAPHTHENE | A | 14.17 | 6 |
| 74 | ACENAPHTHENE | B | 10.00 | 3 |
| 75 | ACENAPHTHENE | C | 19.29 | 7 |
| 76 | ACENAPHTHENE | D | 10.00 | 3 |
| 77 | ACENAPHTHENE | E | 26.00 | 5 |
| 78 | ACENAPHTHENE | F | 50.00 | 2 |
| 79 | ACENAPHTHENE | G | 55.83 | 6 |
| 80 | ACENAPHTHENE | H | 141.25 | 4 |
| 81 | ACENAPHTHENE | Ref | 11.19 | 7 |
| 82 | ACENAPHTHYLENE | A | 14.17 | 6 |
| 83 | ACENAPHTHYLENE | B | 16.25 | 4 |
| 84 | ACENAPHTHYLENE | C | 19.29 | 7 |
| 85 | ACENAPHTHYLENE | D | 19.17 | 6 |
| 86 | ACENAPHTHYLENE | E | 32.83 | 6 |
| 87 | ACENAPHTHYLENE | F | 56.00 | 3 |
| 88 | ACENAPHTHYLENE | G | 66.83 | 6 |
| 89 | ACENAPHTHYLENE | H | 177.75 | 4 |
| 90 | ACENAPHTHYLENE | Ref | 11.19 | 7 |
| 91 | ACID VOLATILE SULFIDE | A | 63.00 | 6 |
| 92 | ACID VOLATILE SULFIDE | B | 70.00 | 4 |
| 93 | ACID VOLATILE SULFIDE | C | 119.89 | 9 |
| 94 | ACID VOLATILE SULFIDE | D | 98.11 | 6 |
| 95 | ACID VOLATILE SULFIDE | E | 176.83 | 6 |
| 96 | ACID VOLATILE SULFIDE | F | 283.33 | 3 |
| 97 | ACID VOLATILE SULFIDE | G | 2850.00 | 6 |
| 98 | ACID VOLATILE SULFIDE | H | 3525.00 | 4 |
| 99 | ACID VOLATILE SULFIDE | Ref | 139.39 | 7 |
| 100 | ALDRIN | A | 0.41 | 6 |
| 101 | ALDRIN | B | 0.39 | 4 |
| 102 | ALDRIN | C | 0.66 | 9 |
| 103 | ALDRIN | D | 0.43 | 6 |
| 104 | ALDRIN | E | 0.48 | 6 |
| 105 | ALDRIN | F | 0.50 | 3 |
| 106 | ALDRIN | G | 0.75 | 6 |
| 107 | ALDRIN | H | 0.50 | 3 |
| 108 | ALDRIN | Ref | 0.47 | 7 |
| 109 | ALPHA-BHC (HCH) | A | 0.41 | 6 |
| 110 | ALPHA-BHC (HCH) | B | 0.39 | 4 |

VOL 18

R0063704

| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 111 | ALPHA-BHC (HCH) | C | 0.46 | 9 |
| 112 | ALPHA-BHC (HCH) | D | 0.43 | 6 |
| 113 | ALPHA-BHC (HCH) | E | 0.48 | 6 |
| 114 | ALPHA-BHC (HCH) | F | 0.50 | 3 |
| 115 | ALPHA-BHC (HCH) | G | 0.75 | 6 |
| 116 | ALPHA-BHC (HCH) | H | 0.50 | 3 |
| 117 | ALPHA-BHC (HCH) | Ref | 0.47 | 7 |
| 118 | ANTHRACENE | A | 14.17 | 6 |
| 119 | ANTHRACENE | B | 42.75 | 4 |
| 120 | ANTHRACENE | C | 21.88 | 8 |
| 121 | ANTHRACENE | D | 34.00 | 6 |
| 122 | ANTHRACENE | E | 74.83 | 6 |
| 123 | ANTHRACENE | F | 130.00 | 3 |
| 124 | ANTHRACENE | G | 116.67 | 6 |
| 125 | ANTHRACENE | H | 887.50 | 4 |
| 126 | ANTHRACENE | Ref | 19.10 | 7 |
| 127 | ARSENIC, TOTAL | A | 5.55 | 6 |
| 128 | ARSENIC, TOTAL | B | 5.30 | 4 |
| 129 | ARSENIC, TOTAL | C | 10.08 | 9 |
| 130 | ARSENIC, TOTAL | D | 9.38 | 6 |
| 131 | ARSENIC, TOTAL | E | 11.20 | 6 |
| 132 | ARSENIC, TOTAL | F | 15.67 | 3 |
| 133 | ARSENIC, TOTAL | G | 10.10 | 6 |
| 134 | ARSENIC, TOTAL | H | 12.50 | 4 |
| 135 | ARSENIC, TOTAL | Ref | 8.33 | 7 |
| 136 | BENZIDINE | A | 45.00 | 1 |
| 137 | BENZIDINE | B | 40.00 | 3 |
| 138 | BENZIDINE | E | 50.00 | 2 |
| 139 | BENZIDINE | G | 75.00 | 2 |
| 140 | BENZIDINE | H | 62.50 | 4 |
| 141 | BENZIDINE | Ref | 46.00 | 5 |
| 142 | BENZO(A)ANTHRACENE | A | 14.17 | 6 |
| 143 | BENZO(A)ANTHRACENE | B | 37.00 | 4 |
| 144 | BENZO(A)ANTHRACENE | C | 23.38 | 8 |
| 145 | BENZO(A)ANTHRACENE | D | 36.39 | 6 |
| 146 | BENZO(A)ANTHRACENE | E | 123.67 | 6 |
| 147 | BENZO(A)ANTHRACENE | F | 210.00 | 3 |
| 148 | BENZO(A)ANTHRACENE | G | 55.83 | 6 |
| 149 | BENZO(A)ANTHRACENE | H | 1250.00 | 4 |
| 150 | BENZO(A)ANTHRACENE | Ref | 11.19 | 7 |
| 151 | BENZO(A)PYRENE | A | 19.50 | 6 |
| 152 | BENZO(A)PYRENE | B | 99.25 | 4 |
| 153 | BENZO(A)PYRENE | C | 60.89 | 9 |
| 154 | BENZO(A)PYRENE | D | 165.39 | 6 |
| 155 | BENZO(A)PYRENE | E | 276.67 | 6 |
| 156 | BENZO(A)PYRENE | F | 493.33 | 3 |
| 157 | BENZO(A)PYRENE | G | 260.00 | 6 |
| 158 | BENZO(A)PYRENE | H | 1112.50 | 4 |
| 159 | BENZO(A)PYRENE | Ref | 52.90 | 7 |
| 160 | BENZO(B)FLUORANTNENE | A | 19.50 | 6 |
| 161 | BENZO(B)FLUORANTHENE | B | 132.00 | 4 |
| 162 | BENZO(B)FLUORANTHENE | C | 65.56 | 9 |
| 163 | BENZO(B)FLUORANTHENE | D | 204.67 | 6 |
| 164 | BENZO(B)FLUORANTHENE | E | 338.33 | 6 |
| 165 | BENZO(B)FLUORANTHENE | F | 563.33 | 3 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 166 | BENZO(B)FLUORANTHENE | G | 316.67 | 6 |
| 167 | BENZO(B)FLUORANTHENE | H | 1425.00 | 4 |
| 168 | BENZO(B)FLUORANTHENE | Ref | 61.48 | 7 |
| 169 | BENZO(GHI)PERYLENE | A | 14.17 | 6 |
| 170 | BENZO(GHI)PERYLENE | B | 58.25 | 4 |
| 171 | BENZO(GHI)PERYLENE | C | 32.13 | 8 |
| 172 | BENZO(GHI)PERYLENE | D | 84.83 | 6 |
| 173 | BENZO(GHI)PERYLENE | E | 163.33 | 6 |
| 174 | BENZO(GHI)PERYLENE | F | 340.00 | 3 |
| 175 | BENZO(GHI)PERYLENE | G | 121.67 | 6 |
| 176 | BENZO(GHI)PERYLENE | H | 295.00 | 4 |
| 177 | BENZO(GHI)PERYLENE | Ref | 25.81 | 7 |
| 178 | BENZO(K)FLUORANTHENE | A | 22.50 | 6 |
| 179 | BENZO(K)FLUORANTHENE | B | 157.50 | 4 |
| 180 | BENZO(K)FLUORANTHENE | C | 74.00 | 9 |
| 181 | BENZO(K)FLUORANTHENE | D | 217.06 | 6 |
| 182 | BENZO(K)FLUORANTHENE | E | 340.00 | 6 |
| 183 | BENZO(K)FLUORANTHENE | F | 563.33 | 3 |
| 184 | BENZO(K)FLUORANTHENE | G | 296.67 | 6 |
| 185 | BENZO(K)FLUORANTHENE | H | 1057.50 | 4 |
| 186 | BENZO(K)FLUORANTHENE | Ref | 69.10 | 7 |
| 187 | BERYLLIUM, TOTAL | A | 0.44 | 6 |
| 188 | BERYLLIUM, TOTAL | B | 0.31 | 4 |
| 189 | BERYLLIUM, TOTAL | C | 0.58 | 9 |
| 190 | BERYLLIUM, TOTAL | D | 0.51 | 6 |
| 191 | BERYLLIUM, TOTAL | E | 0.61 | 6 |
| 192 | BERYLLIUM, TOTAL | F | 0.71 | 3 |
| 193 | BERYLLIUM, TOTAL | G | 0.72 | 6 |
| 194 | BERYLLIUM, TOTAL | H | 0.56 | 4 |
| 195 | BERYLLIUM, TOTAL | Ref | 0.40 | 7 |
| 196 | BETA-BHC (HCH) | A | 0.41 | 6 |
| 197 | BETA-BHC (HCH) | B | 0.39 | 4 |
| 198 | BETA-BHC (HCH) | C | 0.46 | 9 |
| 199 | BETA-BHC (HCH) | D | 0.43 | 6 |
| 200 | BETA-BHC (HCH) | E | 0.48 | 6 |
| 201 | BETA-BHC (HCH) | F | 0.50 | 3 |
| 202 | BETA-BHC (HCH) | G | 0.75 | 6 |
| 203 | BETA-BHC (HCH) | H | 0.50 | 3 |
| 204 | BETA-BHC (HCH) | Ref | 0.47 | 7 |
| 205 | BIS(2 ETHYLHEXYL)PHTHALATE | A | 83.33 | 6 |
| 206 | BIS(2-ETHYLHEXYL)PHTHALATE | B | 50.00 | 3 |
| 207 | BIS(2-ETHYLHEXYL)PHTHALATE | C | 121.43 | 7 |
| 208 | BIS(2-ETHYLHEXYL)PHTHALATE | D | 50.00 | 3 |
| 209 | BIS(2 ETHYLHEXYL)PHTHALATE | E | 200.00 | 5 |
| 210 | BIS(2-ETHYLHEXYL)PHTHALATE | F | 425.00 | 2 |
| 211 | BIS(2-ETHYLHEXYL)PHTHALATE | G | 375.00 | 6 |
| 212 | BIS(2-ETHYLHEXYL)PHTHALATE | H | 112.50 | 4 |
| 213 | BIS(2-ETHYLHEXYL)PHTHALATE | Ref | 119.76 | 7 |
| 214 | CADMIUM, EXTRACTABLE | A | 0.36 | 6 |
| 215 | CADMIUM, EXTRACTABLE | B | 0.39 | 4 |
| 216 | CADMIUM, EXTRACTABLE | C | 0.49 | 9 |
| 217 | CADMIUM, EXTRACTABLE | D | 0.33 | 6 |
| 218 | CADMIUM, EXTRACTABLE | E | 0.52 | 6 |
| 219 | CADMIUM, EXTRACTABLE | F | 0.86 | 3 |
| 220 | CADMIUM, EXTRACTABLE | G | 1.09 | 6 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 221 | CADMIUM, EXTRACTABLE | H | 1.10 | 4 |
| 222 | CADMIUM, EXTRACTABLE | Ref | 1.47 | 7 |
| 223 | CADMIUM, EXTRACTABLE / AVS | A | 0.01 | 6 |
| 224 | CADMIUM, EXTRACTABLE / AVS | B | 0.01 | 4 |
| 225 | CADMIUM, EXTRACTABLE / AVS | C | 0.00 | 9 |
| 226 | CADMIUM, EXTRACTABLE / AVS | D | 0.02 | 6 |
| 227 | CADMIUM, EXTRACTABLE / AVS | E | 0.00 | 6 |
| 228 | CADMIUM, EXTRACTABLE / AVS | F | 0.01 | 3 |
| 229 | CADMIUM, EXTRACTABLE / AVS | G | 0.00 | 6 |
| 230 | CADMIUM, EXTRACTABLE / AVS | H | 0.00 | 4 |
| 231 | CADMIUM, EXTRACTABLE / AVS | Ref | 0.07 | 7 |
| 232 | CADMIUM, TOTAL | A | 0.23 | 6 |
| 233 | CADMIUM, TOTAL | B | 0.19 | 4 |
| 234 | CADMIUM, TOTAL | C | 0.41 | 9 |
| 235 | CADMIUM, TOTAL | D | 0.29 | 6 |
| 236 | CADMIUM, TOTAL | E | 0.58 | 6 |
| 237 | CADMIUM, TOTAL | F | 0.77 | 3 |
| 238 | CADMIUM, TOTAL | G | 0.83 | 6 |
| 239 | CADMIUM, TOTAL | H | 0.86 | 4 |
| 240 | CADMIUM, TOTAL | Ref | 1.13 | 7 |
| 241 | CHLORDANE | A | 1.58 | 6 |
| 242 | CHLORDANE | B | 1.50 | 4 |
| 243 | CHLORDANE | C | 1.89 | 9 |
| 244 | CHLORDANE | D | 1.75 | 6 |
| 245 | CHLORDANE | E | 2.08 | 6 |
| 246 | CHLORDANE | F | 2.50 | 3 |
| 247 | CHLORDANE | G | 3.08 | 6 |
| 248 | CHLORDANE | H | 2.67 | 3 |
| 249 | CHLORDANE | Ref | 2.00 | 7 |
| 250 | CHROMIUM, TOTAL | A | 27.67 | 6 |
| 251 | CHROMIUM, TOTAL | B | 25.00 | 4 |
| 252 | CHROMIUM, TOTAL | C | 42.89 | 9 |
| 253 | CHROMIUM, TOTAL | D | 35.39 | 6 |
| 254 | CHROMIUM, TOTAL | E | 45.67 | 6 |
| 255 | CHROMIUM, TOTAL | F | 69.67 | 3 |
| 256 | CHROMIUM, TOTAL | G | 51.50 | 6 |
| 257 | CHROMIUM, TOTAL | H | 122.50 | 4 |
| 258 | CHROMIUM, TOTAL | Ref | 36.62 | 7 |
| 259 | CHRYSENE | A | 18.00 | 6 |
| 260 | CHRYSENE | B | 75.75 | 4 |
| 261 | CHRYSENE | C | 41.89 | 9 |
| 262 | CHRYSENE | D | 68.40 | 5 |
| 263 | CHRYSENE | E | 238.33 | 6 |
| 264 | CHRYSENE | F | 440.00 | 3 |
| 265 | CHRYSENE | G | 226.67 | 6 |
| 266 | CHRYSENE | H | 1455.00 | 4 |
| 267 | CHRYSENE | Ref | 38.00 | 7 |
| 268 | CLAY | A | 18.21 | 6 |
| 269 | CLAY | B | 12.38 | 4 |
| 270 | CLAY | C | 28.49 | 9 |
| 271 | CLAY | D | 20.18 | 6 |
| 272 | CLAY | E | 31.77 | 6 |
| 273 | CLAY | F | 45.47 | 3 |
| 274 | CLAY | G | 40.82 | 6 |
| 275 | CLAY | H | 36.34 | 4 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 276 | CLAY | Ref | 24.585 | 7 |
| 277 | COPPER, EXTRACTABLE | A | 27.167 | 6 |
| 278 | COPPER, EXTRACTABLE | B | 45.250 | 4 |
| 279 | COPPER, EXTRACTABLE | C | 82.778 | 9 |
| 280 | COPPER, EXTRACTABLE | D | 89.389 | 6 |
| 281 | COPPER, EXTRACTABLE | E | 98.000 | 6 |
| 282 | COPPER, EXTRACTABLE | F | 203.333 | 3 |
| 283 | COPPER, EXTRACTABLE | G | 128.000 | 6 |
| 284 | COPPER, EXTRACTABLE | H | 225.000 | 4 |
| 285 | COPPER, EXTRACTABLE | Ref | 47.714 | 7 |
| 286 | COPPER, EXTRACTABLE / AVS | A | 0.627 | 6 |
| 287 | COPPER, EXTRACTABLE / AVS | B | 0.930 | 4 |
| 288 | COPPER, EXTRACTABLE / AVS | C | 0.807 | 9 |
| 289 | COPPER, EXTRACTABLE / AVS | D | 5.728 | 6 |
| 290 | COPPER, EXTRACTABLE / AVS | E | 0.622 | 6 |
| 291 | COPPER, EXTRACTABLE / AVS | F | 1.390 | 3 |
| 292 | COPPER, EXTRACTABLE / AVS | G | 0.045 | 6 |
| 293 | COPPER, EXTRACTABLE / AVS | H | 0.065 | 4 |
| 294 | COPPER, EXTRACTABLE / AVS | Ref | 2.317 | 7 |
| 295 | COPPER, TOTAL | A | 40.167 | 6 |
| 296 | COPPER, TOTAL | B | 55.500 | 4 |
| 297 | COPPER, TOTAL | C | 111.111 | 9 |
| 298 | COPPER, TOTAL | D | 109.222 | 6 |
| 299 | COPPER, TOTAL | E | 136.833 | 6 |
| 300 | COPPER, TOTAL | F | 320.000 | 3 |
| 301 | COPPER, TOTAL | G | 166.667 | 6 |
| 302 | COPPER, TOTAL | H | 247.500 | 4 |
| 303 | COPPER, TOTAL | Ref | 74.619 | 7 |
| 304 | DELTA-BHC (HCH) | A | 0.408 | 6 |
| 305 | DELTA-BHC (HCH) | B | 0.388 | 4 |
| 306 | DELTA-BHC (HCH) | C | 0.456 | 9 |
| 307 | DELTA-BHC (HCH) | D | 0.433 | 6 |
| 308 | DELTA-BHC (HCH) | E | 0.483 | 6 |
| 309 | DELTA-BHC (HCH) | F | 0.500 | 3 |
| 310 | DELTA-BHC (HCH) | G | 0.750 | 6 |
| 311 | DELTA-BHC (HCH) | H | 0.500 | 3 |
| 312 | DELTA-BHC (HCH) | Ref | 0.471 | 7 |
| 313 | DI-N-OCTYLPHTHALATE | A | 21.667 | 6 |
| 314 | DI-N-OCTYLPHTHALATE | B | 39.000 | 4 |
| 315 | DI-N-OCTYLPHTHALATE | C | 45.750 | 8 |
| 316 | DI-N-OCTYLPHTHALATE | D | 40.933 | 5 |
| 317 | DI-N-OCTYLPHTHALATE | E | 56.333 | 6 |
| 318 | DI-N-OCTYLPHTHALATE | F | 113.667 | 3 |
| 319 | DI-N-OCTYLPHTHALATE | G | 165.000 | 6 |
| 320 | DI-N-OCTYLPHTHALATE | H | 168.750 | 4 |
| 321 | DI-N-OCTYLPHTHALATE | Ref | 68.571 | 7 |
| 322 | DIBENZO(A,H)ANTHRACENE | A | 14.167 | 6 |
| 323 | DIBENZO(A,H)ANTHRACENE | B | 12.000 | 3 |
| 324 | DIBENZO(A,H)ANTHRACENE | C | 20.571 | 7 |
| 325 | DIBENZO(A,H)ANTHRACENE | D | 10.000 | 3 |
| 326 | DIBENZO(A,H)ANTHRACENE | E | 54.000 | 5 |
| 327 | DIBENZO(A,H)ANTHRACENE | F | 50.000 | 2 |
| 328 | DIBENZO(A,H)ANTHRACENE | G | 55.833 | 6 |
| 329 | DIBENZO(A,H)ANTHRACENE | H | 158.750 | 4 |
| 330 | DIBENZO(A,H)ANTHRACENE | Ref | 11.190 | 7 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 331 | DIBUTYLTIN | A | 0.91667 | 6 |
| 332 | DIBUTYLTIN | B | 0.87500 | 4 |
| 333 | DIBUTYLTIN | C | 1.00000 | 9 |
| 334 | DIBUTYLTIN | D | 1.84722 | 6 |
| 335 | DIBUTYLTIN | E | 1.33333 | 6 |
| 336 | DIBUTYLTIN | F | 1.16667 | 3 |
| 337 | DIBUTYLTIN | G | 1.58333 | 6 |
| 338 | DIBUTYLTIN | H | 1.50000 | 4 |
| 339 | DIBUTYLTIN | Ref | 1.21429 | 7 |
| 340 | DIELDRIN | A | 0.40833 | 6 |
| 341 | DIELDRIN | B | 0.38750 | 4 |
| 342 | DIELDRIN | C | 0.45556 | 9 |
| 343 | DIELDRIN | D | 0.43333 | 6 |
| 344 | DIELDRIN | E | 0.48333 | 6 |
| 345 | DIELDRIN | F | 0.50000 | 3 |
| 346 | DIELDRIN | G | 0.75000 | 6 |
| 347 | DIELDRIN | H | 0.50000 | 3 |
| 348 | DIELDRIN | Ref | 0.47143 | 7 |
| 349 | ENDOSULFAN I | A | 0.40833 | 6 |
| 350 | ENDOSULFAN I | B | 0.38750 | 4 |
| 351 | ENDOSULFAN I | C | 0.45556 | 9 |
| 352 | ENDOSULFAN I | D | 0.43333 | 6 |
| 353 | ENDOSULFAN I | E | 0.48333 | 6 |
| 354 | ENDOSULFAN I | F | 0.50000 | 3 |
| 355 | ENDOSULFAN I | G | 0.75000 | 6 |
| 356 | ENDOSULFAN I | H | 0.50000 | 3 |
| 357 | ENDOSULFAN I | Ref | 0.47143 | 7 |
| 358 | ENDOSULFAN II | A | 0.40833 | 6 |
| 359 | ENDOSULFAN II | B | 0.38750 | 4 |
| 360 | ENDOSULFAN II | C | 0.45556 | 9 |
| 361 | ENDOSULFAN II | D | 0.43333 | 6 |
| 362 | ENDOSULFAN II | E | 0.48333 | 6 |
| 363 | ENDOSULFAN II | F | 0.50000 | 3 |
| 364 | ENDOSULFAN II | G | 0.75000 | 6 |
| 365 | ENDOSULFAN II | H | 0.50000 | 3 |
| 366 | ENDOSULFAN II | Ref | 0.47143 | 7 |
| 367 | ENDOSULFAN SULFATE | A | 0.40833 | 6 |
| 368 | ENDOSULFAN SULFATE | B | 0.38750 | 4 |
| 369 | ENDOSULFAN SULFATE | C | 0.45556 | 9 |
| 370 | ENDOSULFAN SULFATE | D | 0.43333 | 6 |
| 371 | ENDOSULFAN SULFATE | E | 0.48333 | 6 |
| 372 | ENDOSULFAN SULFATE | F | 0.50000 | 3 |
| 373 | ENDOSULFAN SULFATE | G | 0.75000 | 6 |
| 374 | ENDOSULFAN SULFATE | H | 0.50000 | 3 |
| 375 | ENDOSULFAN SULFATE | Ref | 0.47143 | 7 |
| 376 | ENDRIN | A | 0.40833 | 6 |
| 377 | ENDRIN | B | 0.38750 | 4 |
| 378 | ENDRIN | C | 0.45556 | 9 |
| 379 | ENDRIN | D | 0.43333 | 6 |
| 380 | ENDRIN | E | 0.48333 | 6 |
| 381 | ENDRIN | F | 0.50000 | 3 |
| 382 | ENDRIN | G | 0.75000 | 6 |
| 383 | ENDRIN | H | 0.50000 | 3 |
| 384 | ENDRIN | Ref | 0.47143 | 7 |
| 385 | ENDRIN ALDEHYDE | A | 0.40833 | 6 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 386 | ENDRIN ALDEHYDE | B | 0.39 | 4 |
| 387 | ENDRIN ALDEHYDE | C | 0.46 | 9 |
| 388 | ENDRIN ALDEHYDE | D | 0.43 | 6 |
| 389 | ENDRIN ALDEHYDE | E | 0.48 | 6 |
| 390 | ENDRIN ALDEHYDE | F | 0.50 | 3 |
| 391 | ENDRIN ALDEHYDE | G | 0.75 | 6 |
| 392 | ENDRIN ALDEHYDE | H | 0.50 | 3 |
| 393 | ENDRIN ALDEHYDE | Ref | 0.47 | 7 |
| 394 | FINES | A | 53.37 | 6 |
| 395 | FINES | B | 45.51 | 4 |
| 396 | FINES | C | 73.87 | 9 |
| 397 | FINES | D | 59.28 | 6 |
| 398 | FINES | E | 73.86 | 6 |
| 399 | FINES | F | 87.19 | 3 |
| 400 | FINES | G | 72.57 | 6 |
| 401 | FINES | H | 69.82 | 4 |
| 402 | FINES | Ref | 71.17 | 7 |
| 403 | FLUORANTHENE | A | 15.17 | 6 |
| 404 | FLUORANTHENE | B | 24.33 | 3 |
| 405 | FLUORANTHENE | C | 24.33 | 9 |
| 406 | FLUORANTHENE | D | 36.80 | 5 |
| 407 | FLUORANTHENE | E | 134.67 | 6 |
| 408 | FLUORANTHENE | F | 210.00 | 3 |
| 409 | FLUORANTHENE | G | 122.67 | 6 |
| 410 | FLUORANTHENE | H | 2630.00 | 4 |
| 411 | FLUORANTHENE | Ref | 62.24 | 7 |
| 412 | FLUORENE | A | 14.17 | 6 |
| 413 | FLUORENE | B | 10.00 | 3 |
| 414 | FLUORENE | C | 19.29 | 7 |
| 415 | FLUORENE | D | 10.00 | 3 |
| 416 | FLUORENE | E | 26.00 | 5 |
| 417 | FLUORENE | F | 50.00 | 2 |
| 418 | FLUORENE | G | 58.50 | 6 |
| 419 | FLUORENE | H | 201.50 | 4 |
| 420 | FLUORENE | Ref | 11.19 | 7 |
| 421 | GRAVEL | A | 0.01 | 6 |
| 422 | GRAVEL | B | 0.01 | 4 |
| 423 | GRAVEL | C | 0.00 | 9 |
| 424 | GRAVEL | D | 0.01 | 6 |
| 425 | GRAVEL | E | 0.45 | 6 |
| 426 | GRAVEL | F | 0.00 | 3 |
| 427 | GRAVEL | G | 14.82 | 6 |
| 428 | GRAVEL | H | 9.63 | 4 |
| 429 | GRAVEL | Ref | 0.06 | 7 |
| 430 | HEPTACHLOR | A | 0.41 | 6 |
| 431 | HEPTACHLOR | B | 0.39 | 4 |
| 432 | HEPTACHLOR | C | 0.46 | 9 |
| 433 | HEPTACHLOR | D | 0.43 | 6 |
| 434 | HEPTACHLOR | E | 0.48 | 6 |
| 435 | HEPTACHLOR | F | 0.50 | 3 |
| 436 | HEPTACHLOR | G | 0.75 | 6 |
| 437 | HEPTACHLOR | H | 0.50 | 3 |
| 438 | HEPTACHLOR | Ref | 0.47 | 7 |
| 439 | HEPTACHLOR EPOXIDE | A | 0.41 | 6 |
| 440 | HEPTACHLOR EPOXIDE | B | 0.39 | 4 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 441 | HEPTACHLOR EPOXIDE | C | 0.456 | 9 |
| 442 | HEPTACHLOR EPOXIDE | D | 0.433 | 6 |
| 443 | HEPTACHLOR EPOXIDE | E | 0.483 | 6 |
| 444 | HEPTACHLOR EPOXIDE | F | 0.500 | 3 |
| 445 | HEPTACHLOR EPOXIDE | G | 0.750 | 6 |
| 446 | HEPTACHLOR EPOXIDE | H | 0.500 | 3 |
| 447 | HEPTACHLOR EPOXIDE | Ref | 0.471 | 7 |
| 448 | INDENO(1,2,3 CD)PYRENE | A | 14.167 | 6 |
| 449 | INDENO(1,2,3-CD)PYRENE | B | 50.250 | 4 |
| 450 | INDENO(1,2,3 CD)PYRENE | C | 30.125 | 8 |
| 451 | INDENO(1,2,3-CD)PYRENE | D | 71.944 | 6 |
| 452 | INDENO(1,2,3-CD)PYRENE | E | 163.333 | 6 |
| 453 | INDENO(1,2,3-CD)PYRENE | F | 353.333 | 3 |
| 454 | INDENO(1,2,3-CD)PYRENE | G | 128.333 | 6 |
| 455 | INDENO(1,2,3-CD)PYRENE | H | 342.500 | 4 |
| 456 | INDENO(1,2,3-CD)PYRENE | Ref | 23.810 | 7 |
| 457 | LEAD, EXTRACTABLE | A | 19.333 | 6 |
| 458 | LEAD, EXTRACTABLE | B | 32.750 | 4 |
| 459 | LEAD, EXTRACTABLE | C | 41.889 | 9 |
| 460 | LEAD, EXTRACTABLE | D | 39.778 | 6 |
| 461 | LEAD, EXTRACTABLE | E | 58.000 | 6 |
| 462 | LEAD, EXTRACTABLE | F | 108.333 | 3 |
| 463 | LEAD, EXTRACTABLE | G | 62.833 | 6 |
| 464 | LEAD, EXTRACTABLE | H | 90.000 | 4 |
| 465 | LEAD, EXTRACTABLE | Ref | 41.048 | 7 |
| 466 | LEAD, EXTRACTABLE / AVS | A | 0.440 | 6 |
| 467 | LEAD, EXTRACTABLE / AVS | B | 0.546 | 4 |
| 468 | LEAD, EXTRACTABLE / AVS | C | 0.400 | 9 |
| 469 | LEAD, EXTRACTABLE / AVS | D | 2.564 | 6 |
| 470 | LEAD, EXTRACTABLE / AVS | E | 0.375 | 6 |
| 471 | LEAD, EXTRACTABLE / AVS | F | 0.760 | 3 |
| 472 | LEAD, EXTRACTABLE / AVS | G | 0.023 | 6 |
| 473 | LEAD, EXTRACTABLE / AVS | H | 0.026 | 4 |
| 474 | LEAD, EXTRACTABLE / AVS | Ref | 1.262 | 7 |
| 475 | LEAD, TOTAL | A | 23.500 | 6 |
| 476 | LEAD, TOTAL | B | 27.750 | 4 |
| 477 | LEAD, TOTAL | C | 48.444 | 9 |
| 478 | LEAD, TOTAL | D | 45.889 | 6 |
| 479 | LEAD, TOTAL | E | 61.000 | 6 |
| 480 | LEAD, TOTAL | F | 111.667 | 3 |
| 481 | LEAD, TOTAL | G | 70.000 | 6 |
| 482 | LEAD, TOTAL | H | 83.750 | 4 |
| 483 | LEAD, TOTAL | Ref | 39.714 | 7 |
| 484 | LINDANE (GAMMA-BHC) | A | 0.408 | 6 |
| 485 | LINDANE (GAMMA-BHC) | B | 0.388 | 4 |
| 486 | LINDANE (GAMMA-BHC) | C | 0.678 | 9 |
| 487 | LINDANE (GAMMA-BHC) | D | 0.472 | 6 |
| 488 | LINDANE (GAMMA-BHC) | E | 0.483 | 6 |
| 489 | LINDANE (GAMMA-BHC) | F | 2.600 | 3 |
| 490 | LINDANE (GAMMA-BHC) | G | 0.750 | 6 |
| 491 | LINDANE (GAMMA-BHC) | H | 0.500 | 3 |
| 492 | LINDANE (GAMMA-BHC) | Ref | 0.471 | 7 |
| 493 | MEAN GRAIN SIZE | A | 29.437 | 6 |
| 494 | MEAN GRAIN SIZE | B | 28.116 | 4 |
| 495 | MEAN GRAIN SIZE | C | 10.882 | 9 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 496 | MEAN GRAIN SIZE | D | 17.727 | 6 |
| 497 | MEAN GRAIN SIZE | E | 9.685 | 6 |
| 498 | MEAN GRAIN SIZE | F | 4.995 | 3 |
| 499 | MEAN GRAIN SIZE | G | 14.002 | 5 |
| 500 | MEAN GRAIN SIZE | H | 28.989 | 4 |
| 501 | MEAN GRAIN SIZE | Ref | 23.969 | 7 |
| 502 | MEDIAN GRAIN SIZE | A | 66.537 | 6 |
| 503 | MEDIAN GRAIN SIZE | B | 66.377 | 4 |
| 504 | MEDIAN GRAIN SIZE | C | 20.255 | 9 |
| 505 | MEDIAN GRAIN SIZE | D | 40.958 | 6 |
| 506 | MEDIAN GRAIN SIZE | E | 21.083 | 6 |
| 507 | MEDIAN GRAIN SIZE | F | 4.801 | 3 |
| 508 | MEDIAN GRAIN SIZE | G | 8.725 | 6 |
| 509 | MEDIAN GRAIN SIZE | H | 108.216 | 4 |
| 510 | MEDIAN GRAIN SIZE | Ref | 30.447 | 7 |
| 511 | MERCURY, EXTRACTABLE | A | 0.014 | 6 |
| 512 | MERCURY, EXTRACTABLE | B | 0.051 | 4 |
| 513 | MERCURY, EXTRACTABLE | C | 0.029 | 9 |
| 514 | MERCURY, EXTRACTABLE | D | 0.069 | 6 |
| 515 | MERCURY, EXTRACTABLE | E | 0.039 | 6 |
| 516 | MERCURY, EXTRACTABLE | F | 0.027 | 3 |
| 517 | MERCURY, EXTRACTABLE | G | 0.073 | 6 |
| 518 | MERCURY, EXTRACTABLE | H | 0.058 | 4 |
| 519 | MERCURY, EXTRACTABLE | Ref | 0.017 | 7 |
| 520 | MERCURY, EXTRACTABLE / AVS | A | 0.000 | 6 |
| 521 | MERCURY, EXTRACTABLE / AVS | B | 0.001 | 4 |
| 522 | MERCURY, EXTRACTABLE / AVS | C | 0.000 | 9 |
| 523 | MERCURY, EXTRACTABLE / AVS | D | 0.006 | 6 |
| 524 | MERCURY, EXTRACTABLE / AVS | E | 0.000 | 6 |
| 525 | MERCURY, EXTRACTABLE / AVS | F | 0.000 | 3 |
| 526 | MERCURY, EXTRACTABLE / AVS | G | 0.000 | 6 |
| 527 | MERCURY, EXTRACTABLE / AVS | H | 0.000 | 4 |
| 528 | MERCURY, EXTRACTABLE / AVS | Ref | 0.001 | 7 |
| 529 | MERCURY, TOTAL | A | 0.162 | 6 |
| 530 | MERCURY, TOTAL | B | 0.250 | 4 |
| 531 | MERCURY, TOTAL | C | 0.506 | 9 |
| 532 | MERCURY, TOTAL | D | 0.611 | 6 |
| 533 | MERCURY, TOTAL | E | 0.673 | 6 |
| 534 | MERCURY, TOTAL | F | 1.037 | 3 |
| 535 | MERCURY, TOTAL | G | 0.417 | 6 |
| 536 | MERCURY, TOTAL | H | 0.565 | 4 |
| 537 | MERCURY, TOTAL | Ref | 0.297 | 7 |
| 538 | METHOXYCHLOR | A | 1.583 | 6 |
| 539 | METHOXYCHLOR | B | 1.500 | 4 |
| 540 | METHOXYCHLOR | C | 1.889 | 9 |
| 541 | METHOXYCHLOR | D | 1.750 | 6 |
| 542 | METHOXYCHLOR | E | 2.083 | 6 |
| 543 | METHOXYCHLOR | F | 2.500 | 3 |
| 544 | METHOXYCHLOR | G | 3.083 | 6 |
| 545 | METHOXYCHLOR | H | 2.667 | 3 |
| 546 | METHOXYCHLOR | Ref | 2.000 | 7 |
| 547 | METHYLNAPHTHALENES | A | 14.167 | 6 |
| 548 | METHYLNAPHTHALENES | B | 11.667 | 3 |
| 549 | METHYLNAPHTHALENES | C | 19.286 | 7 |
| 550 | METHYLNAPHTHALENES | D | 10.000 | 3 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 551 | METHYLNAPHTHALENES | E | 26.000 | 5 |
| 552 | METHYLNAPHTHALENES | F | 50.000 | 2 |
| 553 | METHYLNAPHTHALENES | G | 105.833 | 6 |
| 554 | METHYLNAPHTHALENES | H | 32.000 | 4 |
| 555 | METHYLNAPHTHALENES | Ref | 13.571 | 7 |
| 556 | MONOBUTYLTIN | A | 0.917 | 6 |
| 557 | MONOBUTYLTIN | B | 0.875 | 4 |
| 558 | MONOBUTYLTIN | C | 1.000 | 9 |
| 559 | MONOBUTYLTIN | D | 1.000 | 6 |
| 560 | MONOBUTYLTIN | E | 1.083 | 6 |
| 561 | MONOBUTYLTIN | F | 1.167 | 3 |
| 562 | MONOBUTYLTIN | G | 1.583 | 6 |
| 563 | MONOBUTYLTIN | H | 1.900 | 4 |
| 564 | MONOBUTYLTIN | Ref | 0.929 | 7 |
| 565 | N-NITROSODI-N-PROPYLAMINE | A | 14.167 | 6 |
| 566 | N NITROSODI-N-PROPYLAMINE | B | 10.000 | 3 |
| 567 | N-NITROSODI-N-PROPYLAMINE | C | 19.286 | 7 |
| 568 | N-NITROSODI-N-PROPYLAMINE | D | 10.000 | 3 |
| 569 | N-NITROSODI-N-PROPYLAMINE | E | 26.000 | 5 |
| 570 | N-NITROSODI-N-PROPYLAMINE | F | 50.000 | 2 |
| 571 | N-NITROSODI-N-PROPYLAMINE | G | 55.833 | 6 |
| 572 | N-NITROSODI-N-PROPYLAMINE | H | 15.000 | 4 |
| 573 | N-NITROSODI-N-PROPYLAMINE | Ref | 11.190 | 7 |
| 574 | N NITROSODIMETHYLAMINE | A | 14.167 | 6 |
| 575 | N-NITROSODIMETHYLAMINE | B | 10.000 | 3 |
| 576 | N-NITROSODIMETHYLAMINE | C | 19.286 | 7 |
| 577 | N-NITROSODIMETHYLAMINE | D | 10.000 | 3 |
| 578 | N-NITROSODIMETHYLAMINE | E | 26.000 | 5 |
| 579 | N-NITROSODIMETHYLAMINE | F | 50.000 | 2 |
| 580 | N-NITROSODIMETHYLAMINE | G | 55.833 | 6 |
| 581 | N-NITROSODIMETHYLAMINE | H | 15.000 | 4 |
| 582 | N-NITROSODIMETHYLAMINE | Ref | 11.190 | 7 |
| 583 | NICKEL, TOTAL | A | 19.833 | 6 |
| 584 | NICKEL, TOTAL | B | 16.000 | 4 |
| 585 | NICKEL, TOTAL | C | 26.000 | 9 |
| 586 | NICKEL, TOTAL | D | 22.000 | 6 |
| 587 | NICKEL, TOTAL | E | 25.000 | 6 |
| 588 | NICKEL, TOTAL | F | 34.667 | 3 |
| 589 | NICKEL, TOTAL | G | 30.333 | 6 |
| 590 | NICKEL, TOTAL | H | 30.500 | 4 |
| 591 | NICKEL, TOTAL | Ref | 24.286 | 7 |
| 592 | PCB-1016 | A | 9.167 | 6 |
| 593 | PCB-1016 | B | 8.750 | 4 |
| 594 | PCB-1016 | C | 10.000 | 9 |
| 595 | PCB-1016 | D | 10.000 | 6 |
| 596 | PCB-1016 | E | 10.833 | 6 |
| 597 | PCB-1016 | F | 11.667 | 3 |
| 598 | PCB-1016 | G | 15.833 | 6 |
| 599 | PCB-1016 | H | 13.333 | 3 |
| 600 | PCB-1016 | Ref | 9.286 | 7 |
| 601 | PCB-1221 | A | 9.167 | 6 |
| 602 | PCB-1221 | B | 8.750 | 4 |
| 603 | PCB-1221 | C | 10.000 | 9 |
| 604 | PCB-1221 | D | 10.000 | 6 |
| 605 | PCB-1221 | E | 10.833 | 6 |

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| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 606 | PCB-1221 | F | 11.667 | 3 |
| 607 | PCB-1221 | G | 15.833 | 6 |
| 608 | PCB-1221 | H | 13.333 | 3 |
| 609 | PCB-1221 | Ref | 9.286 | 7 |
| 610 | PCB-1232 | A | 9.167 | 6 |
| 611 | PCB-1232 | B | 8.750 | 4 |
| 612 | PCB-1232 | C | 10.000 | 9 |
| 613 | PCB-1232 | D | 10.000 | 6 |
| 614 | PCB-1232 | E | 10.833 | 6 |
| 615 | PCB-1232 | F | 11.667 | 3 |
| 616 | PCB-1232 | G | 15.833 | 6 |
| 617 | PCB-1232 | H | 13.333 | 3 |
| 618 | PCB-1232 | Ref | 9.286 | 7 |
| 619 | PCB-1242 | A | 9.167 | 6 |
| 620 | PCB-1242 | B | 8.750 | 4 |
| 621 | PCB-1242 | C | 10.000 | 9 |
| 622 | PCB-1242 | D | 10.000 | 6 |
| 623 | PCB-1242 | E | 10.833 | 6 |
| 624 | PCB-1242 | F | 11.667 | 3 |
| 625 | PCB-1242 | G | 15.833 | 6 |
| 626 | PCB-1242 | H | 13.333 | 3 |
| 627 | PCB-1242 | Ref | 9.286 | 7 |
| 628 | PCB-1248 | A | 9.167 | 6 |
| 629 | PCB-1248 | B | 8.750 | 4 |
| 630 | PCB-1248 | C | 10.000 | 9 |
| 631 | PCB-1248 | D | 10.000 | 6 |
| 632 | PCB-1248 | E | 10.833 | 6 |
| 633 | PCB-1248 | F | 11.667 | 3 |
| 634 | PCB-1248 | G | 15.833 | 6 |
| 635 | PCB-1248 | H | 13.333 | 3 |
| 636 | PCB-1248 | Ref | 9.286 | 7 |
| 637 | PCB-1254 | A | 9.167 | 6 |
| 638 | PCB-1254 | B | 8.750 | 4 |
| 639 | PCB-1254 | C | 10.000 | 9 |
| 640 | PCB-1254 | D | 10.000 | 6 |
| 641 | PCB-1254 | E | 10.833 | 6 |
| 642 | PCB-1254 | F | 11.667 | 3 |
| 643 | PCB-1254 | G | 15.833 | 6 |
| 644 | PCB-1254 | H | 13.333 | 3 |
| 645 | PCB-1254 | Ref | 9.286 | 7 |
| 646 | PCB-1260 | A | 19.500 | 6 |
| 647 | PCB-1260 | B | 84.250 | 4 |
| 648 | PCB-1260 | C | 171.222 | 9 |
| 649 | PCB-1260 | D | 215.000 | 6 |
| 650 | PCB-1260 | E | 273.333 | 6 |
| 651 | PCB-1260 | F | 550.000 | 3 |
| 652 | PCB-1260 | G | 15.833 | 6 |
| 653 | PCB-1260 | H | 140.000 | 3 |
| 654 | PCB-1260 | Ref | 9.286 | 7 |
| 655 | PHENANTHRENE | A | 14.167 | 6 |
| 656 | PHENANTHRENE | B | 30.750 | 4 |
| 657 | PHENANTHRENE | C | 19.875 | 8 |
| 658 | PHENANTHRENE | D | 26.278 | 6 |
| 659 | PHENANTHRENE | E | 63.500 | 6 |
| 660 | PHENANTHRENE | F | 106.667 | 3 |

R0063714

| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 661 | PHENANTHRENE | G | 106.00 | 6 |
| 662 | PHENANTHRENE | H | 1067.50 | 4 |
| 663 | PHENANTHRENE | Ref | 19.10 | 7 |
| 664 | PHENOL | A | 34.83 | 6 |
| 665 | PHENOL | B | 15.00 | 3 |
| 666 | PHENOL | C | 40.00 | 8 |
| 667 | PHENOL | D | 16.67 | 3 |
| 668 | PHENOL | E | 91.00 | 5 |
| 669 | PHENOL | F | 125.00 | 2 |
| 670 | PHENOL | G | 110.83 | 6 |
| 671 | PHENOL | H | 28.75 | 4 |
| 672 | PHENOL | Ref | 23.81 | 7 |
| 673 | PYRENE | A | 18.00 | 6 |
| 674 | PYRENE | B | 24.33 | 3 |
| 675 | PYRENE | C | 28.78 | 9 |
| 676 | PYRENE | D | 36.50 | 5 |
| 677 | PYRENE | E | 151.67 | 6 |
| 678 | PYRENE | F | 290.00 | 3 |
| 679 | PYRENE | G | 298.33 | 6 |
| 680 | PYRENE | H | 2475.00 | 4 |
| 681 | PYRENE | Ref | 61.71 | 7 |
| 682 | SAND | A | 46.62 | 6 |
| 683 | SAND | B | 54.48 | 4 |
| 684 | SAND | C | 26.13 | 9 |
| 685 | SAND | D | 40.72 | 6 |
| 686 | SAND | E | 25.69 | 6 |
| 687 | SAND | F | 12.81 | 3 |
| 688 | SAND | G | 12.60 | 6 |
| 689 | SAND | H | 20.55 | 4 |
| 690 | SAND | Ref | 28.77 | 7 |
| 691 | SELENIUM, TOTAL | A | 0.41 | 6 |
| 692 | SELENIUM, TOTAL | B | 0.39 | 4 |
| 693 | SELENIUM, TOTAL | C | 0.46 | 9 |
| 694 | SELENIUM, TOTAL | D | 0.43 | 6 |
| 695 | SELENIUM, TOTAL | E | 0.48 | 6 |
| 696 | SELENIUM, TOTAL | F | 0.87 | 3 |
| 697 | SELENIUM, TOTAL | G | 0.75 | 6 |
| 698 | SELENIUM, TOTAL | H | 0.63 | 4 |
| 699 | SELENIUM, TOTAL | Ref | 0.90 | 7 |
| 700 | SILT | A | 35.15 | 6 |
| 701 | SILT | B | 33.14 | 4 |
| 702 | SILT | C | 45.38 | 9 |
| 703 | SILT | D | 39.10 | 6 |
| 704 | SILT | E | 42.09 | 6 |
| 705 | SILT | F | 41.72 | 3 |
| 706 | SILT | G | 31.75 | 6 |
| 707 | SILT | H | 33.48 | 4 |
| 708 | SILT | Ref | 46.59 | 7 |
| 709 | SILVER, TOTAL | A | 1.70 | 6 |
| 710 | SILVER, TOTAL | B | 1.43 | 4 |
| 711 | SILVER, TOTAL | C | 4.69 | 9 |
| 712 | SILVER, TOTAL | D | 2.31 | 6 |
| 713 | SILVER, TOTAL | E | 2.37 | 6 |
| 714 | SILVER, TOTAL | F | 3.40 | 3 |
| 715 | SILVER, TOTAL | G | 2.45 | 6 |

R0063715

| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 716 | SILVER, TOTAL | H | 2.88 | 4 |
| 717 | SILVER, TOTAL | Ref | 1.82 | 7 |
| 718 | SULFIDE, TOTAL | A | 55.83 | 6 |
| 719 | SULFIDE, TOTAL | B | 45.75 | 4 |
| 720 | SULFIDE, TOTAL | C | 91.24 | 9 |
| 721 | SULFIDE, TOTAL | D | 78.78 | 6 |
| 722 | SULFIDE, TOTAL | E | 142.00 | 6 |
| 723 | SULFIDE, TOTAL | F | 156.67 | 3 |
| 724 | SULFIDE, TOTAL | G | 4166.67 | 6 |
| 725 | SULFIDE, TOTAL | H | 4050.00 | 4 |
| 726 | SULFIDE, TOTAL | Ref | 122.42 | 7 |
| 727 | TOTAL ORGANIC CARBON | A | 0.54 | 6 |
| 728 | TOTAL ORGANIC CARBON | B | 0.53 | 4 |
| 729 | TOTAL ORGANIC CARBON | C | 0.98 | 9 |
| 730 | TOTAL ORGANIC CARBON | D | 0.86 | 6 |
| 731 | TOTAL ORGANIC CARBON | E | 0.92 | 6 |
| 732 | TOTAL ORGANIC CARBON | F | 1.69 | 3 |
| 733 | TOTAL ORGANIC CARBON | G | 1.81 | 6 |
| 734 | TOTAL ORGANIC CARBON | H | 1.91 | 4 |
| 735 | TOTAL ORGANIC CARBON | Ref | 1.30 | 7 |
| 736 | TOXAPHENE | A | 9.17 | 6 |
| 737 | TOXAPHENE | B | 8.75 | 4 |
| 738 | TOXAPHENE | C | 10.00 | 9 |
| 739 | TOXAPHENE | D | 10.00 | 6 |
| 740 | TOXAPHENE | E | 10.83 | 6 |
| 741 | TOXAPHENE | F | 11.67 | 3 |
| 742 | TOXAPHENE | G | 15.83 | 6 |
| 743 | TOXAPHENE | H | 13.33 | 3 |
| 744 | TOXAPHENE | Ref | 9.29 | 7 |
| 745 | TRIBUTYLTIN | A | 8.58 | 6 |
| 746 | TRIBUTYLTIN | B | 9.63 | 4 |
| 747 | TRIBUTYLTIN | C | 11.44 | 9 |
| 748 | TRIBUTYLTIN | D | 15.75 | 6 |
| 749 | TRIBUTYLTIN | E | 12.08 | 6 |
| 750 | TRIBUTYLTIN | F | 7.42 | 3 |
| 751 | TRIBUTYLTIN | G | 9.13 | 6 |
| 752 | TRIBUTYLTIN | H | 14.44 | 4 |
| 753 | TRIBUTYLTIN | Ref | 10.99 | 7 |
| 754 | ZINC, EXTRACTABLE | A | 51.67 | 6 |
| 755 | ZINC, EXTRACTABLE | B | 80.25 | 4 |
| 756 | ZINC, EXTRACTABLE | C | 122.67 | 9 |
| 757 | ZINC, EXTRACTABLE | D | 120.11 | 6 |
| 758 | ZINC, EXTRACTABLE | E | 161.67 | 6 |
| 759 | ZINC, EXTRACTABLE | F | 326.67 | 3 |
| 760 | ZINC, EXTRACTABLE | G | 200.00 | 6 |
| 761 | ZINC, EXTRACTABLE | H | 342.50 | 4 |
| 762 | ZINC, EXTRACTABLE | Ref | 128.95 | 7 |
| 763 | ZINC, EXTRACTABLE / AVS | A | 1.09 | 6 |
| 764 | ZINC, EXTRACTABLE / AVS | B | 1.54 | 4 |
| 765 | ZINC, EXTRACTABLE / AVS | C | 1.20 | 9 |
| 766 | ZINC, EXTRACTABLE / AVS | D | 7.44 | 6 |
| 767 | ZINC, EXTRACTABLE / AVS | E | 1.02 | 6 |
| 768 | ZINC, EXTRACTABLE / AVS | F | 2.32 | 3 |
| 769 | ZINC, EXTRACTABLE / AVS | G | 0.07 | 6 |
| 770 | ZINC, EXTRACTABLE / AVS | H | 0.10 | 4 |

R0063716

| OBS | CHEM | ZONE | MEAN | N |
|---|---|---|---|---|
| 771 | ZINC, EXTRACTABLE / AVS | Ref | 5.993 | 7 |
| 772 | ZINC, TOTAL | A | 90.667 | 6 |
| 773 | ZINC, TOTAL | B | 99.750 | 4 |
| 774 | ZINC, TOTAL | C | 167.778 | 9 |
| 775 | ZINC, TOTAL | D | 148.889 | 6 |
| 776 | ZINC, TOTAL | E | 206.667 | 6 |
| 777 | ZINC, TOTAL | F | 343.333 | 3 |
| 778 | ZINC, TOTAL | G | 241.667 | 6 |
| 779 | ZINC, TOTAL | H | 402.500 | 4 |
| 780 | ZINC, TOTAL | Ref | 153.095 | 7 |

R0063717



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---------- Analyte name=1,2,4-TRICHLOROBENZENE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43

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---------- Analyte name=1,2,4-TRICHLOROBENZENE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |
| Error | 34 | 2405.82976190 | 70.75969888 | | |
| Corrected Total | 42 | 5455.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.559008 | 38.23581 | 8.41187844 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |

R0063718

VOL 18

Analyte name=1,2,4-TRICHLOROBENZENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 70.7597
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 19.619
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 39.000 | 2 | F |
| A | | | |
| A | 36.833 | 6 | G |
| A | | | |
| B A | 25.800 | 5 | E |
| B A | | | |
| B A | 24.750 | 4 | H |
| B A | | | |
| B A | 19.571 | 7 | C |
| B | | | |
| B | 16.750 | 6 | A |
| B | | | |
| B | 14.357 | 7 | Ref |
| B | | | |
| B | 13.500 | 3 | B |
| B | | | |
| B | 13.500 | 3 | D |

R0063719

Analyte name=1,4-DICHLOROBENZENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43



Analyte name=1,4-DICHLOROBENZENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |
| Error | 34 | 2405.82976190 | 70.75969888 | | |
| Corrected Total | 42 | 5455.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.559008 | 38.23581 | 8.41187844 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |

R0063720

VOL 178

Analyte name=1,4-DICHLOROBENZENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 70.7597
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 19.619
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 39.000 | 2 | F |
| A | 36.833 | 6 | G |
| B A | 25.800 | 5 | E |
| B A | 24.750 | 4 | H |
| B A | 19.571 | 7 | C |
| B | 16.750 | 6 | A |
| B | 14.357 | 7 | Ref |
| B | 13.500 | 3 | B |
| B | 13.500 | 3 | D |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 44



General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3223.86994048 | 402.98374256 | 5.52 | 0.0002 |
| Error | 35 | 2554.63005952 | 72.98943027 | | |
| Corrected Total | 43 | 5778.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.557908 | 37.97060 | 8.54338518 | 22.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3223.86994048 | 402.98374256 | 5.52 | 0.0002 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3223.86994048 | 402.98374256 | 5.52 | 0.0002 |

R0063722

Analyte name=2,4-DINITROPHENOL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 35 MSE= 72.98943
Critical Value of Studentized Range= 4.671
Minimum Significant Difference= 19.81
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.057971

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 40.000 | 2 | F |
| A | | | |
| B A | 37.833 | 6 | G |
| B A | | | |
| B A C | 26.600 | 5 | E |
| B A C | | | |
| B A C | 25.625 | 4 | H |
| B C | | | |
| B C | 19.438 | 8 | C |
| C | | | |
| C | 17.333 | 6 | A |
| C | | | |
| C | 14.857 | 7 | Ref |
| C | | | |
| C | 14.000 | 3 | B |
| C | | | |
| C | 14.000 | 3 | D |

R0063723

VOL 18

Analyte name=2-CHLOROPHENOL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 44



Analyte name=2-CHLOROPHENOL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4246.61309524 | 530.82663690 | 7.24 | 0.0001 |
| Error | 35 | 2564.38690476 | 73.26019728 | | |
| Corrected Total | 43 | 6811.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.623493 | 38.04304 | 8.55968441 | 22.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4246.61309524 | 530.82663690 | 7.24 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4246.61309524 | 530.82663690 | 7.24 | 0.0001 |

R0063724

VOL 178

Analyte name=2-CHLOROPHENOL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 35 MSE= 73.2682
Critical Value of Studentized Range= 4.671
Minimum Significant Difference= 19.848
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.057971

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A A | 39.500 | 2 | F |
| B A A | 38.167 | 6 | G |
| B A C C | 28.250 | 4 | H |
| B A C C | 27.000 | 5 | E |
| B A C C | 22.000 | 8 | C |
| B D C C | 19.286 | 7 | Ref |
| D C C | 12.583 | 6 | A |
| D C | 9.833 | 3 | D |
| D | 6.000 | 3 | B |

R0063725

VOL 178

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 44



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4213.69404762 | 526.71175595 | 6.88 | 0.0001 |
| Error | 35 | 2678.30595238 | 76.52302721 | | |
| Corrected Total | 43 | 6892.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.611389 | 38.07886 | 8.74774412 | 22.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4213.69404762 | 526.71175595 | 6.88 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4213.69404762 | 526.71175595 | 6.88 | 0.0001 |

R0063726

Analyte name=3- AND 4-METHYLPHENOL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 35 MSE= 76.52303
Critical Value of Studentized Range= 4.071
Minimum Significant Difference= 20.284
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.057971

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | SOWE |
|---|---|---|---|
| A A A A | 38.583 | 6 | G |
| A A A A | 38.500 | 2 | F |
| B A A A | 28.000 | 4 | H |
| B A A A | 27.800 | 5 | E |
| B A A A | 20.125 | 8 | C |
| B A A C C | 19.929 | 7 | Ref |
| B C C C | 14.417 | 6 | A |
| B C C C | 8.500 | 3 | D |
| B C C C | 6.000 | 3 | B |

R0063727



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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 1704.37441429 | 213.04680179 | 3.41 | 0.0043 |
| Error | 41 | 2563.70303571 | 62.52934233 | | |
| Corrected Total | 49 | 4268.07745000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.399331 | 83.22860 | 7.90754970 | 9.50100000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 1704.37441429 | 213.04680179 | 3.41 | 0.0043 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 1704.37441429 | 213.04680179 | 3.41 | 0.0043 |

R0063728

Analyte name=4,4'-DDD TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 62.52934
Critical Value of Studentized Range= 4.620
Minimum Significant Difference= 16.536
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 21.333 | 3 | F |
| A | | | |
| B A | 16.500 | 3 | H |
| B A | | | |
| B A | 12.833 | 9 | C |
| B A | | | |
| B A | 12.571 | 7 | Ref |
| B A | | | |
| B A | 11.058 | 6 | E |
| B A | | | |
| B A | 10.350 | 6 | D |
| B | | | |
| B | 3.050 | 6 | A |
| B | | | |
| B | 1.700 | 4 | B |
| B | | | |
| B | 0.750 | 6 | O |

R0063729

Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 55334.06769374 | 6916.75846172 | 8.06 | 0.0001 |
| Error | 42 | 36061.50529101 | 858.60726883 | | |
| Corrected Total | 50 | 91395.57298475 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.605435 | 41.02495 | 29.30200111 | 71.42483660 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 55334.06769374 | 6916.75846172 | 8.06 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 55334.06769374 | 6916.75846172 | 8.06 | 0.0001 |

R0063730

VOL 18

Analyte name=4,4'-DDE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 858.6073
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 59.793
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 120.00 | 3 | F |
| A | 119.14 | 7 | Ref |
| B A | 99.33 | 6 | G |
| B A | 87.50 | 6 | E |
| B A C | 70.00 | 4 | H |
| B D C | 54.33 | 9 | C |
| B D C | 48.28 | 6 | D |
| D C | 32.17 | 6 | A |
| D | 19.00 | 4 | B |

R0063731

555-
VOL 18

Analyte name=4,4'-DDT TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=4,4'-DDT TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5504.91369048 | 688.11421131 | 7.16 | 0.0001 |
| Error | 41 | 3941.08630952 | 96.12405633 | | |
| Corrected Total | 49 | 9446.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.582777 | 38.44819 | 9.80428765 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5504.91369048 | 688.11421131 | 7.16 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5504.91369048 | 688.11421131 | 7.16 | 0.0001 |

R0063732

VOL 18

Analyte name=4,4'-DDT TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 96.12406
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 20.502
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | | | Mean | N | ZONE |
|---|---|---|---|---|---|---|
| | | A | | 42.000 | 6 | G |
| | | A | | | | |
| B | | A | | 36.000 | 3 | F |
| B | | A | | | | |
| B | | A | | 36.000 | 3 | H |
| B | | A | | | | |
| B | | A | C | 30.667 | 6 | E |
| B | | A | C | | | |
| B | | A | C | 28.857 | 7 | Ref |
| B | | A | C | | | |
| B | D | A | C | 24.333 | 9 | C |
| B | D | | C | | | |
| B | D | | C | 17.833 | 6 | D |
| | D | | C | | | |
| | D | | C | 11.250 | 6 | A |
| | D | | | | | |
| | D | | | 6.875 | 4 | B |

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Analyte name=ACENAPHTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43



Analyte name=ACENAPHTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3007.35654762 | 375.91956845 | 5.21 | 0.0003 |
| Error | 34 | 2451.64345238 | 72.10716036 | | |
| Corrected Total | 42 | 5459.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.550899 | 38.59815 | 8.49159351 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3007.35654762 | 375.91956845 | 5.21 | 0.0003 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3007.35654762 | 375.91956845 | 5.21 | 0.0003 |

R0063734

VOL 18

Analyte name=ACENAPHTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 72.10716
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 19.805
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 37.000 | 2 | F |
| | A | | | | |
| B | A | | 35.167 | 6 | G |
| B | A | | | | |
| B | A | C | 31.375 | 4 | H |
| B | A | C | | | |
| B | A | C | 24.900 | 5 | E |
| B | A | C | | | |
| B | A | C | 19.000 | 7 | C |
| B | | C | | | |
| B | | C | 16.417 | 6 | A |
| | | C | | | |
| | | C | 14.071 | 7 | Ref |
| | | C | | | |
| | | C | 13.500 | 3 | B |
| | | C | | | |
| | | C | 13.500 | 3 | D |

Analyte name=ACENAPHTHYLENE TRANS-log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 49



Analyte name=ACENAPHTHYLENE TRANS-log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4.64631079 | 0.58078885 | 8.56 | 0.0001 |
| Error | 40 | 2.71408199 | 0.06785205 | | |
| Corrected Total | 48 | 7.36039279 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.631259 | 18.87800 | 0.26048426 | 1.37982958 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4.64631079 | 0.58078885 | 8.56 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4.64631079 | 0.58078885 | 8.56 | 0.0001 |

R0063736

Analyte name=ACENAPHTHYLENE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 40 MSE= 0.067852
Critical Value of Studentized Range= 4.634
Minimum Significant Difference= 0.5377
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.04

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 1.9953 | 4 | H |
| A | 1.7940 | 6 | G |
| B A | 1.7513 | 3 | F |
| B A | 1.4681 | 6 | E |
| B C | 1.2552 | 6 | D |
| C | 1.2118 | 7 | C |
| C | 1.1946 | 4 | B |
| C | 1.1272 | 6 | A |
| C | 1.0355 | 7 | Ref |

R0063737



VOL 18

Analyte name=ACID VOLATILE SULFIDE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=ACID VOLATILE SULFIDE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 6898.05952381 | 862.25744048 | 8.75 | 0.0001 |
| Error | 42 | 4139.44047619 | 98.55810658 | | |
| Corrected Total | 50 | 11037.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.624966 | 38.18324 | 9.92764356 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6898.05952381 | 862.25744048 | 8.75 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6898.05952381 | 862.25744048 | 8.75 | 0.0001 |

R0063738

Analyte name=ACID VOLATILE SULFIDE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 98.55811
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 20.258
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 48.500 | 4 | H |
| A | | | |
| A | 45.167 | 6 | G |
| A | | | |
| B A | 31.833 | 3 | F |
| B A | | | |
| B A | 30.083 | 6 | E |
| B | | | |
| B | 24.167 | 9 | C |
| B | | | |
| B | 19.143 | 7 | Ref |
| B | | | |
| B | 16.000 | 4 | B |
| B | | | |
| B | 15.250 | 6 | D |
| B | | | |
| B | 13.000 | 6 | A |

R0063739

Analyte name=ALDRIN TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=ALDRIN TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5386.41765873 | 673.30220734 | 6.95 | 0.0001 |
| Error | 41 | 3971.58234127 | 96.86786198 | | |
| Corrected Total | 49 | 9358.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.575595 | 38.59666 | 9.84214722 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5386.41765873 | 673.30220734 | 6.95 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5386.41765873 | 673.30220734 | 6.95 | 0.0001 |

R0063740

Analyte name=ALDRIN TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 96.86786
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 20.582
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 41.750 | 6 | G |
| B A | 35.500 | 3 | F |
| B A | 35.500 | 3 | H |
| B A C | 30.167 | 6 | E |
| B A C | 28.429 | 7 | Ref |
| B D A C | 25.778 | 9 | C |
| B D C | 17.583 | 6 | D |
| D C | 11.083 | 6 | A |
| D | 6.875 | 4 | B |

R0063741

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063742

Analyte name=ALPHA-BHC (HCH) TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 42.750 | 6 | G |
| A | | | |
| B A | 36.500 | 3 | F |
| B A | | | |
| B A | 36.500 | 3 | H |
| B A | | | |
| B A | 31.000 | 6 | E |
| B A | | | |
| B A C | 29.214 | 7 | Ref |
| B C | | | |
| B D C | 22.944 | 9 | C |
| B D C | | | |
| B D C | 17.917 | 6 | D |
| D C | | | |
| D C | 11.250 | 6 | A |
| D | | | |
| D | 6.875 | 4 | B |

R0063743

Analyte name=ANTHRACENE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=ANTHRACENE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 11.95470723 | 1.49433840 | 20.00 | 0.0001 |
| Error | 41 | 3.06351768 | 0.07471994 | | |
| Corrected Total | 49 | 15.01822491 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.796013 | 16.85311 | 0.27334949 | 1.62195280 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 11.95470723 | 1.49433840 | 20.00 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 11.95470723 | 1.49433840 | 20.00 | 0.0001 |

R0063744

Analyte name=ANTHRACENE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 0.07472
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 0.5607
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.090909

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 2.8795 | 4 | M |
| B | 2.0574 | 3 | F |
| B | 1.9888 | 6 | G |
| B | 1.8405 | 6 | E |
| B D | 1.6269 | 4 | B |
| D | 1.4446 | 6 | D |
| D | 1.2798 | 8 | C |
| E | 1.1793 | 7 | Ref |
| E | 1.1272 | 6 | A |

R0063745

Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 346.45803455 | 43.30725432 | 6.48 | 0.0001 |
| Error | 42 | 280.61965608 | 6.68142038 | | |
| Corrected Total | 50 | 627.07769063 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.552496 | 27.20514 | 2.58484436 | 9.50130719 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 346.45803455 | 43.30725432 | 6.48 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 346.45803455 | 43.30725432 | 6.48 | 0.0001 |

R0063746

Analyte name=ARSENIC, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 6.68142
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 5.2746
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 15.667 | 3 | F |
| A | | | |
| B A | 12.500 | 4 | H |
| B A | | | |
| B A | 11.200 | 6 | E |
| B | | | |
| B C | 10.100 | 6 | G |
| B C | | | |
| B C | 10.078 | 9 | C |
| B C | | | |
| B C | 9.378 | 6 | D |
| B C | | | |
| B C | 8.329 | 7 | Ref |
| C | | | |
| C | 5.550 | 6 | A |
| C | | | |
| C | 5.300 | 4 | B |

R0063747

VOL 18

Analyte name=BENZIDINE TRANS-rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 6 | A B E G H Ref |

Number of observations in by group = 17



Analyte name=BENZIDINE TRANS-rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 5 | 224.98750000 | 44.99750000 | 4.12 | 0.0235 |
| Error | 11 | 120.01250000 | 10.91022727 | | |
| Corrected Total | 16 | 345.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.652138 | 36.70070 | 3.30306332 | 9.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 5 | 224.98750000 | 44.99750000 | 4.12 | 0.0235 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 5 | 224.98750000 | 44.99750000 | 4.12 | 0.0235 |

R0063748

Analyte name=BENZIDINE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 10.91023
Critical Value of Studentized Range= 4.823
Minimum Significant Difference= 10.85
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 2.155689

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 13.750 | 2 | G |
| A | | | |
| A | 12.375 | 4 | H |
| A | | | |
| A | 11.000 | 2 | E |
| A | | | |
| A | 7.900 | 5 | Ref |
| A | | | |
| A | 5.500 | 1 | A |
| A | | | |
| A | 3.000 | 3 | B |

R0063749

VOL 18

Analyte name=BENZO(A)ANTHRACENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=BENZO(A)ANTHRACENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 7810.04613095 | 976.25576637 | 17.70 | 0.0001 |
| Error | 41 | 2260.95386905 | 55.14521632 | | |
| Corrected Total | 49 | 10071.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.775499 | 29.12150 | 7.42598252 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7810.04613095 | 976.25576637 | 17.70 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7810.04613095 | 976.25576637 | 17.70 | 0.0001 |

R0063750

---------- Analyte name=BENZO(A)ANTHRACENE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 55.14522
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.233
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.090909

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 48.500 | 4 | H |
| | A | | | |
| | A | 44.833 | 3 | F |
| | A | | | |
| B | A | 40.250 | 6 | E |
| B | | | | |
| B | C | 29.500 | 6 | G |
| | C | | | |
| D | C | 24.125 | 4 | B |
| D | C | | | |
| D | C | 23.167 | 6 | D |
| D | C | | | |
| D | C | 18.813 | 8 | C |
| D | | | | |
| D | | 11.917 | 6 | A |
| D | | | | |
| D | | 10.071 | 7 | Ref |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 13.62512912 | 1.70314114 | 20.57 | 0.0001 |
| Error | 42 | 3.47758720 | 0.08279970 | | |
| Corrected Total | 50 | 17.10271631 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.796665 | 14.22320 | 0.28774936 | 2.02309888 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 13.62512912 | 1.70314114 | 20.57 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 13.62512912 | 1.70314114 | 20.57 | 0.0001 |

R0063752

Analyte name=BENZO(A)PYRENE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 0.0828
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 0.5872
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 3.0375 | 4 | H |
| | A | | | | |
| B | A | | 2.6925 | 3 | F |
| B | | | | | |
| B | C | | 2.4346 | 6 | E |
| B | C | | | | |
| B | C | D | 2.3001 | 6 | G |
| B | C | D | | | |
| B | C | D | 2.2025 | 6 | D |
| | C | D | | | |
| E | C | D | 1.9971 | 4 | B |
| E | | D | | | |
| E | F | D | 1.7246 | 9 | C |
| E | F | | | | |
| E | F | | 1.4722 | 7 | Ref |
| | F | | | | |
| | F | | 1.2522 | 6 | A |

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Analyte name=BENZO(B)FLUORANTHENE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=BENZO(B)FLUORANTHENE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 6790304.05244320 | 848788.00655540 | 59.66 | 0.0001 |
| Error | 42 | 597578.57916508 | 14228.06141345 | | |
| Corrected Total | 50 | 7387882.63180828 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.919114 | 42.80033 | 119.28143784 | 278.69281046 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6790304.05244320 | 848788.00655540 | 59.66 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6790304.05244320 | 848788.00655540 | 59.66 | 0.0001 |

R0063754

Analyte name=BENZO(B)FLUORANTHENE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 14228.06
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 243.4
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 1425.00 | 4 | H |
| B | 563.33 | 3 | F |
| B | | | |
| C B | 338.33 | 6 | E |
| C | | | |
| C | 316.67 | 6 | G |
| C | | | |
| C D | 204.67 | 6 | D |
| C D | | | |
| C D | 132.00 | 4 | B |
| D | | | |
| D | 65.56 | 9 | C |
| D | | | |
| D | 61.48 | 7 | Ref |
| D | | | |
| D | 19.50 | 6 | A |

R0063755

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---------- Analyte name=BENZO(GHI)PERYLENE TRANS=log(x+1) DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=BENZO(GHI)PERYLENE TRANS=log(x+1) DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 10.39136272 | 1.29892034 | 17.01 | 0.0001 |
| Error | 41 | 3.13057240 | 0.07635542 | | |
| Corrected Total | 49 | 13.52193512 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.768482 | 15.70768 | 0.27632485 | 1.75917037 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 10.39136272 | 1.29892034 | 17.01 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 10.39136272 | 1.29892034 | 17.01 | 0.0001 |

R0063756

Analyte name=BENZO(GHI)PERYLENE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 0.076355
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 0.5668
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.090909

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 2.5307 | 3 | F |
| A A | | | |
| A | 2.4448 | 4 | H |
| A A | | | |
| B A | 2.2047 | 6 | E |
| B A | | | |
| B A | 2.0530 | 6 | G |
| B | | | |
| B C | 1.8245 | 6 | D |
| B C | | | |
| B C | 1.7645 | 4 | B |
| C | | | |
| D C | 1.4286 | 8 | C |
| D C | | | |
| D C | 1.2634 | 7 | Ref |
| D | | | |
| D | 1.1272 | 6 | A |

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Analyte name=BENZO(K)FLUORANTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=BENZO(K)FLUORANTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 8820.73015873 | 1102.59126984 | 20.90 | 0.0001 |
| Error | 42 | 2215.76984127 | 52.75642479 | | |
| Corrected Total | 50 | 11036.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.799233 | 27.93601 | 7.26336181 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 8820.73015873 | 1102.59126984 | 20.90 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 8820.73015873 | 1102.59126984 | 20.90 | 0.0001 |

R0063758

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Analyte name=BENZO(K)FLUORANTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 52.75642
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 14.822
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A A | 49.500 | 4 | H |
| B A A | 45.000 | 3 | F |
| B A A C C | 39.167 | 6 | E |
| B C C | 31.750 | 6 | G |
| B C C C C | 30.750 | 6 | D |
| D C C | 25.750 | 4 | B |
| E D D | 15.889 | 9 | C |
| E D D | 13.429 | 7 | Ref |
| E | 7.167 | 6 | A |

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Analyte name=BERYLLIUM, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=BERYLLIUM, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4896.68253968 | 612.08531746 | 4.19 | 0.0009 |
| Error | 42 | 6131.81746032 | 145.99565382 | | |
| Corrected Total | 50 | 11028.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.444003 | 46.47256 | 12.08286613 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4896.68253968 | 612.08531746 | 4.19 | 0.0009 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4896.68253968 | 612.08531746 | 4.19 | 0.0009 |

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VOL 18

---------- Analyte name=BERYLLIUM, TOTAL TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 145.9957
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 24.656
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 42.333 | 3 | F |
| | A | | | | |
| B | A | | 40.417 | 6 | G |
| B | A | | | | |
| B | A | C | 30.917 | 6 | E |
| B | A | C | | | |
| B | A | C | 29.556 | 9 | C |
| B | A | C | | | |
| B | A | C | 28.875 | 4 | H |
| B | A | C | | | |
| B | A | C | 23.417 | 6 | D |
| B | A | C | | | |
| B | A | C | 18.000 | 6 | A |
| B | | C | | | |
| B | | C | 16.214 | 7 | Ref |
| | | C | | | |
| | | C | 6.875 | 4 | B |

R0063761

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063762

Analyte name=BETA-BHC (HCH) TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 42.750 | 6 | G |
| | A | | | | |
| B | A | | 36.500 | 3 | F |
| B | A | | | | |
| B | A | | 36.500 | 3 | H |
| B | A | | | | |
| B | A | | 31.000 | 6 | E |
| B | A | | | | |
| B | A | C | 29.214 | 7 | Ref |
| B | | C | | | |
| B | D | C | 22.944 | 9 | C |
| B | D | C | | | |
| B | D | C | 17.917 | 6 | D |
| | D | C | | | |
| | D | C | 11.250 | 6 | A |
| | D | | | | |
| | D | | 6.875 | 4 | B |

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---------- Analyte name=BIS(2-ETHYLHEXYL)PHTHALATE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43

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---------- Analyte name=BIS(2-ETHYLHEXYL)PHTHALATE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3020.89523810 | 377.61190476 | 4.41 | 0.0010 |
| Error | 34 | 2910.60476190 | 85.60602241 | | |
| Corrected Total | 42 | 5931.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.509297 | 42.05615 | 9.25235226 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3020.89523810 | 377.61190476 | 4.41 | 0.0010 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3020.89523810 | 377.61190476 | 4.41 | 0.0010 |

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---------- Analyte name=BIS(2-ETHYLHEXYL)PHTHALATE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 85.60602
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 21.58
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 38.500 | 2 | F |
| | A | | | |
| | A | 36.500 | 6 | G |
| | A | | | |
| B | A | 25.500 | 4 | H |
| B | A | | | |
| B | A | 25.100 | 5 | E |
| B | A | | | |
| B | A | 19.857 | 7 | Ref |
| B | A | | | |
| B | A | 17.929 | 7 | C |
| B | | | | |
| B | | 14.833 | 6 | A |
| B | | | | |
| B | | 11.500 | 3 | B |
| B | | | | |
| B | | 11.500 | 3 | D |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 8.22490401 | 1.02811300 | 5.93 | 0.0001 |
| Error | 42 | 7.27996310 | 0.17333245 | | |
| Corrected Total | 50 | 15.50486710 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.530472 | 57.50548 | 0.41633214 | 0.72398693 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 8.22490401 | 1.02811300 | 5.93 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 8.22490401 | 1.02811300 | 5.93 | 0.0001 |

R0063766

Analyte name=CADMIUM, EXTRACTABLE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 0.173332
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 0.8696
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 1.4676 | 7 | Ref |
| A | | | |
| B A | 1.1000 | 4 | H |
| B A | | | |
| B A | 1.0850 | 6 | G |
| B A | | | |
| B A | 0.8567 | 3 | F |
| B | | | |
| B | 0.5217 | 6 | E |
| B | | | |
| B | 0.4867 | 9 | C |
| B | | | |
| B | 0.3875 | 4 | B |
| B | | | |
| B | 0.3550 | 6 | A |
| B | | | |
| B | 0.3300 | 6 | D |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 6715.16071429 | 839.39508929 | 8.13 | 0.0001 |
| Error | 42 | 4333.83928571 | 103.18664966 | | |
| Corrected Total | 50 | 11049.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.607762 | 39.06955 | 10.15808297 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6715.16071429 | 839.39508929 | 8.13 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6715.16071429 | 839.39508929 | 8.13 | 0.0001 |

R0063768

Analyte name=CADMIUM, EXTRACTABLE / AVS TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 103.1866
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 20.728
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 39.429 | 7 | Ref |
| A | | | |
| A | 36.583 | 6 | D |
| A | | | |
| A | 32.750 | 6 | A |
| A | | | |
| A | 32.250 | 4 | B |
| A | | | |
| A | 29.000 | 3 | F |
| A | | | |
| B A | 26.500 | 9 | C |
| B A | | | |
| B A C | 20.417 | 6 | E |
| B C | | | |
| B C | 6.667 | 6 | G |
| C | | | |
| C | 4.250 | 4 | H |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 7649.58730159 | 956.19841270 | 11.82 | 0.0001 |
| Error | 42 | 3396.41269841 | 80.86696901 | | |
| Corrected Total | 50 | 11046.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.692521 | 34.58695 | 8.99260635 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7649.58730159 | 956.19841270 | 11.82 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7649.58730159 | 956.19841270 | 11.82 | 0.0001 |

R0063770

Analyte name=CADMIUM, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 80.86697
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 18.35
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 39.250 | 4 | H |
| A | 39.143 | 7 | Ref |
| A | 39.083 | 6 | G |
| A | 35.333 | 3 | F |
| B A | 30.417 | 6 | E |
| B A | 23.556 | 9 | C |
| B C | 14.000 | 6 | D |
| C | 9.000 | 6 | A |
| C | 5.500 | 4 | B |

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---------- Analyte name=CHLORDANE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=CHLORDANE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 7020.15277778 | 877.51909722 | 14.89 | 0.0001 |
| Error | 41 | 2416.84722222 | 58.94749322 | | |
| Corrected Total | 49 | 9437.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.743897 | 30.10873 | 7.67772709 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7020.15277778 | 877.51909722 | 14.89 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7020.15277778 | 877.51909722 | 14.89 | 0.0001 |

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R0063772

Analyte name=CHLORDANE TRANS-rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 58.94749
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 16.055
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A A | 46.417 | 6 | G |
| B A A | 42.167 | 3 | H |
| B A A | 40.000 | 3 | F |
| B C C | 28.333 | 6 | E |
| D C C | 25.500 | 7 | Ref |
| E D | 21.722 | 9 | C |
| E D F F | 17.250 | 6 | D |
| E F F | 11.417 | 6 | A |
| F | 8.500 | 4 | B |

R0063773

-JOE-

VOL 18

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 30367.90476190 | 3795.98809524 | 2.60 | 0.0211 |
| Error | 42 | 61423.35449735 | 1462.46082137 | | |
| Corrected Total | 50 | 91791.25925926 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.330837 | 81.17436 | 38.24213411 | 47.11111111 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 30367.90476190 | 3795.98809524 | 2.60 | 0.0211 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 30367.90476190 | 3795.98809524 | 2.60 | 0.0211 |

R0063774

Analyte name=CHROMIUM, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 1462.461
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 78.036
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 122.50 | 4 | H |
| | A | | | |
| B | A | 69.67 | 3 | F |
| B | A | | | |
| B | A | 51.50 | 6 | G |
| B | A | | | |
| B | A | 45.67 | 6 | E |
| B | | | | |
| B | | 42.89 | 9 | C |
| B | | | | |
| B | | 36.62 | 7 | Ref |
| B | | | | |
| B | | 35.39 | 6 | D |
| B | | | | |
| B | | 27.67 | 6 | A |
| B | | | | |
| B | | 25.00 | 4 | B |

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Analyte name=CHRYSENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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Analyte name=CHRYSENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 8050.14821429 | 1006.26852679 | 17.93 | 0.0001 |
| Error | 41 | 2300.85178571 | 56.11831624 | | |
| Corrected Total | 49 | 10351.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.777717 | 29.37732 | 7.49121727 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 8050.14821429 | 1006.26852679 | 17.93 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 8050.14821429 | 1006.26852679 | 17.93 | 0.0001 |

R0063776

Analyte name=CHRYSENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 56.11834
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.451
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.035524

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 48.500 | 4 | H |
| A | 44.000 | 3 | F |
| B A | 38.417 | 6 | E |
| B A C | 34.917 | 6 | G |
| B C | | | |
| B D C | 26.125 | 4 | B |
| D C | | | |
| E D C | 20.100 | 5 | D |
| E D | | | |
| E D | 16.667 | 9 | C |
| E D | | | |
| E D | 14.429 | 7 | Ref |
| E | | | |
| E | 8.833 | 6 | A |

R0063777



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Analyte name=CLAY TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=CLAY TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4266.10471053 | 533.26308882 | 9.28 | 0.0001 |
| Error | 42 | 2414.59957421 | 57.49046605 | | |
| Corrected Total | 50 | 6680.70428475 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.638571 | 27.12289 | 7.58224677 | 27.95515686 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4266.10471053 | 533.26308882 | 9.28 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4266.10471053 | 533.26308882 | 9.28 | 0.0001 |

R0063778

VOL 18

Analyte name=CLAY TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 57.49047
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 15.472
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A A | 45.472 | 3 | F |
| B A A | 40.819 | 6 | G |
| B A A C C | 36.336 | 4 | H |
| B D A C C | 31.770 | 6 | E |
| B D C C | 28.494 | 9 | C |
| D C C | 24.585 | 7 | Ref |
| D E | 20.181 | 6 | D |
| D E | 18.215 | 6 | A |
| E | 12.378 | 4 | B |

R0063779

Analyte name=COPPER, EXTRACTABLE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=COPPER, EXTRACTABLE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 164082.08940243 | 20510.26117530 | 12.56 | 0.0001 |
| Error | 42 | 68597.77116402 | 1633.28026581 | | |
| Corrected Total | 50 | 232679.86056645 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.705184 | 42.71429 | 40.41386230 | 94.61437908 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 164082.08940243 | 20510.26117530 | 12.56 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 164082.08940243 | 20510.26117530 | 12.56 | 0.0001 |

R0063780

---------- Analyte name=COPPER, EXTRACTABLE TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 1633.28
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 82.468
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 225.00 | 4 | H |
| | A | | | |
| B | A | 203.33 | 3 | F |
| B | | | | |
| B | C | 128.00 | 6 | G |
| | C | | | |
| D | C | 98.00 | 6 | E |
| D | C | | | |
| D | C | 89.39 | 6 | D |
| D | C | | | |
| D | C | 82.78 | 9 | C |
| D | C | | | |
| D | C | 47.71 | 7 | Ref |
| D | | | | |
| D | | 45.25 | 4 | B |
| D | | | | |
| D | | 27.17 | 6 | A |

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---------- Analyte name=COPPER, EXTRACTABLE / AVS TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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---------- Analyte name=COPPER, EXTRACTABLE / AVS TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statisticel analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 147.57677397 | 18.44709675 | 1.85 | 0.0944 |
| Error | 42 | 418.73879492 | 9.96997131 | | |
| Corrected Total | 50 | 566.31556889 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.260591 | 218.2889 | 3.15752614 | 1.44648979 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 147.57677397 | 18.44709675 | 1.85 | 0.0944 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 147.57677397 | 18.44709675 | 1.85 | 0.0944 |

R0063782

VOL 18

Analyte name=COPPER, EXTRACTABLE / AVS TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 9.969971
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 6.4432
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 9.720 | 6 | D |
| A | | | |
| A | 2.317 | 7 | Ref |
| A | | | |
| A | 1.390 | 3 | F |
| A | | | |
| A | 0.930 | 4 | B |
| A | | | |
| A | 0.807 | 9 | C |
| A | | | |
| A | 0.627 | 6 | A |
| A | | | |
| A | 0.622 | 6 | E |
| A | | | |
| A | 0.065 | 4 | H |
| A | | | |
| A | 0.045 | 6 | G |

R0063783

VOL 18

Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 268829.06162465 | 33603.63270308 | 9.44 | 0.0001 |
| Error | 42 | 149440.79894180 | 3558.11426052 | | |
| Corrected Total | 50 | 418269.86056645 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.642717 | 47.44705 | 59.64993093 | 125.71895425 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 268829.06162465 | 33603.63270308 | 9.44 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 268829.06162465 | 33603.63270308 | 9.44 | 0.0001 |

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---------- Analyte name=COPPER, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 3558.114
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 121.72
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 320.00 | 3 | F |
| | A | | | | |
| B | A | | 247.50 | 4 | H |
| B | | | | | |
| B | C | | 166.67 | 6 | G |
| B | C | | | | |
| B | C | D | 136.83 | 6 | E |
| | C | D | | | |
| | C | D | 111.11 | 9 | C |
| | C | D | | | |
| | C | D | 109.22 | 6 | D |
| | C | D | | | |
| | C | D | 74.62 | 7 | Ref |
| | C | D | | | |
| | C | D | 55.50 | 4 | B |
| | | D | | | |
| | | D | 40.17 | 6 | A |

R0063785

VOL 18

Analyte name=DELTA-BHC (HCH) TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=DELTA-BHC (HCH) TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063786

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Analyte name=DELTA-BHC (HCH) TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898688

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 42.750 | 6 | G |
| | A | | | | |
| B | A | | 36.500 | 3 | F |
| B | A | | | | |
| B | A | | 36.500 | 3 | H |
| B | A | | | | |
| B | A | | 31.000 | 6 | E |
| B | A | | | | |
| B | A | C | 29.214 | 7 | Ref |
| B | | C | | | |
| B | D | C | 22.944 | 9 | C |
| B | D | C | | | |
| B | D | C | 17.917 | 6 | D |
| | D | C | | | |
| | D | C | 11.250 | 6 | A |
| | D | | | | |
| | D | | 6.875 | 4 | B |

R0063787



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---------- Analyte name=DI-N-OCTYLPHTHALATE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 49

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---------- Analyte name=DI-N-OCTYLPHTHALATE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4969.25059524 | 621.15632440 | 5.28 | 0.0002 |
| Error | 40 | 4707.24940476 | 117.68123512 | | |
| Corrected Total | 48 | 9676.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.513538 | 43.39239 | 10.84809823 | 25.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4969.25059524 | 621.15632440 | 5.28 | 0.0002 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4969.25059524 | 621.15632440 | 5.28 | 0.0002 |

VOL 18

R0063788

Analyte name=DI-N-OCTYLPHTHALATE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 40 MSE= 117.6812
Critical Value of Studentized Range= 4.634
Minimum Significant Difference= 22.491
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.996695

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 41.833 | 6 | G |
| A | | | |
| A | 40.750 | 4 | H |
| A | | | |
| A | 35.667 | 3 | F |
| A | | | |
| B A | 23.500 | 6 | E |
| B A | | | |
| B A | 23.125 | 4 | B |
| B A | | | |
| B A | 21.625 | 8 | C |
| B A | | | |
| B A | 20.786 | 7 | Ref |
| B A | | | |
| B A | 19.700 | 5 | D |
| B | | | |
| B | 8.917 | 6 | A |

R0063789

VOL 178

Analyte name=DIBENZO(A,H)ANTHRACENE TRANS=rank DUNNY=' ' DUNNY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43



Analyte name=DIBENZO(A,H)ANTHRACENE TRANS=rank DUNNY=' ' DUNNY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3419.23869048 | 427.40483631 | 5.75 | 0.0001 |
| Error | 34 | 2529.26130952 | 74.39003852 | | |
| Corrected Total | 42 | 5948.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.574807 | 39.20439 | 8.62496600 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3419.23869048 | 427.40483631 | 5.75 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3419.23869048 | 427.40483631 | 5.75 | 0.0001 |

R0063790

VOL 18

Analyte name=DIBENZO(A,H)ANTHRACENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 74.39004
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 20.116
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 35.500 | 2 | F |
| A | | | |
| B A | 33.875 | 4 | H |
| B A | | | |
| B A | 33.417 | 6 | G |
| B A | | | |
| B A C | 29.200 | 5 | E |
| B A C | | | |
| B A C | 19.357 | 7 | C |
| B A C | | | |
| B A C | 16.000 | 3 | B |
| B C | | | |
| B C | 14.583 | 6 | A |
| C | | | |
| C | 12.500 | 7 | Ref |
| C | | | |
| C | 11.500 | 3 | D |

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Bechtel Chemistry

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Analyte name=DIBUTYLTIN TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

Bechtel Chemistry

15:38 Thursday, August 17, 1995 139

Analyte name=DIBUTYLTIN TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 0.09889651 | 0.01236206 | 2.23 | 0.0440 |
| Error | 42 | 0.23268953 | 0.00554023 | | |
| Corrected Total | 50 | 0.33158605 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.298253 | 22.16679 | 0.07443270 | 0.33578472 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 0.09889651 | 0.01236206 | 2.23 | 0.0440 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 0.09889651 | 0.01236206 | 2.23 | 0.0440 |

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-4-6

Analyte name=DIBUTYLTIN TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 0.00554
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 0.1519
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 0.41114 | 6 | G |
| A | | | |
| A | 0.39351 | 4 | H |
| A | | | |
| A | 0.35769 | 6 | E |
| A | | | |
| A | 0.35302 | 6 | D |
| A | | | |
| A | 0.33575 | 7 | Ref |
| A | | | |
| A | 0.33333 | 3 | F |
| A | | | |
| A | 0.30103 | 9 | C |
| A | | | |
| A | 0.28021 | 6 | A |
| A | | | |
| A | 0.26980 | 4 | B |

R0063793

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---------- Analyte name=DIELDRIN TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

Bechtel Chemistry 15:38 Thursday, August 17, 1995 142

---------- Analyte name=DIELDRIN TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063794

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Analyte name=DIELDRIN TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.638
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898468

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 42.750 | 6 | O |
| A | | | |
| B A | 36.500 | 3 | P |
| B A | | | |
| B A | 36.500 | 3 | H |
| B A | | | |
| B A | 31.000 | 6 | E |
| B A | | | |
| B A C | 29.214 | 7 | Ref |
| B C | | | |
| B D C | 22.944 | 9 | C |
| B D C | | | |
| B D C | 17.917 | 6 | D |
| D C | | | |
| D C | 11.250 | 6 | A |
| D | | | |
| D | 6.875 | 4 | B |

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Analyte name=ENDOSULFAN I TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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15:38 Thursday, August 17, 1995 145

Analyte name=ENDOSULFAN I TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063796

Analyte name=ENDOSULFAN I TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A A | 42.750 | 6 | G |
| B A A | 36.500 | 3 | F |
| B A A | 36.500 | 3 | H |
| B A A | 31.000 | 6 | E |
| B A A | 29.214 | 7 | Ref |
| B C C | 22.944 | 9 | C |
| B D C C | 17.917 | 6 | D |
| D C C | 11.250 | 6 | A |
| D | 6.875 | 4 | B |

R0063797

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---------- Analyte name=ENDOSULFAN II TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

Bechtel Chemistry 15:38 Thursday, August 17, 1995 148

---------- Analyte name=ENDOSULFAN II TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063798

VOL 18

Analyte name=ENDOSULFAN II TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.620
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 42.750 | 6 | G |
| A | | | |
| B A | 36.500 | 3 | F |
| B A | | | |
| B A | 36.500 | 3 | H |
| B A | | | |
| B A | 31.000 | 6 | E |
| B A | | | |
| B A C | 29.214 | 7 | Ref |
| B C | | | |
| B D C | 22.944 | 9 | C |
| B D C | | | |
| B D C | 17.917 | 6 | D |
| D C | | | |
| D C | 11.250 | 6 | A |
| D | | | |
| D | 6.875 | 4 | B |

R0063799

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---------- Analyte name=ENDOSULFAN SULFATE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=ENDOSULFAN SULFATE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063800

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Bechtel Chem..try

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---------- Analyte name=ENDOSULFAN SULFATE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 42.750 | 6 | G |
| | A | | | | |
| B | A | | 36.500 | 3 | F |
| B | A | | | | |
| B | A | | 36.500 | 3 | H |
| B | A | | | | |
| B | A | | 31.000 | 6 | E |
| B | A | | | | |
| B | A | C | 29.214 | 7 | Ref |
| B | | C | | | |
| B | D | C | 22.944 | 9 | C |
| B | D | C | | | |
| B | D | C | 17.917 | 6 | D |
| | D | C | | | |
| | D | C | 11.250 | 6 | A |
| | D | | | | |
| | D | | 6.875 | 4 | B |

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R0063801

Bechtel Chemistry 15:38 Thursday, August 17, 1995 153

---------- Analyte name=ENDRIN TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

Bechtel Chemistry 15:38 Thursday, August 17, 1995 154

---------- Analyte name=ENDRIN TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063802

VOL 18

-426

Analyte name=ENDRIN TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 42.750 | 6 | O |
| A | | | |
| B A | 38.500 | 3 | P |
| B A | | | |
| B A | 36.500 | 3 | M |
| B A | | | |
| B A | 31.000 | 6 | E |
| B A | | | |
| B A C | 29.214 | 7 | Ref |
| B C | | | |
| B D C | 22.944 | 9 | C |
| B D C | | | |
| B D C | 17.917 | 6 | D |
| D C | | | |
| D C | 11.250 | 6 | A |
| D | | | |
| D | 6.875 | 4 | B |

R0063803



VOL 178

Analyte name=ENDRIN ALDEHYDE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=ENDRIN ALDEHYDE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063804

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---------- Analyte name=ENDRIN ALDEHYDE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 42.750 | 6 | G |
| | A | | | | |
| B | A | | 36.500 | 3 | F |
| B | A | | | | |
| B | A | | 36.500 | 3 | H |
| B | A | | | | |
| B | A | | 31.000 | 6 | E |
| B | A | | | | |
| B | A | C | 29.214 | 7 | Ref |
| B | | C | | | |
| B | D | C | 22.944 | 9 | C |
| B | D | C | | | |
| B | D | C | 17.917 | 6 | D |
| | D | C | | | |
| | D | C | 11.250 | 6 | A |
| | D | | | | |
| | D | | 6.875 | 4 | B |

VOL 18

Analyte name=FINES TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=FINES TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3881.50396825 | 485.18799603 | 2.84 | 0.0129 |
| Error | 42 | 7168.49603175 | 170.67847695 | | |
| Corrected Total | 50 | 11050.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.351267 | 50.24768 | 13.06439731 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3881.50396825 | 485.18799603 | 2.84 | 0.0129 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3881.50396825 | 485.18799603 | 2.84 | 0.0129 |

R0063806

Analyte name=FINES TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 170.6705
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 26.659
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 44.333 | 3 | F |
| A | | | |
| B A | 32.143 | 7 | Ref |
| B A | | | |
| B A | 29.667 | 6 | E |
| B A | | | |
| B A | 29.500 | 6 | G |
| B A | | | |
| B A | 29.444 | 9 | C |
| B A | | | |
| B A | 28.500 | 4 | H |
| B | | | |
| B | 17.167 | 6 | D |
| B | | | |
| B | 16.667 | 6 | A |
| B | | | |
| B | 7.750 | 4 | B |

R0063807



VOL 178

Analyte name=FLUORANTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 49



Analyte name=FLUORANTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 6700.66230159 | 837.58278770 | 11.12 | 0.0001 |
| Error | 40 | 3012.83769841 | 75.32094246 | | |
| Corrected Total | 48 | 9713.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.689830 | 34.71506 | 8.67876388 | 25.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6700.66230159 | 837.58278770 | 11.12 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6700.66230159 | 837.58278770 | 11.12 | 0.0001 |

R0063808

Analyte name=FLUORANTHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 40 MSE= 75.32094
Critical Value of Studentized Range= 4.534
Minimum Significant Difference= 18.337
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.811301

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 47.500 | 4 | H |
| A | | | |
| A | 41.667 | 3 | F |
| A | | | |
| B A | 35.417 | 6 | E |
| B A | | | |
| B A | 34.417 | 6 | G |
| B | | | |
| B C | 21.357 | 7 | Ref |
| B C | | | |
| B C | 17.000 | 9 | D |
| C | | | |
| C | 16.056 | 9 | C |
| C | | | |
| C | 15.833 | 3 | B |
| C | | | |
| C | 10.083 | 6 | A |

R0063809

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Analyte name=FLUORENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43

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Analyte name=FLUORENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3676.08690476 | 459.51086310 | 8.13 | 0.0001 |
| Error | 34 | 1922.41309524 | 56.54156162 | | |
| Corrected Total | 42 | 5598.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.656620 | 36.17915 | 7.51941232 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3676.08690476 | 459.51086310 | 8.13 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3676.08690476 | 459.51086310 | 8.13 | 0.0001 |

R0063810

VOL 18

---------- Analyte name=FLUORENE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 56.54156
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 17.538
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 37.000 | 3 | F |
| | A | | | | |
| | A | | 36.500 | 4 | H |
| | A | | | | |
| B | A | | 35.083 | 6 | G |
| B | A | | | | |
| B | A | C | 24.200 | 5 | E |
| B | | C | | | |
| B | | C | 18.357 | 7 | C |
| | | C | | | |
| | | C | 15.667 | 6 | A |
| | | C | | | |
| | | C | 13.429 | 7 | Ref |
| | | C | | | |
| | | C | 13.000 | 3 | B |
| | | C | | | |
| | | C | 13.000 | 3 | D |

R0063811

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Analyte name=GRAVEL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=GRAVEL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 6198.85813492 | 774.85726687 | 10.13 | 0.0001 |
| Error | 42 | 3212.64186508 | 76.49147298 | | |
| Corrected Total | 50 | 9411.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.658647 | 33.63823 | 8.74594037 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6198.85813492 | 774.85726687 | 10.13 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6198.85813492 | 774.85726687 | 10.13 | 0.0001 |

R0063812

Analyte name=GRAVEL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentised Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 76.49147
Critical Value of Studentised Range= 4.622
Minimum Significant Difference= 17.847
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | SOMS |
|---|---|---|---|
| A | 47.500 | 6 | G |
| A | | | |
| B A | 44.500 | 4 | H |
| B | | | |
| B C | 29.417 | 6 | E |
| B C | | | |
| B C | 27.143 | 7 | Ref |
| C | | | |
| C | 19.333 | 6 | D |
| C | | | |
| C | 18.875 | 4 | B |
| C | | | |
| C | 17.667 | 6 | A |
| C | | | |
| C | 17.444 | 9 | C |
| C | | | |
| C | 14.000 | 3 | F |

R0063813

VOL 178

Analyte name=HEPTACHLOR TRANS-rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=HEPTACHLOR TRANS-rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063814

Analyte name=HEPTACHLOR TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 42.750 | 6 | G |
| A | | | |
| B A | 36.500 | 3 | F |
| B A | | | |
| B A | 36.500 | 3 | H |
| B A | | | |
| B A | 31.000 | 6 | E |
| B A | | | |
| B A | 29.314 | 7 | Ref |
| B C | | | |
| B D C | 22.964 | 9 | C |
| B D C | | | |
| B D C | 17.917 | 6 | D |
| D C | | | |
| D C | 11.250 | 6 | A |
| D | | | |
| D | 6.875 | 4 | B |

R0063815

-7369

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---------- Analyte name=HEPTACHLOR EPOXIDE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=HEPTACHLOR EPOXIDE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |
| Error | 41 | 3531.29662698 | 86.12918602 | | |
| Corrected Total | 49 | 9330.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.621532 | 36.39444 | 9.28058113 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5799.20337302 | 724.90042163 | 8.42 | 0.0001 |

R0063816

VOL 18

Analyte name=HEPTACHLOR EPOXIDE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 86.12919
Critical Value of Studentized Range= 4.620
Minimum Significant Difference= 19.407
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 42.750 | 6 | G |
| A | | | |
| B A | 36.500 | 3 | F |
| B A | | | |
| B A | 36.500 | 3 | H |
| B A | | | |
| B A | 31.000 | 6 | E |
| B A | | | |
| B A C | 29.214 | 7 | Ref |
| B C | | | |
| B D C | 22.944 | 9 | C |
| B D C | | | |
| B D C | 17.917 | 6 | D |
| D C | | | |
| D C | 11.250 | 6 | A |
| D | | | |
| D | 6.875 | 4 | B |

R0063817



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---------- Analyte name=INDENO(1,2,3-CD)PYRENE TRANS=log(x+1) DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=INDENO(1,2,3-CD)PYRENE TRANS=log(x+1) DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 11.11958295 | 1.38994787 | 16.49 | 0.0001 |
| Error | 41 | 3.45655462 | 0.08430621 | | |
| Corrected Total | 49 | 14.57613757 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.762862 | 16.65223 | 0.29035532 | 1.74364203 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 11.11958295 | 1.38994787 | 16.49 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 11.11958295 | 1.38994787 | 16.49 | 0.0001 |

R0063818

VOL 18

2442

---------- Analyte name=INDENO(1,2,3-CD)PYRENE TRANS=log(x+1) DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 0.084306
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 0.5956
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.090909

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 2.5464 | 3 | F |
| | A | | | | |
| | A | | 2.5063 | 4 | H |
| | A | | | | |
| B | A | | 2.2047 | 6 | E |
| B | A | | | | |
| B | A | | 2.0711 | 6 | G |
| B | | | | | |
| B | C | | 1.7645 | 4 | B |
| B | C | | | | |
| B | C | D | 1.6760 | 6 | D |
| | C | D | | | |
| | C | D | 1.4072 | 8 | C |
| | C | D | | | |
| | C | D | 1.2470 | 7 | Ref |
| | | D | | | |
| | | D | 1.1272 | 6 | A |

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R0063819

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Analyte name=LEAD, EXTRACTABLE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=LEAD, EXTRACTABLE TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 26591.54582944 | 3323.94322868 | 7.75 | 0.0001 |
| Error | 42 | 18016.04894180 | 428.95354623 | | |
| Corrected Total | 50 | 44607.59477124 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.596121 | 41.26058 | 20.71119376 | 50.19607843 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 26591.54582944 | 3323.94322868 | 7.75 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 26591.54582944 | 3323.94322868 | 7.75 | 0.0001 |

R0063820

---------- Analyte name=LEAD, EXTRACTABLE TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 428.9535
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 42.263
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 108.33 | 3 | F |
| | A | | | | |
| B | A | | 90.00 | 4 | H |
| B | | | | | |
| B | C | | 62.83 | 6 | G |
| B | C | | | | |
| B | C | D | 58.00 | 6 | E |
| | C | D | | | |
| | C | D | 41.89 | 9 | C |
| | C | D | | | |
| | C | D | 41.05 | 7 | Ref |
| | C | D | | | |
| | C | D | 39.78 | 6 | D |
| | C | D | | | |
| | C | D | 32.75 | 4 | B |
| | | D | | | |
| | | D | 19.33 | 6 | A |

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1445

R0063821

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Analyte name=LEAD, EXTRACTABLE / AVS TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=LEAD, EXTRACTABLE / AVS TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 29.51675827 | 3.68959478 | 1.64 | 0.1435 |
| Error | 42 | 94.68431962 | 2.25438856 | | |
| Corrected Total | 50 | 124.20107789 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.237653 | 204.6626 | 1.50146214 | 0.73362792 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 29.51675827 | 3.68959478 | 1.64 | 0.1435 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 29.51675827 | 3.68959478 | 1.64 | 0.1435 |

R0063822

Analyte name=LEAD, EXTRACTABLE / AVS TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 2.254189
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 3.0639
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 2.5637 | 6 | D |
| A | 1.2622 | 7 | Ref |
| A | 0.7598 | 3 | F |
| A | 0.5462 | 4 | B |
| A | 0.4396 | 6 | A |
| A | 0.4004 | 9 | C |
| A | 0.3753 | 6 | E |
| A | 0.0259 | 4 | H |
| A | 0.0228 | 6 | G |

R0063823

VOL 18

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---------- Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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---------- Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 25722.46031746 | 3215.30753968 | 10.44 | 0.0001 |
| Error | 42 | 12935.68783069 | 307.99256740 | | |
| Corrected Total | 50 | 38658.14814815 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.665383 | 33.18224 | 17.54971702 | 52.88888889 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 25722.46031746 | 3215.30753968 | 10.44 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 25722.46031746 | 3215.30753968 | 10.44 | 0.0001 |

R0063824

VOL 18

Analyte name=LEAD, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 307.9926
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 35.812
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 111.67 | 3 | F |
| A | | | |
| B A | 83.75 | 4 | H |
| B | | | |
| B C | 70.00 | 6 | G |
| B C | | | |
| B C D | 61.00 | 6 | E |
| B C D | | | |
| B E C D | 48.44 | 9 | C |
| E C D | | | |
| E C D | 45.89 | 6 | D |
| E C D | | | |
| E C D | 39.71 | 7 | Ref |
| E D | | | |
| E D | 27.75 | 4 | B |
| E | | | |
| E | 23.50 | 6 | A |

R0063825

5447 VOL 18

Analyte name=LINDANE (GAMMA-BHC) TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=LINDANE (GAMMA-BHC) TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5119.44146825 | 639.93018353 | 5.92 | 0.0001 |
| Error | 41 | 4431.55853175 | 108.08679346 | | |
| Corrected Total | 49 | 9551.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.536011 | 40.77051 | 10.39647986 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5119.44146825 | 639.93018353 | 5.92 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5119.44146825 | 639.93018353 | 5.92 | 0.0001 |

R0063826

NOV 18

Analyte name=LINDANB (GAMMA-BHC) TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 108.0868
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 21.741
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | SOME |
|---|---|---|---|
| A | 40.750 | 6 | O |
| A | 39.667 | 3 | F |
| A | 34.500 | 3 | H |
| B A | 29.333 | 6 | E |
| B A C | 27.643 | 7 | Ref |
| B A C | 23.444 | 9 | C |
| B A C | 22.417 | 6 | D |
| B C | 10.917 | 6 | A |
| C | 6.875 | 4 | B |

R0063827



VOL 178

Analyte name=MEAN GRAIN SIZE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=MEAN GRAIN SIZE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4290.11349206 | 536.26418651 | 3.59 | 0.0030 |
| Error | 41 | 6122.38650794 | 149.32650019 | | |
| Corrected Total | 49 | 10412.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.412016 | 47.92126 | 12.21992227 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4290.11349206 | 536.26418651 | 3.59 | 0.0030 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4290.11349206 | 536.26418651 | 3.59 | 0.0030 |

R0063828

Analyte name=MEAN GRAIN SIZE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 149.3265
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 25.204
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.035524

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 42.500 | 4 | B |
| A | 37.500 | 6 | A |
| A | 33.333 | 6 | D |
| A | 26.250 | 4 | H |
| A | 22.600 | 5 | G |
| A | 21.571 | 7 | Ref |
| A | 21.111 | 9 | C |
| A | 19.333 | 6 | E |
| B | 4.333 | 3 | F |

R0063829

VOL 18

Analyte name=MEDIAN GRAIN SIZE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=MEDIAN GRAIN SIZE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4.15330522 | 0.51916315 | 3.83 | 0.0019 |
| Error | 42 | 5.69607799 | 0.13562090 | | |
| Corrected Total | 50 | 9.84938321 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.421682 | 27.75605 | 0.36826744 | 1.32680044 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4.15330522 | 0.51916315 | 3.83 | 0.0019 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4.15330522 | 0.51916315 | 3.83 | 0.0019 |

R0063830

VOL 18

Analyte name=MEDIAN GRAIN SIZE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 0.135621
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 0.7515
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 1.8276 | 4 | B |
| A | 1.6965 | 6 | A |
| B A | 1.5680 | 4 | D |
| B A | 1.3120 | 4 | H |
| B A C | 1.3976 | 7 | Ref |
| B A C | 1.2441 | 9 | C |
| B A C | 1.2209 | 6 | E |
| B C | 0.9404 | 6 | G |
| C | 0.7617 | 3 | F |

R0063831

VOL 18

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Analyte name=MERCURY, EXTRACTABLE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=MERCURY, EXTRACTABLE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5421.35813492 | 677.66976687 | 5.28 | 0.0001 |
| Error | 42 | 5395.64186508 | 128.46766345 | | |
| Corrected Total | 50 | 10817.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.501189 | 43.59368 | 11.33435766 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5421.35813492 | 677.66976687 | 5.28 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5421.35813492 | 677.66976687 | 5.28 | 0.0001 |

R0063832

VOL 18

1456

Analyte name=MERCURY, EXTRACTABLE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 128.4677
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 23.129
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 40.417 | 6 | D |
| A | | | |
| A | 38.917 | 6 | G |
| A | | | |
| B A | 34.125 | 4 | B |
| B A | | | |
| B A | 33.750 | 4 | H |
| B A | | | |
| B A | 27.333 | 6 | E |
| B A | | | |
| B A | 20.944 | 9 | C |
| B A | | | |
| B A | 20.500 | 3 | F |
| B | | | |
| B | 13.857 | 7 | Ref |
| B | | | |
| B | 11.250 | 6 | A |

R0063833



VOL 18

Bechtel Chemistry 15:38 Thursday, August 17, 1995 201

---------- Analyte name=MERCURY, EXTRACTABLE / AVS TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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---------- Analyte name=MERCURY, EXTRACTABLE / AVS TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 6824.41666667 | 853.05208333 | 8.48 | 0.0001 |
| Error | 42 | 4224.08333333 | 100.57341270 | | |
| Corrected Total | 50 | 11048.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.617678 | 38.57165 | 10.02862965 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6824.41666667 | 853.05208333 | 8.48 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6824.41666667 | 853.05208333 | 8.48 | 0.0001 |

R0063834

VOL 18

1458

Analyte name=MERCURY, EXTRACTABLE / AVS TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 100.5734
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 20.464
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 42.333 | 6 | D |
| | A | | | | |
| | A | | 42.250 | 4 | B |
| | A | | | | |
| B | A | | 30.167 | 6 | A |
| B | A | | | | |
| B | A | C | 27.500 | 7 | Ref |
| B | A | C | | | |
| B | A | C | 27.167 | 6 | E |
| B | A | C | | | |
| B | A | C | 27.000 | 9 | C |
| B | | C | | | |
| B | D | C | 20.500 | 3 | F |
| | D | C | | | |
| | D | C | 7.333 | 6 | G |
| | D | | | | |
| | D | | 4.500 | 4 | H |

R0063835

VOL 18

Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 2.35450419 | 0.29431302 | 5.87 | 0.0001 |
| Error | 42 | 2.10678853 | 0.05016163 | | |
| Corrected Total | 50 | 4.46129272 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.527763 | 47.43638 | 0.22396793 | 0.47214379 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 2.35450419 | 0.29431302 | 5.87 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 2.35450419 | 0.29431302 | 5.87 | 0.0001 |

R0063836

Analyte name=MERCURY, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 0.050162
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 0.457
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 1.0367 | 3 | F |
| A | | | |
| B A | 0.6733 | 6 | E |
| B A | | | |
| B A C | 0.6106 | 6 | D |
| B C | | | |
| B C | 0.5450 | 4 | H |
| B C | | | |
| B C | 0.5044 | 9 | C |
| B C | | | |
| B C | 0.4167 | 6 | G |
| B C | | | |
| B C | 0.2966 | 7 | Ref |
| B C | | | |
| B C | 0.2500 | 4 | B |
| C | | | |
| C | 0.1617 | 6 | A |

R0063837



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---------- Analyte name=METHOXYCHLOR TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=METHOXYCHLOR TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 7020.15277778 | 877.51909722 | 14.89 | 0.0001 |
| Error | 41 | 2416.84722222 | 58.94749322 | | |
| Corrected Total | 49 | 9437.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.743897 | 30.10873 | 7.67772709 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7020.15277778 | 877.51909722 | 14.89 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7020.15277778 | 877.51909722 | 14.89 | 0.0001 |

R0063838

VOL 18

Analyte name=METHOXYCHLOR TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 58.94749
Critical Value of Studentized Range= 4.620
Minimum Significant Difference= 16.055
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 46.417 | 6 | G |
| | A | | | | |
| B | A | | 42.167 | 3 | H |
| B | A | | | | |
| B | A | C | 40.000 | 3 | F |
| B | | C | | | |
| B | D | C | 28.333 | 6 | E |
| | D | C | | | |
| E | D | C | 25.500 | 7 | Ref |
| E | D | | | | |
| E | D | F | 21.722 | 9 | C |
| E | D | F | | | |
| E | D | F | 17.250 | 6 | D |
| E | | F | | | |
| E | | F | 11.417 | 6 | A |
| | | F | | | |
| | | F | 8.500 | 4 | B |

R0063839

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---------- Analyte name=METHYLNAPHTHALENES TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43

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---------- Analyte name=METHYLNAPHTHALENES TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 2968.12857143 | 371.01607143 | 4.80 | 0.0005 |
| Error | 34 | 2628.37142857 | 77.30504202 | | |
| Corrected Total | 42 | 5596.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.530354 | 39.96513 | 8.79232859 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 2968.12857143 | 371.01607143 | 4.80 | 0.0005 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 2968.12857143 | 371.01607143 | 4.80 | 0.0005 |

R0063840

VOL 18

1464

Analyte name=METHYLNAPHTHALENES TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 77.30504
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 20.507
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | SONE |
|---|---|---|---|
| A | 37.000 | 6 | G |
| A | | | |
| A | 37.000 | 2 | F |
| A | | | |
| B A | 27.000 | 4 | H |
| B A | | | |
| B A | 24.800 | 5 | E |
| B A | | | |
| B A | 18.857 | 7 | C |
| B A | | | |
| B A | 17.500 | 3 | B |
| B | | | |
| B | 16.000 | 6 | A |
| B | | | |
| B | 14.071 | 7 | Ref |
| B | | | |
| B | 13.000 | 3 | D |

R006384

Analyte name=MONOBUTYLTIN TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=MONOBUTYLTIN TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4486.72619048 | 560.84077381 | 10.32 | 0.0001 |
| Error | 42 | 2283.27380952 | 54.36366213 | | |
| Corrected Total | 50 | 6770.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.662737 | 28.35835 | 7.37317178 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4486.72619048 | 560.84077381 | 10.32 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4486.72619048 | 560.84077381 | 10.32 | 0.0001 |

R0063842

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---------- Analyte name=MONOBUTYLTIN TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 54.36366
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 15.046
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 45.833 | 6 | G |
| | A | | | |
| B | A | 40.750 | 4 | H |
| B | | | | |
| B | C | 29.667 | 3 | F |
| B | C | | | |
| B | C | 25.833 | 6 | E |
| | C | | | |
| | C | 22.000 | 9 | C |
| | C | | | |
| | C | 22.000 | 6 | D |
| | C | | | |
| | C | 19.143 | 7 | Ref |
| | C | | | |
| | C | 18.667 | 6 | A |
| | C | | | |
| | C | 17.000 | 4 | B |

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R0063843

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---------- Analyte name=N-NITROSODI-N-PROPYLAMINE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43

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---------- Analyte name=N-NITROSODI-N-PROPYLAMINE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |
| Error | 34 | 2405.82976190 | 70.75969888 | | |
| Corrected Total | 42 | 5455.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.559008 | 38.23581 | 8.41187844 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |

R0063844

VOL 18

1468

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---------- Analyte name=N-NITROSODI-N-PROPYLAMINE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 70.7597
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 19.619
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 39.000 | 2 | F |
| | A | | | |
| | A | 36.833 | 6 | G |
| | A | | | |
| B | A | 25.800 | 5 | E |
| B | A | | | |
| B | A | 24.750 | 4 | N |
| B | A | | | |
| B | A | 19.571 | 7 | C |
| B | | | | |
| B | | 16.750 | 6 | A |
| B | | | | |
| B | | 14.357 | 7 | Ref |
| B | | | | |
| B | | 13.500 | 3 | B |
| B | | | | |
| B | | 13.500 | 3 | D |

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1469

R0063845

Analyte name=N-NITROSODIMETHYLAMINE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 43



Analyte name=N-NITROSODIMETHYLAMINE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |
| Error | 34 | 2405.82976190 | 70.75969888 | | |
| Corrected Total | 42 | 5455.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.559008 | 38.23581 | 8.41187844 | 22.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3049.67023810 | 381.20877976 | 5.39 | 0.0002 |

R0063846

Analyte name=N-NITROSODIMETHYLAMINE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 34 MSE= 70.7597
Critical Value of Studentized Range= 4.680
Minimum Significant Difference= 19.619
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.025559

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 39.000 | 2 | F |
| A | | | |
| A | 36.833 | 6 | G |
| A | | | |
| B A | 25.800 | 5 | E |
| B A | | | |
| B A | 24.750 | 4 | H |
| B A | | | |
| B A | 19.571 | 7 | C |
| B | | | |
| B | 16.750 | 6 | A |
| B | | | |
| B | 14.357 | 7 | Ref |
| B | | | |
| B | 13.500 | 3 | B |
| B | | | |
| B | 13.500 | 3 | D |

R0063847

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Analyte name=NICKEL, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=NICKEL, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE  Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 5198.09920635 | 649.76240079 | 4.70 | 0.0004 |
| Error | 42 | 5811.90079365 | 138.37859033 | | |
| Corrected Total | 50 | 11010.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.472125 | 45.26401 | 11.76344296 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5198.09920635 | 649.76240079 | 4.70 | 0.0004 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 5198.09920635 | 649.76240079 | 4.70 | 0.0004 |

R0063848

VOL 18

Analyte name=NICKEL, TOTAL TRANS-rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 138.3786
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 24.006
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | SOME |
|---|---|---|---|
| A | 45.667 | 3 | F |
| A | | | |
| B A | 38.625 | 4 | H |
| B A | | | |
| B A C | 37.333 | 6 | G |
| B A C | | | |
| B D A C | 30.611 | 9 | C |
| B D A C | | | |
| B D A C | 25.714 | 7 | Ref |
| B D A C | | | |
| B D A C | 24.167 | 6 | E |
| B D C | | | |
| B D C | 19.000 | 6 | D |
| D C | | | |
| D C | 14.250 | 6 | A |
| D | | | |
| D | 7.125 | 4 | B |

R0063849

VOL 18

Analyte name=PCB-1016 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=PCB-1016 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |
| Error | 41 | 2143.19047619 | 52.27293844 | | |
| Corrected Total | 49 | 6132.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.650519 | 28.35295 | 7.23000266 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

R0063850

Analyte name=PCB-1016 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 52.27294
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.119
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 45.833 | 6 | G |
| A | | | |
| B A | 37.333 | 3 | H |
| B | | | |
| B C | 29.667 | 3 | F |
| B C | | | |
| B C | 25.833 | 6 | E |
| C | | | |
| C | 22.000 | 9 | C |
| C | | | |
| C | 22.000 | 6 | D |
| C | | | |
| C | 19.143 | 7 | Ref |
| C | | | |
| C | 18.667 | 6 | A |
| C | | | |
| C | 17.000 | 4 | B |

R0063851

Analyte name=PCB-1221 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=PCB-1221 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |
| Error | 41 | 2143.19047619 | 52.27293844 | | |
| Corrected Total | 49 | 6132.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.650519 | 28.35295 | 7.23000266 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

R0063852

VOL 18

Analyte name=PCB-1221 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 52.27294
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.119
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.098488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 45.833 | 6 | G |
| A | | | |
| B A | 37.333 | 3 | H |
| B | | | |
| B C | 29.667 | 3 | F |
| B C | | | |
| B C | 25.833 | 6 | E |
| C | | | |
| C | 22.000 | 9 | C |
| C | | | |
| C | 22.000 | 6 | D |
| C | | | |
| C | 19.143 | 7 | Ref |
| C | | | |
| C | 18.667 | 6 | A |
| C | | | |
| C | 17.000 | 4 | B |

R0063853

VOL 18

Bechtel Chemistry 15:38 Thursday, August 17, 1995 231

---------- Analyte name=PCB-1232 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=PCB-1232 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |
| Error | 41 | 2143.19047619 | 52.27293844 | | |
| Corrected Total | 49 | 6132.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.650519 | 28.35295 | 7.23000266 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

R0063854

Bechtel Chemistry 15:30 Thursday, August 17, 1995 233

---------- Analyte name=PCB-1232 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 52.27294
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.119
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 45.833 | 6 | G |
| | A | | | |
| B | A | 37.333 | 3 | H |
| B | | | | |
| B | C | 29.667 | 3 | F |
| B | C | | | |
| B | C | 25.833 | 6 | E |
| | C | | | |
| | C | 22.000 | 9 | C |
| | C | | | |
| | C | 22.000 | 6 | D |
| | C | | | |
| | C | 19.143 | 7 | Ref |
| | C | | | |
| | C | 18.667 | 6 | A |
| | C | | | |
| | C | 17.000 | 4 | B |

R0063855

VOL 18

Bechtel Chemistry 15:38 Thursday, August 17, 1995 234

---------- Analyte name=PCB-1242 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=PCB-1242 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |
| Error | 41 | 2143.19047619 | 52.27293844 | | |
| Corrected Total | 49 | 6132.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.650519 | 28.35295 | 7.23000266 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

R0063856

VOL 18

Analyte name=PCB-1242 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 52.27294
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.119
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898486

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 45.833 | 6 | G |
| A | | | |
| B A | 37.333 | 3 | H |
| B | | | |
| B C | 29.667 | 3 | F |
| B C | | | |
| B C | 25.833 | 6 | E |
| C | | | |
| C | 22.000 | 9 | C |
| C | | | |
| C | 23.000 | 6 | D |
| C | | | |
| C | 19.143 | 7 | Ref |
| C | | | |
| C | 18.667 | 6 | A |
| C | | | |
| C | 17.000 | 4 | B |

R0063857



VOL 108

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---------- Analyte name=PCB-1248 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

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---------- Analyte name=PCB-1248 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |
| Error | 41 | 2143.19047619 | 52.27293844 | | |
| Corrected Total | 49 | 6132.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.650519 | 28.35295 | 7.23000266 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

R0063858

VOL 18

---------- Analyte name=PCB-1248 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 52.27294
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.119
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 45.833 | 6 | G |
| | A | | | |
| B | A | 37.333 | 3 | H |
| B | | | | |
| B | C | 29.667 | 3 | F |
| B | C | | | |
| B | C | 25.833 | 6 | E |
| | C | | | |
| | C | 22.000 | 9 | C |
| | C | | | |
| | C | 22.000 | 6 | D |
| | C | | | |
| | C | 19.143 | 7 | Ref |
| | C | | | |
| | C | 18.667 | 6 | A |
| | C | | | |
| | C | 17.000 | 4 | B |

Analyte name=PCB-1254 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=PCB-1254 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |
| Error | 41 | 2143.19047619 | 52.27293844 | | |
| Corrected Total | 49 | 6132.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.650519 | 28.35295 | 7.23000266 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

R0063860

-7897

VOL 178

Analyte name=PCB-1254 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 52.27294
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.119
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | SOME |
|---|---|---|---|
| A | 45.833 | 6 | G |
| A | | | |
| B A | 37.333 | 3 | M |
| B | | | |
| B C | 29.667 | 3 | P |
| B C | | | |
| B C | 25.833 | 6 | H |
| C | | | |
| C | 22.000 | 9 | C |
| C | | | |
| C | 22.000 | 6 | D |
| C | | | |
| C | 19.143 | 7 | Ref |
| C | | | |
| C | 18.667 | 6 | A |
| C | | | |
| C | 17.000 | 4 | B |

R0063861

5847 VOL 18

Analyte name=PCB-1260 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50



Analyte name=PCB-1260 TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 8413.41170635 | 1051.67646329 | 22.60 | 0.0001 |
| Error | 41 | 1908.08829365 | 46.53873887 | | |
| Corrected Total | 49 | 10321.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.815135 | 26.75267 | 6.82193073 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 8413.41170635 | 1051.67646329 | 22.60 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 8413.41170635 | 1051.67646329 | 22.60 | 0.0001 |

R0063862

VOL 178

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---------- Analyte name=PCB-1260 TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 46.53874
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 14.266
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 46.000 | 3 | F |
| | A | | | |
| | A | 40.667 | 6 | E |
| | A | | | |
| B | A | 37.083 | 6 | D |
| B | A | | | |
| B | A | 32.556 | 9 | C |
| B | | | | |
| B | C | 25.333 | 3 | H |
| B | C | | | |
| B | C | 25.125 | 4 | B |
| | C | | | |
| D | C | 15.667 | 6 | G |
| D | | | | |
| D | | 10.583 | 6 | A |
| D | | | | |
| D | | 6.214 | 7 | Ref |

R0063863

Bechtel Chemistry 15:38 Thursday, August 17, 1995 246

---------- Analyte name=PHENANTHRENE TRANS=log(x+1) DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

Bechtel Chemistry 15:38 Thursday, August 17, 1995 247

---------- Analyte name=PHENANTHRENE TRANS=log(x+1) DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 11.85610311 | 1.48201289 | 20.60 | 0.0001 |
| Error | 41 | 2.94992590 | 0.07194941 | | |
| Corrected Total | 49 | 14.80602901 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.800762 | 16.98254 | 0.26823388 | 1.57946817 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 11.85610311 | 1.48201289 | 20.60 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 11.85610311 | 1.48201289 | 20.60 | 0.0001 |

R0063864

VOL 18

1488

Analyte name=PHENANTHRENE TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 0.071949
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 0.5502
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.090909

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 2.0622 | 4 | H |
| B | 1.9866 | 3 | F |
| B | | | |
| B | 1.9605 | 6 | G |
| B | | | |
| C B | 1.8006 | 6 | E |
| C B | | | |
| C B D | 1.4758 | 4 | B |
| C D | | | |
| C D | 1.3661 | 6 | D |
| D | | | |
| D | 1.2351 | 8 | C |
| D | | | |
| D | 1.1793 | 7 | Ref |
| D | | | |
| D | 1.1272 | 6 | A |

R0063865

5005-- VOL 18

Analyte name=PHENOL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 44



Analyte name=PHENOL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 4009.34434524 | 501.16804315 | 6.13 | 0.0001 |
| Error | 35 | 2862.15565476 | 81.77587585 | | |
| Corrected Total | 43 | 6871.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.583474 | 40.19112 | 9.04300148 | 22.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4009.34434524 | 501.16804315 | 6.13 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 4009.34434524 | 501.16804315 | 6.13 | 0.0001 |

R0063866

Analyte name=PHENOL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 35 MSE= 81.77588
Critical Value of Studentized Range= 4.671
Minimum Significant Difference= 20.968
WARNING: Cell sizes are not equal.
Harmonic Mean of Cell Sizes= 4.057971

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 38.500 | 2 | F |
| A | | | |
| B A | 36.833 | 6 | G |
| B A | | | |
| B A | 31.200 | 5 | E |
| B A | | | |
| B A C | 26.250 | 4 | H |
| B A C | | | |
| B A C | 20.688 | 8 | C |
| B A C | | | |
| B A C | 17.786 | 7 | Ref |
| B C | | | |
| B C | 16.250 | 6 | A |
| C | | | |
| C | 9.000 | 3 | D |
| C | | | |
| C | 5.500 | 3 | B |

R0063867



VOL 708

Bechtel Chemistry 15:38 Thursday, August 17, 1995 252

---------- Analyte name=PYRENE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 49

Bechtel Chemistry 15:38 Thursday, August 17, 1995 253

---------- Analyte name=PYRENE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 7106.35476190 | 888.29434524 | 13.51 | 0.0001 |
| Error | 40 | 2630.64523810 | 65.76613095 | | |
| Corrected Total | 48 | 9737.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.729830 | 32.43853 | 8.10963199 | 25.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7106.35476190 | 888.29434524 | 13.51 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7106.35476190 | 888.29434524 | 13.51 | 0.0001 |

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---------- Analyte name=PYRENE TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 40 MSE= 65.76613
Critical Value of Studentized Range= 4.634
Minimum Significant Difference= 17.135
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.811201

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 47.500 | 4 | H |
| | A | | | |
| | A | 41.500 | 3 | F |
| | A | | | |
| B | A | 35.917 | 6 | G |
| B | A | | | |
| B | A | 35.667 | 6 | E |
| B | | | | |
| B | C | 21.214 | 7 | Ref |
| | C | | | |
| | C | 18.200 | 5 | D |
| | C | | | |
| | C | 15.833 | 9 | C |
| | C | | | |
| | C | 12.833 | 3 | B |
| | C | | | |
| | C | 10.083 | 6 | A |

R0063869

VOL 18

Analyte name=SAND TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=SAND TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 1.85954330 | 0.23244291 | 4.69 | 0.0004 |
| Error | 42 | 2.08246066 | 0.04958240 | | |
| Corrected Total | 50 | 3.94200396 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.471729 | 15.83709 | 0.22267105 | 1.40600964 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 1.85954330 | 0.23244291 | 4.69 | 0.0004 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 1.85954330 | 0.23244291 | 4.69 | 0.0004 |

R0063870

-7697

VOL 18

Analyte name=SAND TRANS=log(x+1) DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 0.049582
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 0.4544
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | | | Mean | N | ZONE |
|---|---|---|---|---|---|
| | A | | 1.7433 | 4 | B |
| | A | | | | |
| B | A | | 1.6341 | 6 | A |
| B | A | | | | |
| B | A | | 1.6061 | 6 | D |
| B | A | | | | |
| B | A | C | 1.3919 | 9 | C |
| B | A | C | | | |
| B | A | C | 1.3656 | 6 | E |
| B | A | C | | | |
| B | A | C | 1.3466 | 7 | Ref |
| B | | C | | | |
| B | | C | 1.2679 | 4 | H |
| | | C | | | |
| | | C | 1.1196 | 6 | G |
| | | C | | | |
| | | C | 1.1188 | 3 | F |

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Analyte name=SELENIUM, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=SELENIUM, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 6105.56646825 | 763.19580853 | 7.52 | 0.0001 |
| Error | 42 | 4260.43353175 | 101.43889361 | | |
| Corrected Total | 50 | 10366.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.588999 | 38.73726 | 10.07168772 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6105.56646825 | 763.19580853 | 7.52 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 6105.56646825 | 763.19580853 | 7.52 | 0.0001 |

R0063872

Analyte Name=SELENIUM, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 101.4389
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 20.552
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | SOME |
|---|---|---|---|
| A | 40.000 | 6 | G |
| A | | | |
| A | 39.667 | 3 | F |
| A | | | |
| B A | 37.250 | 4 | H |
| B A | | | |
| B A | 34.143 | 7 | Ref |
| B A | | | |
| B A C | 29.667 | 6 | E |
| B A C | | | |
| B D A C | 22.278 | 9 | C |
| B D C | | | |
| B D C | 17.583 | 6 | D |
| D C | | | |
| D C | 11.250 | 6 | A |
| D | | | |
| D | 6.875 | 4 | B |

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---------- Analyte name=SILT TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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---------- Analyte name=SILT TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 2599.84920635 | 324.98115079 | 1.62 | 0.1495 |
| Error | 42 | 8450.15079365 | 201.19406652 | | |
| Corrected Total | 50 | 11050.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.235280 | 54.55496 | 14.18428943 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 2599.84920635 | 324.98115079 | 1.62 | 0.1495 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 2599.84920635 | 324.98115079 | 1.62 | 0.1495 |

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Analyte name=SILT TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 201.1941
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 28.944
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 35.111 | 9 | C |
| A | | | |
| A | 32.714 | 7 | Ref |
| A | | | |
| A | 30.667 | 6 | E |
| A | | | |
| A | 27.000 | 3 | F |
| A | | | |
| A | 24.333 | 6 | A |
| A | | | |
| A | 23.833 | 6 | D |
| A | | | |
| A | 17.750 | 4 | H |
| A | | | |
| A | 16.167 | 6 | G |
| A | | | |
| A | 14.750 | 4 | B |

R0063875

VOL 18

Analyte name=SILVER, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



Analyte name=SILVER, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 56.96478369 | 7.12059796 | 1.22 | 0.3122 |
| Error | 42 | 245.49116402 | 5.84502771 | | |
| Corrected Total | 50 | 302.45594771 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.188341 | 91.13090 | 2.41764921 | 2.65294118 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 56.96478369 | 7.12059796 | 1.22 | 0.3122 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 56.96478369 | 7.12059796 | 1.22 | 0.3122 |

R0063876

Analyte name=SILVER, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 5.845028
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 4.9334
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 4.689 | 9 | C |
| A | 3.400 | 3 | F |
| A | 2.875 | 4 | H |
| A | 2.450 | 6 | G |
| A | 2.367 | 6 | E |
| A | 2.311 | 6 | D |
| A | 1.819 | 7 | Ref |
| A | 1.700 | 6 | A |
| A | 1.425 | 4 | B |

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Analyte name=SULFIDE, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=SULFIDE, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 130172128.89484900 | 16271516.11185610 | 151.46 | 0.0001 |
| Error | 42 | 4512229.66894181 | 107434.03971671 | | |
| Corrected Total | 50 | 134684358.56379000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.966498 | 36.99058 | 327.77132232 | 886.09411765 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 130172128.89484900 | 16271516.11185610 | 151.46 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 130172128.89484900 | 16271516.11185610 | 151.46 | 0.0001 |

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VOL 18

Analyte name=SULFIDE, TOTAL TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 107434
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 668.85
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 4166.7 | 6 | O |
| A | | | |
| A | 4050.0 | 4 | N |
| B | 156.7 | 3 | P |
| B | | | |
| B | 142.0 | 6 | E |
| B | | | |
| B | 122.4 | 7 | Ref |
| B | | | |
| B | 91.2 | 9 | C |
| B | | | |
| B | 70.8 | 6 | D |
| B | | | |
| B | 55.8 | 6 | A |
| B | | | |
| B | 45.8 | 4 | B |

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---------- Analyte name=TOTAL ORGANIC CARBON TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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---------- Analyte name=TOTAL ORGANIC CARBON TRANS=notrans DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 10.80841501 | 1.35105188 | 10.57 | 0.0001 |
| Error | 42 | 5.36869567 | 0.12782609 | | |
| Corrected Total | 50 | 16.17711068 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.668130 | 31.66197 | 0.35752774 | 1.12920261 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 10.80841501 | 1.35105188 | 10.57 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 10.80841501 | 1.35105188 | 10.57 | 0.0001 |

R0063880

VOL 18

Analyte name=TOTAL ORGANIC CARBON TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 0.127826
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 0.7296
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 1.9095 | 4 | H |
| A A | 1.8148 | 6 | G |
| B A A | 1.6860 | 3 | F |
| B B A | 1.3048 | 7 | Ref |
| B B C C | 0.9801 | 9 | C |
| D C C C | 0.9168 | 6 | E |
| D D C C C | 0.8641 | 6 | D |
| D D D | 0.5380 | 6 | A |
| D D D | 0.5340 | 4 | B |

R0063881

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Analyte name=TOXAPHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 50

Bechtel Chemistry

15:38 Thursday, August 17, 1995 274

Analyte name=TOXAPHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |
| Error | 41 | 2143.19047619 | 52.27293844 | | |
| Corrected Total | 49 | 6132.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.650519 | 28.35295 | 7.23000266 | 25.50000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 3989.30952381 | 498.66369048 | 9.54 | 0.0001 |

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Analyte name=TOXAPHENE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 41 MSE= 52.27294
Critical Value of Studentized Range= 4.628
Minimum Significant Difference= 15.119
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.898488

Means with the same letter are not significantly different.

| Tukey Grouping | | Mean | N | ZONE |
|---|---|---|---|---|
| | A | 45.833 | 6 | O |
| | A | | | |
| B | A | 37.333 | 3 | H |
| B | | | | |
| B | C | 29.667 | 3 | F |
| B | C | | | |
| B | C | 25.833 | 6 | E |
| | C | | | |
| | C | 22.000 | 9 | C |
| | C | | | |
| | C | 22.000 | 6 | D |
| | C | | | |
| | C | 19.143 | 7 | Ref |
| | C | | | |
| | C | 18.667 | 6 | A |
| | C | | | |
| | C | 17.000 | 4 | B |

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Bechtel Chemistry

Analyte name=TRIBUTYLTIN TRANS=rank DUMMY=' ' DUMMY=' ' 15:38 Thursday, August 17, 1995 276

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=TRIBUTYLTIN TRANS=rank DUMMY=' ' DUMMY=' ' 15:38 Thursday, August 17, 1995 277

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 1602.30753968 | 200.28844246 | 0.92 | 0.5069 |
| Error | 42 | 9105.69246032 | 216.80220144 | | |
| Corrected Total | 50 | 10708.00000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.149636 | 56.63156 | 14.72420461 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 1602.30753968 | 200.28844246 | 0.92 | 0.5069 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 1602.30753968 | 200.28844246 | 0.92 | 0.5069 |

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---------- Analyte name=TRIBUTYLTIN TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 216.8022
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 30.046
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 39.500 | 6 | D |
| A | | | |
| A | 27.500 | 4 | B |
| A | | | |
| A | 27.222 | 9 | C |
| A | | | |
| A | 26.500 | 6 | E |
| A | | | |
| A | 25.000 | 4 | H |
| A | | | |
| A | 23.286 | 7 | Ref |
| A | | | |
| A | 22.167 | 6 | G |
| A | | | |
| A | 20.417 | 6 | A |
| A | | | |
| A | 18.833 | 3 | F |

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Bechtel Chemistry

Analyte name=ZINC, EXTRACTABLE TRANS=rank DUMMY=' ' DUMMY=' ' 15:30 Thursday, August 17, 1995 279

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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Analyte name=ZINC, EXTRACTABLE TRANS=rank DUMMY=' ' DUMMY=' ' 15:30 Thursday, August 17, 1995 280

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 7816.55059524 | 977.06882440 | 12.78 | 0.0001 |
| Error | 42 | 3209.94940476 | 76.42736678 | | |
| Corrected Total | 50 | 11026.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.708888 | 33.62413 | 8.74227469 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7816.55059524 | 977.06882440 | 12.78 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7816.55059524 | 977.06882440 | 12.78 | 0.0001 |

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Analyte name=ZINC, EXTRACTABLE TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 76.42737
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 17.839
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 48.500 | 4 | H |
| A | | | |
| A | 43.333 | 3 | F |
| A | | | |
| B A | 39.750 | 6 | G |
| B A | | | |
| B A | 31.417 | 6 | E |
| B | | | |
| B C | 23.714 | 7 | Ref |
| B C | | | |
| B C | 22.500 | 9 | C |
| B C | | | |
| B C | 22.417 | 6 | D |
| C | | | |
| C | 10.375 | 4 | B |
| C | | | |
| C | 6.250 | 6 | A |

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General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51



General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 334.10506176 | 41.76313272 | 1.55 | 0.1687 |
| Error | 42 | 1129.98599953 | 26.90442856 | | |
| Corrected Total | 50 | 1464.09106129 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.228200 | 213.3967 | 5.18694790 | 2.43066017 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 334.10506176 | 41.76313272 | 1.55 | 0.1687 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 334.10506176 | 41.76313272 | 1.55 | 0.1687 |

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Analyte name=ZINC, EXTRACTABLE / AVS TRANS=notrans DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 26.90443
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 10.984
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 7.440 | 6 | D |
| A | | | |
| A | 5.993 | 7 | Ref |
| A | | | |
| A | 3.315 | 3 | F |
| A | | | |
| A | 1.541 | 4 | B |
| A | | | |
| A | 1.196 | 9 | C |
| A | | | |
| A | 1.094 | 6 | A |
| A | | | |
| A | 1.020 | 6 | E |
| A | | | |
| A | 0.098 | 4 | H |
| A | | | |
| A | 0.072 | 6 | G |

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---------- Analyte name=ZINC, TOTAL TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure
Class Level Information

| Class | Levels | Values |
|---|---|---|
| ZONE | 9 | A B C D E F G H Ref |

Number of observations in by group = 51

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---------- Analyte name=ZINC, TOTAL TRANS=rank DUMMY=' ' DUMMY=' ' ----------

General Linear Models Procedure

Dependent Variable: VALUE Value to use for statistical analyses

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 8 | 7836.97619048 | 979.62202381 | 12.97 | 0.0001 |
| Error | 42 | 3172.52380952 | 75.53628118 | | |
| Corrected Total | 50 | 11009.50000000 | | | |

| R-Square | C.V. | Root MSE | VALUE Mean |
|---|---|---|---|
| 0.711838 | 33.42754 | 8.69116109 | 26.00000000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7836.97619048 | 979.62202381 | 12.97 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ZONE | 8 | 7836.97619048 | 979.62202381 | 12.97 | 0.0001 |

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Analyte name=ZINC, TOTAL TRANS=rank DUMMY=' ' DUMMY=' '

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 42 MSE= 75.53628
Critical Value of Studentized Range= 4.622
Minimum Significant Difference= 17.735
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 5.131222

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | ZONE |
|---|---|---|---|
| A | 47.750 | 4 | N |
| A | | | |
| A | 45.667 | 3 | P |
| A | | | |
| B A | 38.333 | 6 | O |
| B A | | | |
| B A | 32.417 | 6 | E |
| B | | | |
| B C | 24.667 | 9 | C |
| B C | | | |
| B C | 21.083 | 6 | D |
| B C | | | |
| B C | 20.857 | 7 | Ref |
| C | | | |
| C | 8.500 | 4 | B |
| C | | | |
| C | 7.500 | 6 | A |

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Significant ANOVA results

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| OBS | Analyte name | TRANS | DUMMY | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,2,4-TRICHLOROBENZENE | rank | | VALUE | ZONE | SS1 | 8 | 3049.67 | 5.3874 | 0.000205 |
| 2 | 1,4-DICHLOROBENZENE | rank | | VALUE | ZONE | SS1 | 8 | 3049.67 | 5.3874 | 0.000205 |
| 3 | 2,4-DINITROPHENOL | rank | | VALUE | ZONE | SS1 | 8 | 3223.87 | 5.5211 | 0.000153 |
| 4 | 2-CHLOROPHENOL | rank | | VALUE | ZONE | SS1 | 8 | 4246.61 | 7.2450 | 0.000012 |
| 5 | 3- AND 4-METHYLPHENOL | rank | | VALUE | ZONE | SS1 | 8 | 4213.69 | 6.8830 | 0.000020 |
| 6 | 4,4'-DDD | notrans | | VALUE | ZONE | SS1 | 8 | 1704.37 | 3.4071 | 0.004334 |
| 7 | 4,4'-DDE | notrans | | VALUE | ZONE | SS1 | 8 | 55334.07 | 8.0558 | 0.000002 |
| 8 | 4,4'-DDT | rank | | VALUE | ZONE | SS1 | 8 | 5504.91 | 7.1586 | 0.000007 |
| 9 | ACENAPHTHENE | rank | | VALUE | ZONE | SS1 | 8 | 3007.36 | 5.2133 | 0.000269 |
| 10 | ACENAPHTHYLENE | log(x+1) | | VALUE | ZONE | SS1 | 8 | 4.65 | 8.5596 | 0.000001 |
| 11 | ACID VOLATILE SULFIDE | rank | | VALUE | ZONE | SS1 | 8 | 6898.06 | 8.7487 | 0.000001 |
| 12 | ALDRIN | rank | | VALUE | ZONE | SS1 | 8 | 5386.42 | 6.9507 | 0.000009 |
| 13 | ALPHA-BHC (HCH) | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 14 | ANTHRACENE | log(x+1) | | VALUE | ZONE | SS1 | 8 | 11.95 | 19.9992 | 0.000000 |
| 15 | ARSENIC, TOTAL | notrans | | VALUE | ZONE | SS1 | 8 | 346.46 | 6.4817 | 0.000018 |
| 16 | BENZIDINE | rank | | VALUE | ZONE | SS1 | 5 | 224.99 | 4.1243 | 0.023490 |
| 17 | BENZO(A)ANTHRACENE | rank | | VALUE | ZONE | SS1 | 8 | 7810.05 | 17.7034 | 0.000000 |
| 18 | BENZO(A)PYRENE | log(x+1) | | VALUE | ZONE | SS1 | 8 | 13.63 | 20.5694 | 0.000000 |
| 19 | BENZO(B)FLUORANTHENE | notrans | | VALUE | ZONE | SS1 | 8 | 6790304.05 | 59.6559 | 0.000000 |
| 20 | BENZO(GHI)PERYLENE | log(x+1) | | VALUE | ZONE | SS1 | 8 | 10.39 | 17.0115 | 0.000000 |
| 21 | BENZO(K)FLUORANTHENE | rank | | VALUE | ZONE | SS1 | 8 | 8820.73 | 20.8997 | 0.000000 |
| 22 | BERYLLIUM, TOTAL | rank | | VALUE | ZONE | SS1 | 8 | 4896.68 | 4.1925 | 0.000934 |
| 23 | BETA-BHC (HCH) | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 24 | BIS(2-ETHYLHEXYL)PHTHALATE | rank | | VALUE | ZONE | SS1 | 8 | 3020.90 | 4.4110 | 0.000983 |
| 25 | CADMIUM, EXTRACTABLE | notrans | | VALUE | ZONE | SS1 | 8 | 8.22 | 5.9315 | 0.000043 |
| 26 | CADMIUM, EXTRACTABLE / AVS | rank | | VALUE | ZONE | SS1 | 8 | 6715.16 | 8.1347 | 0.000001 |
| 27 | CADMIUM, TOTAL | rank | | VALUE | ZONE | SS1 | 8 | 7649.59 | 11.0243 | 0.000000 |
| 28 | CHLORDANE | rank | | VALUE | ZONE | SS1 | 8 | 7020.15 | 14.8865 | 0.000000 |
| 29 | CHROMIUM, TOTAL | notrans | | VALUE | ZONE | SS1 | 8 | 30347.90 | 2.5956 | 0.021114 |
| 30 | CHRYSENE | rank | | VALUE | ZONE | SS1 | 8 | 8050.15 | 17.9312 | 0.000000 |
| 31 | CLAY | notrans | | VALUE | ZONE | SS1 | 8 | 4266.10 | 9.2757 | 0.000000 |
| 32 | COPPER, EXTRACTABLE | notrans | | VALUE | ZONE | SS1 | 8 | 164082.09 | 12.5577 | 0.000000 |
| 33 | COPPER, TOTAL | notrans | | VALUE | ZONE | SS1 | 8 | 268829.06 | 9.4442 | 0.000000 |
| 34 | DELTA-BHC (HCH) | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 35 | DI-N-OCTYLPHTHALATE | rank | | VALUE | ZONE | SS1 | 8 | 4969.25 | 5.2783 | 0.000152 |
| 36 | DIBENZO(A,H)ANTHRACENE | rank | | VALUE | ZONE | SS1 | 8 | 3419.24 | 5.7455 | 0.000119 |
| 37 | DIBUTYLTIN | log(x+1) | | VALUE | ZONE | SS1 | 8 | 0.10 | 2.2313 | 0.044024 |
| 38 | DIELDRIN | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 39 | ENDOSULFAN I | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 40 | ENDOSULFAN II | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 41 | ENDOSULFAN SULFATE | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 42 | ENDRIN | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 43 | ENDRIN ALDEHYDE | rank | | VALUE | ZONE | SS1 | 8 | 3881.50 | 2.8427 | 0.012850 |
| 44 | FINES | rank | | VALUE | ZONE | SS1 | 8 | 6700.66 | 11.1202 | 0.000000 |
| 45 | FLUORANTHENE | rank | | VALUE | ZONE | SS1 | 8 | 3676.09 | 8.1270 | 0.000005 |
| 46 | FLUORENE | rank | | VALUE | ZONE | SS1 | 8 | 6198.86 | 10.1300 | 0.000000 |
| 47 | GRAVEL | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 48 | HEPTACHLOR | rank | | VALUE | ZONE | SS1 | 8 | 5799.20 | 8.4164 | 0.000001 |
| 49 | HEPTACHLOR EPOXIDE | log(x+1) | | VALUE | ZONE | SS1 | 8 | 11.12 | 16.4869 | 0.000000 |
| 50 | INDENO(1,2,3-CD)PYRENE | notrans | | VALUE | ZONE | SS1 | 8 | 26591.55 | 7.7490 | 0.000003 |
| 51 | LEAD, EXTRACTABLE | notrans | | VALUE | ZONE | SS1 | 8 | 25722.46 | 10.6396 | 0.000000 |
| 52 | LEAD, TOTAL | rank | | VALUE | ZONE | SS1 | 8 | 5119.44 | 5.9205 | 0.000048 |
| 53 | LINDANE (GAMMA-BHC) | | | | | | | | | |

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8 7 1 0 4

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| OBS | Analyte name | TRANS | DUMMY | _NAME_ | _SOURCE_ | _TYPE_ | Degrees of Freedom | Sum of Squares | F Value | Prob > F |
|---|---|---|---|---|---|---|---|---|---|---|
| 54 | MEAN GRAIN SIZE | rank | | VALUE | ZONE | SS1 | 8 | 4290.11 | 3.591 | .0030391 |
| 55 | MEDIAN GRAIN SIZE | log(x+1) | | VALUE | ZONE | SS1 | 8 | 4.15 | 3.828 | .0018607 |
| 56 | MERCURY, EXTRACTABLE | rank | | VALUE | ZONE | SS1 | 8 | 5421.36 | 5.275 | .0001327 |
| 57 | MERCURY, EXTRACTABLE / AVS | rank | | VALUE | ZONE | SS1 | 8 | 6024.42 | 8.482 | .0000009 |
| 58 | MERCURY, TOTAL | notrans | | VALUE | ZONE | SS1 | 8 | 2.35 | 5.867 | .0000484 |
| 59 | METHOXYCHLOR | rank | | VALUE | ZONE | SS1 | 8 | 7020.15 | 14.886 | .0000000 |
| 60 | METHYLNAPHTHALENES | rank | | VALUE | ZONE | SS1 | 8 | 2968.13 | 4.799 | .0005199 |
| 61 | MONOBUTYLTIN | rank | | VALUE | ZONE | SS1 | 8 | 4486.73 | 10.316 | .0000001 |
| 62 | N-NITROSODI-N-PROPYLAMINE | rank | | VALUE | ZONE | SS1 | 8 | 3049.67 | 5.387 | .0002053 |
| 63 | N-NITROSODIMETHYLAMINE | rank | | VALUE | ZONE | SS1 | 8 | 3049.67 | 5.387 | .0002053 |
| 64 | NICKEL, TOTAL | rank | | VALUE | ZONE | SS1 | 8 | 5198.10 | 4.696 | .0003707 |
| 65 | PCB-1016 | rank | | VALUE | ZONE | SS1 | 8 | 3989.31 | 9.540 | .0000002 |
| 66 | PCB-1221 | rank | | VALUE | ZONE | SS1 | 8 | 3989.31 | 9.540 | .0000002 |
| 67 | PCB-1232 | rank | | VALUE | ZONE | SS1 | 8 | 3989.31 | 9.540 | .0000002 |
| 68 | PCB-1242 | rank | | VALUE | ZONE | SS1 | 8 | 3989.31 | 9.540 | .0000002 |
| 69 | PCB-1248 | rank | | VALUE | ZONE | SS1 | 8 | 3989.31 | 9.540 | .0000002 |
| 70 | PCB-1254 | rank | | VALUE | ZONE | SS1 | 8 | 3989.31 | 9.540 | .0000002 |
| 71 | PCB-1260 | rank | | VALUE | ZONE | SS1 | 8 | 8413.41 | 22.598 | .0000000 |
| 72 | PHENANTHRENE | log(x+1) | | VALUE | ZONE | SS1 | 8 | 11.86 | 20.598 | .0000000 |
| 73 | PHENOL | rank | | VALUE | ZONE | SS1 | 8 | 4009.34 | 6.129 | .0000608 |
| 74 | PYRENE | rank | | VALUE | ZONE | SS1 | 8 | 7106.38 | 13.807 | .0000000 |
| 75 | SAND | log(x+1) | | VALUE | ZONE | SS1 | 8 | 1.86 | 4.688 | .0003757 |
| 76 | SELENIUM, TOTAL | rank | | VALUE | ZONE | SS1 | 8 | 6105.57 | 7.524 | .0000035 |
| 77 | SULFIDE, TOTAL | notrans | | VALUE | ZONE | SS1 | 8 | 130172128.89 | 151.456 | .0000000 |
| 78 | TOTAL ORGANIC CARBON | notrans | | VALUE | ZONE | SS1 | 8 | 10.81 | 10.569 | .0000001 |
| 79 | TOXAPHENE | rank | | VALUE | ZONE | SS1 | 8 | 3989.31 | 9.540 | .0000002 |
| 80 | ZINC, EXTRACTABLE | rank | | VALUE | ZONE | SS1 | 8 | 7816.55 | 12.784 | .0000000 |
| 81 | ZINC, TOTAL | rank | | VALUE | ZONE | SS1 | 8 | 7836.90 | 12.969 | .0000000 |

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VOL 18

## Section 5. Correlation Analysis

Patterns of association between physical, chemical, toxicity, and benthic infauna parameters were analyzed by correlation analysis. The following sections present the results of the correlation analysis in summary and detail format.

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## Section 5-1. Summary of Correlation Analysis for Biological Parameters

Patterns of association between physical, chemical, toxicity, and benthic infauna parameters were analyzed by correlation analysis. This section presents a summary of the results of the correlation analysis of toxicity and benthic infauna parameters verse the chemical parameters, where the $r^2$ value exceeds 0.4. Chemical data were evaluated as raw data and as carbon normalized data (analyte concentration divided by total organic carbon concentration).

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NORMAL=carbon

| OBS | VAR1 | VAR2 | VALUE |
|---|---|---|---|
| 1 | ABUNDANC | AVS | 0.46673 |
| 2 | ABUNDANC | SULFIDE | 0.54536 |
| 3 | A_REBURI | ABUNDANC | -0.62568 |
| 4 | A_REBURI | AVS | -0.56100 |
| 5 | A_REBURI | SULFIDE | -0.62605 |
| 6 | A_SURVIV | ABUNDANC | -0.65057 |
| 7 | A_SURVIV | AVS | -0.62364 |
| 8 | A_SURVIV | A_REBURI | 0.92486 |
| 9 | A_SURVIV | PHENANTH | -0.40216 |
| 10 | A_SURVIV | SILT | 0.44018 |
| 11 | A_SURVIV | SULFIDE | -0.68336 |
| 12 | BIOMASS | ABUNDANC | 0.50391 |
| 13 | BIOMASS | AVS | 0.59601 |
| 14 | BIOMASS | A_REBURI | -0.55283 |
| 15 | BIOMASS | A_SURVIV | -0.60843 |
| 16 | BIOMASS | SULFIDE | 0.65987 |
| 17 | E_NORM_D | AVS | -0.40421 |
| 18 | E_NORM_D | MERC_ENT | -0.43889 |
| 19 | E_NORM_D | SULFIDE | -0.42423 |
| 20 | E_SURVIV | E_NORM_D | 0.65961 |
| 21 | MARGALEF | ABUNDANC | 0.49283 |
| 22 | MARGALEF | AVS | 0.47484 |
| 23 | MARGALEF | A_REBURI | -0.48503 |
| 24 | MARGALEF | A_SURVIV | -0.49297 |
| 25 | MARGALEF | BIOMASS | 0.73059 |
| 26 | MARGALEF | E_NORM_D | -0.47913 |
| 27 | MARGALEF | E_SURVIV | -0.50012 |
| 28 | MARGALEF | SULFIDE | 0.54801 |
| 29 | NSPECIES | ABUNDANC | 0.69895 |
| 30 | NSPECIES | AVS | 0.59984 |
| 31 | NSPECIES | A_REBURI | -0.60457 |
| 32 | NSPECIES | A_SURVIV | -0.62398 |
| 33 | NSPECIES | BIOMASS | 0.79831 |
| 34 | NSPECIES | E_NORM_D | -0.52246 |
| 35 | NSPECIES | E_SURVIV | -0.47515 |
| 36 | NSPECIES | FINES | -0.41762 |
| 37 | NSPECIES | MARGALEF | 0.94785 |
| 38 | NSPECIES | SILT | -0.43462 |
| 39 | NSPECIES | SULFIDE | 0.67330 |
| 40 | P_GROWTH | ABUNDANC | 0.52474 |
| 41 | P_GROWTH | ACNPHTHY | 0.47050 |
| 42 | P_GROWTH | ANTHRACE | 0.53790 |
| 43 | P_GROWTH | AVS | 0.70523 |
| 44 | P_GROWTH | A_REBURI | -0.51219 |
| 45 | P_GROWTH | A_SURVIV | -0.53357 |
| 46 | P_GROWTH | BZ_A_ANT | 0.52990 |
| 47 | P_GROWTH | BZ_B_FLU | 0.41093 |
| 48 | P_GROWTH | CHRYSENE | 0.50081 |
| 49 | P_GROWTH | DDE | -0.42826 |
| 50 | P_GROWTH | E_NORM_D | -0.54497 |

/usr/cntl/bechtel/analysis/corr2.sas

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NORMAL=carbon
(continued)

| OBS | VAR1 | VAR2 | VALUE |
|---|---|---|---|
| 51 | P_GROWTH | FLUORANT | 0.56800 |
| 52 | P_GROWTH | NSPECIES | 0.69715 |
| 53 | P_GROWTH | PHENANTH | 0.54784 |
| 54 | P_GROWTH | PYRENE | 0.61666 |
| 55 | P_GROWTH | SULFIDE | 0.70067 |
| 56 | P_SURVIV | PHENANTH | -0.41751 |
| 57 | SHANNON | MARGALEF | 0.58702 |



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NORMAL=none

| OBS | VAR1 | VAR2 | VALUE |
|---|---|---|---|
| 58 | ABUNDANC | AVS | 0.47366 |
| 59 | ABUNDANC | GRAVEL | 0.50716 |
| 60 | ABUNDANC | SULFIDE | 0.55069 |
| 61 | A_REBURI | ABUNDANC | -0.62568 |
| 62 | A_REBURI | ACNPHTHY | -0.48725 |
| 63 | A_REBURI | AVS | -0.54849 |
| 64 | A_REBURI | CHROMIUM | -0.40409 |
| 65 | A_REBURI | DIBENZO_ | -0.49757 |
| 66 | A_REBURI | DINOCTYL | -0.41209 |
| 67 | A_REBURI | GRAVEL | -0.68894 |
| 68 | A_REBURI | MERC_EXT | -0.54217 |
| 69 | A_REBURI | SULFIDE | -0.61301 |
| 70 | A_REBURI | TOC | -0.41809 |
| 71 | A_SURVIV | ABUNDANC | -0.65057 |
| 72 | A_SURVIV | ACNPHTHY | -0.55873 |
| 73 | A_SURVIV | AVS | -0.62388 |
| 74 | A_SURVIV | A_REBURI | 0.92486 |
| 75 | A_SURVIV | CHROMIUM | -0.46634 |
| 76 | A_SURVIV | CLAY | -0.41046 |
| 77 | A_SURVIV | DIBENZO_ | -0.50933 |
| 78 | A_SURVIV | DINOCTYL | -0.47506 |
| 79 | A_SURVIV | GRAVEL | -0.65193 |
| 80 | A_SURVIV | MERC_EXT | -0.46623 |
| 81 | A_SURVIV | PHENANTH | -0.44552 |
| 82 | A_SURVIV | SULFIDE | -0.68398 |
| 83 | A_SURVIV | TOC | -0.50027 |
| 84 | BIOMASS | ABUNDANC | 0.50391 |
| 85 | BIOMASS | AVS | 0.52312 |
| 86 | BIOMASS | A_REBURI | -0.55203 |
| 87 | BIOMASS | A_SURVIV | -0.60843 |
| 88 | BIOMASS | DINOCTYL | 0.41143 |
| 89 | BIOMASS | GRAVEL | 0.46826 |
| 90 | BIOMASS | SULFIDE | 0.58723 |
| 91 | E_NORM_D | AVS | -0.41176 |
| 92 | E_NORM_D | FINES | 0.50918 |
| 93 | E_NORM_D | MERC_EXT | -0.43103 |
| 94 | E_NORM_D | SILT | 0.41001 |
| 95 | E_NORM_D | SULFIDE | -0.42930 |
| 96 | E_SURVIV | E_NORM_D | 0.65961 |
| 97 | E_SURVIV | SILT | 0.40992 |
| 98 | MARGALEF | ABUNDANC | 0.49283 |
| 99 | MARGALEF | AVS | 0.43076 |
| 100 | MARGALEF | A_REBURI | -0.48503 |
| 101 | MARGALEF | A_SURVIV | -0.49297 |
| 102 | MARGALEF | BIOMASS | 0.73059 |
| 103 | MARGALEF | E_NORM_D | -0.47913 |
| 104 | MARGALEF | E_SURVIV | -0.90012 |
| 105 | MARGALEF | FINES | -0.40914 |
| 106 | MARGALEF | GRAVEL | 0.41844 |
| 107 | MARGALEF | SILT | -0.40072 |

/usr/cnt1/bechtel/analysis/corr2.sas

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NORMAL=none
(continued)

| OBS | VAR1 | VAR2 | VALUE |
|---|---|---|---|
| 108 | MARGALEF | SULFIDE | 0.49731 |
| 109 | NSPECIES | ABUNDANC | 0.69895 |
| 110 | NSPECIES | AVS | 0.56784 |
| 111 | NSPECIES | A_REBURI | -0.60457 |
| 112 | NSPECIES | A_SURVIV | -0.62398 |
| 113 | NSPECIES | BIOMASS | 0.79831 |
| 114 | NSPECIES | E_NORM_D | -0.52246 |
| 115 | NSPECIES | E_SURVIV | -0.47515 |
| 116 | NSPECIES | GRAVEL | 0.69186 |
| 117 | NSPECIES | MARGALEF | 0.96785 |
| 118 | NSPECIES | SILT | -0.53089 |
| 119 | NSPECIES | SULFIDE | 0.63528 |
| 120 | P_GROWTH | ABUNDANC | 0.52474 |
| 121 | P_GROWTH | ACNPHTHY | 0.93787 |
| 122 | P_GROWTH | ANTHRACE | 0.87420 |
| 123 | P_GROWTH | AVS | 0.76046 |
| 124 | P_GROWTH | A_REBURI | -0.91219 |
| 125 | P_GROWTH | A_SURVIV | -0.53357 |
| 126 | P_GROWTH | BZ_A_ANT | 0.56018 |
| 127 | P_GROWTH | BZ_A_PYR | 0.54423 |
| 128 | P_GROWTH | BZ_B_FLU | 0.54594 |
| 129 | P_GROWTH | BZ_K_FLU | 0.51919 |
| 130 | P_GROWTH | CHRYSENE | 0.57990 |
| 131 | P_GROWTH | DIBENZO_ | 0.48790 |
| 132 | P_GROWTH | DINOCTYL | 0.51154 |
| 133 | P_GROWTH | E_NORM_D | -0.54497 |
| 134 | P_GROWTH | FLUORANT | 0.58177 |
| 135 | P_GROWTH | GRAVEL | 0.50351 |
| 136 | P_GROWTH | NSPECIES | 0.49715 |
| 137 | P_GROWTH | PHENANTH | 0.53476 |
| 138 | P_GROWTH | PYRENE | 0.64755 |
| 139 | P_GROWTH | SULFIDE | 0.73650 |
| 140 | P_GROWTH | TOC | 0.40438 |
| 141 | P_SURVIV | ACNPHTHY | -0.47913 |
| 142 | P_SURVIV | AVS | -0.41571 |
| 143 | P_SURVIV | BZ_A_PYR | -0.46474 |
| 144 | P_SURVIV | BZ_B_FLU | -0.43903 |
| 145 | P_SURVIV | BZ_K_FLU | -0.43469 |
| 146 | P_SURVIV | CHROMIUM | -0.44118 |
| 147 | P_SURVIV | CHRYSENE | -0.42400 |
| 148 | P_SURVIV | DIBENZO_ | -0.46810 |
| 149 | P_SURVIV | INDENO_1 | -0.40058 |
| 150 | P_SURVIV | PHENANTH | -0.44706 |
| 151 | P_SURVIV | PYRENE | -0.44027 |
| 152 | SHANNON | MARGALEF | 0.98702 |



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## Section 5-2. Detail Results of Correlation Analysis for All Parameters

Patterns of association between physical, chemical, toxicity, and benthic infauna parameters were analyzed by correlation analysis. This section presents detailed results of the correlation analysis of all physical, chemical, toxicity, and benthic infauna parameters. Chemical data were evaluated as raw data and as carbon normalized data (analyte concentration divided by total organic carbon concentration). A list of parameter name abbreviations used in the correlation table is presented at the front of this section.

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| OBS | Abbreviation | Parameter | # detectable values |
|---|---|---|---|
| 1 | ABUNDANC | TOTAL COUNT | |
| 2 | ACNPHTHY | ACENAPHTHYLENE | 52 |
| 3 | ANTHRACE | ANTHRACENE | 14 |
| 4 | ARSENIC | ARSENIC, TOTAL | 24 |
| 5 | AVS | ACID VOLATILE SULFIDE | 52 |
| 6 | A_REBURI | AMPHIPOD REBURIAL | 52 |
| 7 | A_SURVIV | AMPHIPOD SURVIVAL | 52 |
| 8 | BERYLLIU | BERYLLIUM, TOTAL | 52 |
| 9 | BIOMASS | TOTAL BIOMASS | 51 |
| 10 | BZ(A)ANT | BENZO(A)ANTHRACENE | 82 |
| 11 | BZ(A)PYR | BENZO(A)PYRENE | 33 |
| 12 | BZ(B)FLU | BENZO(B)FLUORANTHENE | 42 |
| 13 | BZ(GHI)P | BENZO(GHI)PERYLENE | 41 |
| 14 | BZ(K)FLU | BENZO(K)FLUORANTHENE | 31 |
| 15 | CADMIUM | CADMIUM, TOTAL | 42 |
| 16 | CAD_EX/A | CADMIUM, EXTRACTABLE / AVS | 52 |
| 17 | CAD_EXTR | CADMIUM, EXTRACTABLE | 30 |
| 18 | CHROMIUM | CHROMIUM, TOTAL | 30 |
| 19 | CHRYSENE | CHRYSENE | 52 |
| 20 | CLAY | CLAY | 36 |
| 21 | COPPER | COPPER, TOTAL | 52 |
| 22 | COP_EX/A | COPPER, EXTRACTABLE / AVS | 52 |
| 23 | COP_EXTR | COPPER, EXTRACTABLE | 52 |
| 24 | DDD | 4,4'-DDD | 52 |
| 25 | DDE | 4,4'-DDE | 30 |
| 26 | DIBENZO( | DIBENZO(A,H)ANTHRACENE | 52 |
| 27 | DINOCTYL | DI-N-OCTYLPHTHALATE | 6 |
| 28 | E_NORM_D | ECHINODERM NORMAL DEVELOPMENT | 19 |
| 29 | E_SURVIV | ECHINODERM SURVIVAL | 82 |
| 30 | FINES | FINES | 52 |
| 31 | FLUORANT | FLUORANTHENE | 52 |
| 32 | GRAVEL | GRAVEL | 32 |
| 33 | INDENO(1 | INDENO(1,2,3-CD)PYRENE | 83 |
| 34 | LEAD | LEAD, TOTAL | 30 |
| 35 | LEAD_EX/ | LEAD, EXTRACTABLE / AVS | 52 |
| 36 | LEAD_EXT | LEAD, EXTRACTABLE | 52 |
| 37 | MARGALEF | MARGALEF DIVERSITY INDEX | 52 |
| 38 | MEAN_ORS | MEAN GRAIN SIZE | 83 |
| 39 | MEDIAN_G | MEDIAN GRAIN SIZE | 91 |
| 40 | MERCURY | MERCURY, TOTAL | 52 |
| 41 | MERC_EX/ | MERCURY, EXTRACTABLE / AVS | 81 |
| 42 | MERC_EXT | MERCURY, EXTRACTABLE | 30 |
| 43 | NICKEL | NICKEL, TOTAL | 30 |
| 44 | NSPECIES | NUMBER OF SPECIES | 52 |
| 45 | PCB_1260 | PCB-1260 | 52 |
| 46 | PHENANTH | PHENANTHRENE | 32 |
| 47 | PYRENE | PYRENE | 23 |
| 48 | P_GROWTH | POLYCHAETE GROWTH | 33 |
| 49 | P_SURVIV | POLYCHAETE SURVIVAL | 52 |
| 50 | SAND | SAND | 52 |
| 51 | SELENIUM | SELENIUM, TOTAL | 52 |
| | | | 5 |



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| OBS | Abbreviation | Parameter | # detectable values |
|---|---|---|---|
| 52 | SHANNON | SHANNON-WIENER DIVERSITY INDEX | 52 |
| 53 | SILT | SILT | 52 |
| 54 | SILVER | SILVER, TOTAL | 51 |
| 55 | SULFIDE | SULFIDE, TOTAL | 52 |
| 56 | TOC | TOTAL ORGANIC CARBON | 52 |
| 57 | ZINC | ZINC, TOTAL | 52 |
| 58 | ZINC_EX/ | ZINC, EXTRACTABLE / AVS | 52 |
| 59 | ZINC_EXT | ZINC, EXTRACTABLE | 52 |



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NORMAL=carbon

Correlation Analysis

59 'VAR' Variables: ABUNDANC ACNPHTHY ANTHRACE ARSENIC AVS A_REBURI A_SURVIV BERYLLIU BIOMASS BZ_A_ANT BZ_A_PYR BZ_B_FLU BZ_GHI_P BZ_K_FLU
CADMIUN CAD_EX_A CAD_EXTR CHROMIUN CHRYSENE CLAY COPPER COP_EX_A COP_EXTR DDD DDE DIBENZO_ DINOCTYL E_HORN_D
E_SURVIV FINES FLUORANT GRAVEL INDENO_1 LEAD LEAD_EX_ LEAD_EXT MARGALEF MEAN_GRS MEDIAN_G MERCURY MERC_EX_ MERC_EXT
NICKEL NSPECIES PCB_1260 PHENANTH PYRENE P_GROWTH P_SURVIV SAND SELENIUM SHANNON SILT SILVER SULFIDE ZINC
ZINC_EX_ ZINC_EXT TOC



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VOL 18

---------- NORMAL=carbon ----------

Correlation Analysis

Simple Statistics

| Variable | N | Mean | Std Dev | Sum | Minimum | Maximum |
|---|---|---|---|---|---|---|
| ABUNDANC | 52 | 426.246795 | 734.750336 | 22165 | 14.000000 | 4264.000000 |
| ACNPHTHY | 50 | 34.445569 | 35.922241 | 1722.278454 | 5.115090 | 215.238915 |
| ANTHRACE | 51 | 81.130200 | 135.605810 | 4137.640216 | 5.115090 | 767.263427 |
| ARSENIC | 52 | 10.788174 | 9.098446 | 560.985044 | 2.852050 | 66.666667 |
| AVS | 52 | 441.392785 | 642.074651 | 22952 | 3.272451 | 2429.667519 |
| A_REBURI | 52 | 0.905231 | 0.148529 | 47.072000 | 0.246000 | 1.000000 |
| A_SURVIV | 52 | 0.801795 | 0.190710 | 41.693333 | 0.163000 | 0.988000 |
| BERYLLIU | 52 | 0.593064 | 0.340582 | 30.839337 | 0.116279 | 1.884058 |
| BIOMASS | 52 | 20.383862 | 50.505324 | 1059.960833 | 0.055000 | 293.701000 |
| BZ_A_ANT | 51 | 101.122413 | 174.563739 | 5157.243063 | 5.115090 | 817.907878 |
| BZ_A_PYR | 52 | 177.102849 | 169.898442 | 9209.348147 | 10.431154 | 687.070581 |
| BZ_B_FLU | 52 | 215.007941 | 215.858701 | 11180 | 10.431154 | 874.453467 |
| BZ_GHI_P | 51 | 93.416491 | 92.730859 | 4764.241046 | 7.610350 | 536.585366 |
| BZ_K_FLU | 52 | 209.132250 | 184.578424 | 10875 | 10.431154 | 780.487805 |
| CADMIUM | 52 | 0.523693 | 0.262661 | 27.232049 | 0.182232 | 1.278090 |
| CAD_EX_A | 52 | 0.019828 | 0.061548 | 1.031070 | 0.000066838 | 0.420080 |
| CAD_EXTR | 52 | 0.681453 | 0.447274 | 35.435579 | 0.190259 | 2.898551 |
| CHROMIUM | 52 | 46.572374 | 25.440827 | 2421.763443 | 23.017903 | 142.057684 |
| CHRYSENE | 51 | 161.495988 | 210.151504 | 8236.295396 | 7.610350 | 904.003444 |
| CLAY | 52 | 27.634958 | 12.414719 | 1437.077795 | 11.570234 | 80.995366 |
| COPPER | 52 | 113.067190 | 57.650433 | 5879.493880 | 30.232558 | 294.943820 |
| COP_EX_A | 52 | 2.005281 | 4.754705 | 104.274613 | 0.019302 | 29.405587 |
| COP_EXTR | 52 | 85.545273 | 41.875519 | 4448.354194 | 25.581395 | 202.898551 |
| DDD | 51 | 9.382266 | 8.538837 | 478.495569 | 0.233754 | 47.457627 |
| DDE | 52 | 66.765723 | 31.663385 | 3471.817598 | 6.046512 | 182.584270 |
| DIBENZO_ | 44 | 37.368720 | 52.545105 | 1644.223696 | 5.115090 | 292.682927 |
| DINOCTYL | 50 | 68.866231 | 53.112041 | 3443.311573 | 10.230179 | 243.902439 |
| E_NORM_D | 52 | 0.378077 | 0.418124 | 19.660000 | 0 | 0.963000 |
| E_SURVIV | 52 | 0.760962 | 0.207934 | 39.570000 | 0.250000 | 1.000000 |
| FINES | 52 | 71.197492 | 33.941000 | 3702.269582 | 24.572251 | 203.092683 |
| FLUORANT | 50 | 161.815876 | 382.668383 | 8090.793798 | 7.610350 | 1894.102454 |
| GRAVEL | 52 | 6.114562 | 33.517659 | 317.957225 | 0 | 241.260870 |
| INDENO_1 | 51 | 93.011746 | 95.364372 | 4743.599059 | 7.610350 | 536.585366 |
| LEAD | 52 | 51.040825 | 21.092989 | 2654.122922 | 18.414322 | 125.000000 |
| LEAD_EX_ | 52 | 0.859081 | 1.402149 | 44.672324 | 0.008689 | 7.964320 |
| LEAD_EXT | 52 | 47.278500 | 21.247655 | 2458.481983 | 16.900456 | 114.634146 |
| MARGALEP | 52 | 7.074507 | 2.658618 | 367.874388 | 2.202606 | 14.698435 |
| MEAN_GRS | 51 | 207.213140 | 1291.396209 | 10568 | 1.127907 | 9244.072464 |
| MEDIAN_G | 52 | 162.471617 | 795.944120 | 8448.524101 | 1.622791 | 5764.724638 |
| MERCURY | 52 | 0.452983 | 0.265153 | 23.555140 | 0.125174 | 1.390244 |
| MERC_EX_ | 52 | 0.001258 | 0.003199 | 0.065407 | 0.000002326 | 0.019466 |
| MERC_EXT | 52 | 0.041331 | 0.033158 | 2.149217 | 0.005115 | 0.138136 |
| NICKEL | 52 | 27.700692 | 16.202217 | 1440.435989 | 12.053379 | 113.043478 |
| NSPECIES | 52 | 39.807692 | 22.710299 | 2070.000000 | 8.000000 | 106.000000 |
| PCB_1260 | 51 | 143.853070 | 150.149550 | 7336.506553 | 5.070137 | 618.729097 |
| PHENANTH | 51 | 79.575024 | 173.768375 | 4058.326201 | 5.115090 | 1162.290162 |
| PYRENE | 50 | 177.792394 | 340.092824 | 8889.619718 | 7.610350 | 1420.576840 |
| P_GROWTH | 52 | 0.103308 | 0.020545 | 5.372000 | 0.056000 | 0.187000 |

/usr/cnt1/bechtel/analysis/corr1.sas

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C3S5-- VOL 18

NORMAL=carbon

Correlation Analysis

Simple Statistics

| Variable | N | Mean | Std Dev | Sum | Minimum | Maximum |
|---|---|---|---|---|---|---|
| P_SURVIV | 52 | 0.939295 | 0.056850 | 48.843333 | 0.760000 | 1.000000 |
| SAND | 52 | 63.713999 | 160.117137 | 3313.127932 | 2.611163 | 1151.797101 |
| SELENIUM | 52 | 0.661183 | 0.662163 | 34.381514 | 0.215239 | 5.072464 |
| SHANNON | 52 | 2.709660 | 0.562196 | 140.902329 | 1.128306 | 3.682892 |
| SILT | 52 | 43.562834 | 24.577929 | 2265.251787 | 10.125320 | 122.107317 |
| SILVER | 52 | 2.770496 | 2.083468 | 144.065786 | 0.967051 | 14.437690 |
| SULFIDE | 52 | 526.231268 | 878.700830 | 27366 | 0.837139 | 3132.992327 |
| ZINC | 52 | 184.960184 | 81.479033 | 9617.929557 | 97.674419 | 470.260870 |
| ZINC_EX_ | 52 | 3.094310 | 6.699898 | 160.904163 | 0.029609 | 42.007982 |
| ZINC_EXT | 52 | 140.788556 | 57.456803 | 7321.004922 | 55.258467 | 317.982456 |
| TOC | 0 | . | . | . | . | . |



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---------- NORMAL=carbon ----------

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_REBURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | 1.00000<br>0.0<br>52 | 0.14127<br>0.3278<br>50 | 0.23879<br>0.0915<br>51 | -0.20672<br>0.1415<br>52 | 0.46673<br>0.0005<br>52 | -0.62568<br>0.0001<br>52 | -0.65057<br>0.0001<br>52 | -0.30307<br>0.0290<br>52 | 0.50391<br>0.0001<br>52 | 0.17298<br>0.2248<br>51 | 0.08188<br>0.5639<br>52 | 0.10464<br>0.4604<br>52 |
| ACNPHTHY | 0.14127<br>0.3278<br>50 | 1.00000<br>0.0<br>50 | 0.57304<br>0.0001<br>50 | 0.21671<br>0.1306<br>50 | 0.29666<br>0.0364<br>50 | -0.32054<br>0.0232<br>50 | -0.36261<br>0.0097<br>50 | 0.17785<br>0.2166<br>50 | 0.14112<br>0.3283<br>50 | 0.59862<br>0.0001<br>50 | 0.58833<br>0.0001<br>50 | 0.52609<br>0.0001<br>50 |
| ANTHRACE | 0.23879<br>0.0915<br>51 | 0.57304<br>0.0001<br>50 | 1.00000<br>0.0<br>51 | -0.06320<br>0.6595<br>51 | 0.61562<br>0.0001<br>51 | -0.17880<br>0.2094<br>51 | -0.27910<br>0.0473<br>51 | -0.20750<br>0.1440<br>51 | 0.29902<br>0.0330<br>51 | 0.89021<br>0.0001<br>51 | 0.71096<br>0.0001<br>51 | 0.72628<br>0.0001<br>51 |
| ARSENIC | -0.20672<br>0.1415<br>52 | 0.21671<br>0.1306<br>50 | -0.06320<br>0.6595<br>51 | 1.00000<br>0.0<br>52 | -0.23991<br>0.0867<br>52 | 0.21326<br>0.1290<br>52 | 0.25610<br>0.0669<br>52 | 0.82585<br>0.0001<br>52 | -0.17743<br>0.2083<br>52 | -0.02582<br>0.8572<br>51 | 0.03965<br>0.7802<br>52 | 0.01777<br>0.9005<br>52 |
| AVS | 0.46673<br>0.0005<br>52 | 0.29666<br>0.0364<br>50 | 0.61562<br>0.0001<br>51 | -0.23991<br>0.0867<br>52 | 1.00000<br>0.0<br>52 | -0.56100<br>0.0001<br>52 | -0.62364<br>0.0001<br>52 | -0.30595<br>0.0274<br>52 | 0.59681<br>0.0001<br>52 | 0.55145<br>0.0001<br>51 | 0.48165<br>0.0003<br>52 | 0.50800<br>0.0001<br>52 |
| A_REBURI | -0.62568<br>0.0001<br>52 | -0.32054<br>0.0232<br>50 | -0.17880<br>0.2094<br>51 | 0.21326<br>0.1290<br>52 | -0.56100<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.92486<br>0.0001<br>52 | 0.22831<br>0.1035<br>52 | -0.55283<br>0.0001<br>52 | -0.18337<br>0.1977<br>51 | -0.13638<br>0.3350<br>52 | -0.14461<br>0.3066<br>52 |
| A_SURVIV | -0.65057<br>0.0001<br>52 | -0.36261<br>0.0097<br>50 | -0.27910<br>0.0473<br>51 | 0.25610<br>0.0669<br>52 | -0.62364<br>0.0001<br>52 | 0.92486<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.31519<br>0.0228<br>52 | -0.60843<br>0.0001<br>52 | -0.26323<br>0.0620<br>51 | -0.12157<br>0.3906<br>52 | -0.12652<br>0.3714<br>52 |
| BERYLLIU | -0.30307<br>0.0290<br>52 | 0.17785<br>0.2166<br>50 | -0.20750<br>0.1440<br>51 | 0.82585<br>0.0001<br>52 | -0.30595<br>0.0274<br>52 | 0.22831<br>0.1035<br>52 | 0.31519<br>0.0228<br>52 | 1.00000<br>0.0<br>52 | -0.24237<br>0.0834<br>52 | -0.11889<br>0.4060<br>51 | 0.01189<br>0.9333<br>52 | -0.01905<br>0.8933<br>52 |
| BIOMASS | 0.50391<br>0.0001<br>52 | 0.14112<br>0.3283<br>50 | 0.29902<br>0.0330<br>51 | -0.17743<br>0.2083<br>52 | 0.59681<br>0.0001<br>52 | -0.55283<br>0.0001<br>52 | -0.60843<br>0.0001<br>52 | -0.24237<br>0.0834<br>52 | 1.00000<br>0.0<br>52 | 0.14099<br>0.3237<br>51 | 0.05861<br>0.6798<br>52 | 0.07524<br>0.5960<br>52 |
| BZ_A_ANT | 0.17298<br>0.2248<br>51 | 0.59862<br>0.0001<br>50 | 0.89021<br>0.0001<br>51 | -0.02582<br>0.8572<br>51 | 0.55145<br>0.0001<br>51 | -0.18337<br>0.1977<br>51 | -0.26323<br>0.0620<br>51 | -0.11889<br>0.4060<br>51 | 0.14099<br>0.3237<br>51 | 1.00000<br>0.0<br>51 | 0.79402<br>0.0001<br>51 | 0.79959<br>0.0001<br>51 |
| BZ_A_PYR | 0.08188<br>0.5639<br>52 | 0.58833<br>0.0001<br>50 | 0.71096<br>0.0001<br>51 | 0.03965<br>0.7802<br>52 | 0.48165<br>0.0003<br>52 | -0.13638<br>0.3350<br>52 | -0.12157<br>0.3906<br>52 | 0.01189<br>0.9333<br>52 | 0.05861<br>0.6798<br>52 | 0.79402<br>0.0001<br>51 | 1.00000<br>0.0<br>52 | 0.98775<br>0.0001<br>52 |
| BZ_B_FLU | 0.10464<br>0.4604<br>52 | 0.52609<br>0.0001<br>50 | 0.72628<br>0.0001<br>51 | 0.01777<br>0.9005<br>52 | 0.50800<br>0.0001<br>52 | -0.14461<br>0.3066<br>52 | -0.12652<br>0.3714<br>52 | -0.01905<br>0.8933<br>52 | 0.07524<br>0.5960<br>52 | 0.79959<br>0.0001<br>51 | 0.98775<br>0.0001<br>52 | 1.00000<br>0.0<br>52 |



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NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_RESURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | -0.03612<br>0.8013<br>51 | 0.55103<br>0.0001<br>50 | 0.32422<br>0.0203<br>51 | 0.22549<br>0.1116<br>51 | 0.10239<br>0.4766<br>51 | -0.03311<br>0.8176<br>51 | 0.03851<br>0.7885<br>51 | 0.29389<br>0.0363<br>51 | -0.03684<br>0.7975<br>51 | 0.43695<br>0.0013<br>51 | 0.77469<br>0.0001<br>51 | 0.72581<br>0.0001<br>51 |
| BZ_K_FLU | 0.05928<br>0.6763<br>52 | 0.54111<br>0.0001<br>50 | 0.62267<br>0.0001<br>51 | 0.06384<br>0.6530<br>52 | 0.37067<br>0.0068<br>52 | -0.04204<br>0.7873<br>52 | -0.01316<br>0.9262<br>52 | 0.07263<br>0.6089<br>52 | 0.00972<br>0.9488<br>52 | 0.71164<br>0.0001<br>51 | 0.95514<br>0.0001<br>52 | 0.93608<br>0.0001<br>52 |
| CADMIUM | -0.10559<br>0.4563<br>52 | 0.02404<br>0.8684<br>50 | 0.04361<br>0.7612<br>51 | 0.45328<br>0.0007<br>52 | -0.05048<br>0.7223<br>52 | 0.17902<br>0.2042<br>52 | 0.11450<br>0.4189<br>52 | 0.37099<br>0.0068<br>52 | -0.06501<br>0.6471<br>52 | 0.04319<br>0.7635<br>51 | 0.10402<br>0.4630<br>52 | 0.09926<br>0.4839<br>52 |
| CAD_EX_A | -0.07137<br>0.6151<br>52 | 0.05167<br>0.7216<br>50 | -0.08005<br>0.5766<br>51 | 0.78876<br>0.0001<br>52 | -0.18555<br>0.1879<br>52 | 0.15609<br>0.2691<br>52 | 0.13202<br>0.3508<br>52 | 0.42946<br>0.0015<br>52 | -0.10039<br>0.4789<br>52 | -0.10213<br>0.4757<br>51 | -0.16186<br>0.2516<br>52 | -0.16520<br>0.2419<br>52 |
| CAD_EXTR | -0.03389<br>0.8115<br>52 | -0.02209<br>0.8790<br>50 | -0.08676<br>0.5449<br>51 | 0.59882<br>0.0001<br>52 | -0.06231<br>0.6608<br>52 | 0.00018<br>0.9990<br>52 | 0.00304<br>0.9829<br>52 | 0.39480<br>0.0038<br>52 | -0.02549<br>0.8576<br>52 | -0.08945<br>0.5325<br>51 | -0.17011<br>0.2279<br>52 | -0.15903<br>0.2601<br>52 |
| CHROMIUM | -0.16789<br>0.2341<br>52 | 0.64981<br>0.0001<br>50 | 0.23569<br>0.0959<br>51 | 0.73056<br>0.0001<br>52 | -0.13441<br>0.3421<br>52 | 0.00525<br>0.9705<br>52 | 0.02259<br>0.8737<br>52 | 0.71205<br>0.0001<br>52 | -0.21502<br>0.1258<br>52 | 0.33036<br>0.0179<br>51 | 0.32550<br>0.0185<br>52 | 0.28837<br>0.0382<br>52 |
| CHRYSENE | 0.17083<br>0.2307<br>51 | 0.60447<br>0.0001<br>49 | 0.85799<br>0.0001<br>50 | -0.00331<br>0.9816<br>51 | 0.57177<br>0.0001<br>51 | -0.16688<br>0.2418<br>51 | -0.32058<br>0.1199<br>51 | -0.06290<br>0.6610<br>51 | 0.13176<br>0.3567<br>51 | 0.94967<br>0.0001<br>50 | 0.90184<br>0.0001<br>51 | 0.90057<br>0.0001<br>51 |
| CLAY | -0.26045<br>0.0622<br>52 | 0.14483<br>0.3156<br>50 | -0.17056<br>0.2314<br>51 | 0.36699<br>0.0074<br>52 | -0.18355<br>0.1927<br>52 | 0.13789<br>0.3296<br>52 | 0.17700<br>0.2094<br>52 | 0.69712<br>0.0001<br>52 | -0.13829<br>0.3282<br>52 | -0.01185<br>0.9342<br>51 | 0.11711<br>0.4083<br>52 | 0.07212<br>0.6114<br>52 |
| COPPER | -0.10403<br>0.4630<br>52 | 0.27061<br>0.0573<br>50 | 0.14158<br>0.3217<br>51 | 0.45803<br>0.0006<br>52 | -0.04157<br>0.7698<br>52 | 0.08795<br>0.5353<br>52 | 0.18363<br>0.1925<br>52 | 0.46252<br>0.0006<br>52 | -0.12388<br>0.3859<br>52 | 0.25893<br>0.0666<br>51 | 0.55322<br>0.0001<br>52 | 0.54358<br>0.0001<br>52 |
| COP_EX_A | -0.10446<br>0.4611<br>52 | 0.03725<br>0.7973<br>50 | -0.10696<br>0.4550<br>51 | 0.74749<br>0.0001<br>52 | -0.24371<br>0.0817<br>52 | 0.20507<br>0.1447<br>52 | 0.20474<br>0.1454<br>52 | 0.44769<br>0.0009<br>52 | -0.11752<br>0.4067<br>52 | -0.12263<br>0.3913<br>51 | -0.08882<br>0.5312<br>52 | -0.08103<br>0.5679<br>52 |
| COP_EXTR | -0.01829<br>0.8976<br>52 | 0.41039<br>0.0031<br>50 | 0.27082<br>0.0546<br>51 | 0.50134<br>0.0002<br>52 | 0.07403<br>0.6019<br>52 | 0.05642<br>0.6912<br>52 | 0.10408<br>0.4628<br>52 | 0.36378<br>0.0080<br>52 | -0.05119<br>0.7186<br>52 | 0.33461<br>0.0164<br>51 | 0.55529<br>0.0001<br>52 | 0.53085<br>0.0001<br>52 |
| DDD | -0.28202<br>0.0450<br>51 | -0.02345<br>0.8729<br>49 | -0.10893<br>0.4515<br>50 | 0.12336<br>0.3886<br>51 | -0.31533<br>0.0242<br>51 | 0.22912<br>0.1058<br>51 | 0.22726<br>0.1088<br>51 | 0.22251<br>0.1166<br>51 | -0.31536<br>0.0242<br>51 | 0.02801<br>0.8469<br>50 | 0.00161<br>0.9701<br>51 | 0.06942<br>0.6283<br>51 |



R0063909

3355--

VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_REBURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | -0.15305<br>0.2787<br>52 | -0.03265<br>0.8219<br>50 | -0.22710<br>0.1090<br>51 | 0.29091<br>0.0364<br>52 | -0.25566<br>0.0674<br>52 | 0.07024<br>0.6207<br>52 | 0.04682<br>0.7417<br>52 | 0.29128<br>0.0362<br>52 | -0.05160<br>0.7164<br>52 | -0.16097<br>0.2591<br>51 | -0.00410<br>0.9770<br>52 | -0.01177<br>0.9340<br>52 |
| DIBENZO_ | -0.01179<br>0.9395<br>44 | 0.77122<br>0.0001<br>44 | 0.25219<br>0.0986<br>44 | 0.29438<br>0.0524<br>44 | 0.16532<br>0.2835<br>44 | -0.18353<br>0.2330<br>44 | -0.15230<br>0.3237<br>44 | 0.35308<br>0.0187<br>44 | 0.01552<br>0.9203<br>44 | 0.38959<br>0.0089<br>44 | 0.60573<br>0.0001<br>44 | 0.52634<br>0.0002<br>44 |
| DINOCTYL | 0.09212<br>0.5246<br>50 | 0.60001<br>0.0001<br>49 | 0.28716<br>0.0432<br>50 | 0.47787<br>0.0004<br>50 | 0.26115<br>0.0670<br>50 | -0.07393<br>0.6099<br>50 | -0.06488<br>0.6544<br>50 | 0.38292<br>0.0061<br>50 | 0.15993<br>0.2672<br>50 | 0.22843<br>0.1106<br>50 | 0.39389<br>0.0047<br>50 | 0.34078<br>0.0154<br>50 |
| E_NORM_D | -0.36397<br>0.0080<br>52 | -0.12815<br>0.3751<br>50 | -0.25239<br>0.0740<br>51 | 0.05132<br>0.7179<br>52 | -0.40421<br>0.0030<br>52 | 0.27257<br>0.0506<br>52 | 0.30020<br>0.0306<br>52 | 0.17150<br>0.2241<br>52 | -0.31936<br>0.0210<br>52 | -0.17130<br>0.2294<br>51 | -0.15930<br>0.2716<br>52 | -0.20140<br>0.1522<br>52 |
| E_SURVIV | -0.31311<br>0.0238<br>52 | 0.01561<br>0.9143<br>50 | 0.05872<br>0.6823<br>51 | -0.00589<br>0.9669<br>52 | -0.06532<br>0.6455<br>52 | 0.13054<br>0.3563<br>52 | 0.10750<br>0.4481<br>52 | 0.02324<br>0.8701<br>52 | -0.25407<br>0.0691<br>52 | 0.14169<br>0.3213<br>51 | 0.13109<br>0.3543<br>52 | 0.08283<br>0.5594<br>52 |
| FINES | -0.34615<br>0.0119<br>52 | 0.08896<br>0.5390<br>50 | -0.25820<br>0.0673<br>51 | 0.36328<br>0.0081<br>52 | -0.41455<br>0.0022<br>52 | 0.33366<br>0.0156<br>52 | 0.38350<br>0.0050<br>52 | 0.73454<br>0.0001<br>52 | -0.32870<br>0.0174<br>52 | -0.14414<br>0.3129<br>51 | 0.01336<br>0.9251<br>52 | -0.02352<br>0.8685<br>52 |
| FLUORANT | 0.20415<br>0.1550<br>50 | 0.54397<br>0.0001<br>48 | 0.87989<br>0.0001<br>49 | -0.09935<br>0.4925<br>50 | 0.56708<br>0.0001<br>50 | -0.20945<br>0.1443<br>50 | -0.31652<br>0.0251<br>50 | -0.21737<br>0.1294<br>50 | 0.14663<br>0.3096<br>50 | 0.96913<br>0.0001<br>49 | 0.66914<br>0.0001<br>50 | 0.68288<br>0.0001<br>50 |
| GRAVEL | 0.01781<br>0.9002<br>52 | 0.17084<br>0.2355<br>50 | 0.04769<br>0.7397<br>51 | 0.84356<br>0.0001<br>52 | 0.01219<br>0.9316<br>52 | 0.00006<br>0.9997<br>52 | 0.00240<br>0.9865<br>52 | 0.50370<br>0.0001<br>52 | 0.04626<br>0.7447<br>52 | 0.00895<br>0.9503<br>51 | -0.06615<br>0.6413<br>52 | -0.06801<br>0.6319<br>52 |
| INDENO_1 | -0.00904<br>0.9498<br>51 | 0.60485<br>0.0001<br>50 | 0.39182<br>0.0045<br>51 | 0.20248<br>0.1542<br>51 | 0.16401<br>0.2501<br>51 | -0.07125<br>0.6193<br>51 | -0.01460<br>0.9190<br>51 | 0.25031<br>0.0765<br>51 | -0.01869<br>0.8964<br>51 | 0.50521<br>0.0002<br>51 | 0.79316<br>0.0001<br>51 | 0.76363<br>0.0001<br>51 |
| LEAD | -0.26350<br>0.0591<br>52 | 0.18695<br>0.1936<br>50 | 0.00188<br>0.9896<br>51 | 0.51795<br>0.0001<br>52 | -0.15784<br>0.2637<br>52 | 0.14743<br>0.2969<br>52 | 0.23319<br>0.0962<br>52 | 0.67428<br>0.0001<br>52 | -0.17060<br>0.2266<br>52 | 0.09313<br>0.5157<br>51 | 0.38405<br>0.0049<br>52 | 0.36954<br>0.0070<br>52 |
| LEAD_EX_ | -0.15835<br>0.2632<br>52 | -0.08465<br>0.5589<br>50 | -0.18415<br>0.1958<br>51 | 0.47512<br>0.0004<br>52 | -0.35160<br>0.0106<br>52 | 0.26921<br>0.0536<br>52 | 0.26535<br>0.0573<br>52 | 0.28012<br>0.0443<br>52 | -0.16616<br>0.2391<br>52 | -0.19296<br>0.1769<br>51 | -0.10641<br>0.4527<br>52 | -0.09001<br>0.5257<br>52 |
| LEAD_EXT | -0.20755<br>0.1398<br>52 | 0.18860<br>0.1896<br>50 | 0.08967<br>0.5315<br>51 | 0.22574<br>0.1076<br>52 | -0.07568<br>0.5939<br>52 | 0.07768<br>0.5841<br>52 | 0.13233<br>0.3497<br>52 | 0.39191<br>0.0041<br>52 | -0.10826<br>0.4449<br>52 | 0.16116<br>0.2586<br>51 | 0.40722<br>0.0027<br>52 | 0.39370<br>0.0039<br>52 |



R0063910

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_REBURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | 0.49283<br>0.0002<br>52 | 0.12288<br>0.3952<br>50 | 0.28920<br>0.0396<br>51 | -0.09448<br>0.5053<br>52 | 0.47484<br>0.0004<br>52 | -0.48503<br>0.0003<br>52 | -0.49297<br>0.0002<br>52 | -0.13947<br>0.3241<br>52 | 0.73059<br>0.0001<br>52 | 0.13418<br>0.3479<br>51 | 0.00448<br>0.9748<br>52 | 0.04278<br>0.7633<br>52 |
| MEAN_GRS | -0.04637<br>0.7466<br>51 | 0.15151<br>0.2987<br>49 | -0.01065<br>0.9415<br>50 | 0.86889<br>0.0001<br>51 | -0.07798<br>0.5865<br>51 | 0.10599<br>0.4591<br>51 | 0.09367<br>0.5132<br>51 | 0.53354<br>0.0001<br>51 | -0.04398<br>0.7592<br>51 | -0.02741<br>0.8502<br>50 | -0.09332<br>0.5148<br>51 | -0.09863<br>0.4911<br>51 |
| MEDIAN_G | -0.05118<br>0.7186<br>52 | 0.14975<br>0.2993<br>50 | 0.01011<br>0.9439<br>51 | 0.86459<br>0.0001<br>52 | -0.08400<br>0.5538<br>52 | 0.11255<br>0.4270<br>52 | 0.10883<br>0.4425<br>52 | 0.53019<br>0.0001<br>52 | -0.04434<br>0.7549<br>52 | -0.02020<br>0.8881<br>51 | -0.09372<br>0.5087<br>52 | -0.09713<br>0.4933<br>52 |
| MERCURY | -0.20879<br>0.1374<br>52 | 0.07374<br>0.6108<br>50 | -0.12577<br>0.3792<br>51 | 0.20242<br>0.1501<br>52 | -0.34758<br>0.0116<br>52 | 0.19751<br>0.1605<br>52 | 0.29244<br>0.0356<br>52 | 0.32392<br>0.0191<br>52 | -0.25252<br>0.0709<br>52 | -0.01240<br>0.9312<br>51 | 0.33607<br>0.0149<br>52 | 0.30999<br>0.0253<br>52 |
| MERC_EX_ | -0.09605<br>0.4946<br>52 | -0.06464<br>0.6556<br>50 | -0.11867<br>0.4069<br>51 | 0.38759<br>0.0045<br>52 | -0.23753<br>0.0900<br>52 | 0.18671<br>0.1851<br>52 | 0.19379<br>0.1687<br>52 | 0.20319<br>0.1485<br>52 | -0.09687<br>0.4945<br>52 | -0.13838<br>0.3329<br>51 | -0.04646<br>0.7436<br>52 | -0.02498<br>0.8605<br>52 |
| MERC_EXT | 0.03695<br>0.7948<br>52 | 0.09273<br>0.5218<br>50 | -0.01347<br>0.9252<br>51 | 0.17511<br>0.2144<br>52 | -0.08800<br>0.5350<br>52 | -0.08397<br>0.5539<br>52 | 0.01673<br>0.9063<br>52 | 0.16407<br>0.2451<br>52 | 0.03384<br>0.8118<br>52 | -0.07554<br>0.5983<br>51 | 0.10830<br>0.4447<br>52 | 0.11335<br>0.4236<br>52 |
| NICKEL | -0.25672<br>0.0662<br>52 | 0.17193<br>0.2325<br>50 | -0.12284<br>0.3912<br>51 | 0.93688<br>0.0001<br>52 | -0.29767<br>0.0321<br>52 | 0.26815<br>0.0546<br>52 | 0.32611<br>0.0183<br>52 | 0.92134<br>0.0001<br>52 | -0.18605<br>0.1866<br>52 | -0.09111<br>0.5249<br>51 | -0.03427<br>0.8094<br>52 | -0.05563<br>0.6953<br>52 |
| NSPECIES | 0.69895<br>0.0001<br>52 | 0.17390<br>0.2271<br>50 | 0.36984<br>0.0076<br>51 | -0.16900<br>0.2310<br>52 | 0.59984<br>0.0001<br>52 | -0.60457<br>0.0001<br>52 | -0.62398<br>0.0001<br>52 | -0.26252<br>0.0601<br>52 | 0.79831<br>0.0001<br>52 | 0.21907<br>0.1225<br>51 | 0.09835<br>0.4879<br>52 | 0.13693<br>0.3331<br>52 |
| PCB_1260 | -0.22740<br>0.1085<br>51 | 0.01129<br>0.9386<br>49 | -0.09215<br>0.5245<br>50 | 0.22819<br>0.1073<br>51 | -0.30271<br>0.0308<br>51 | 0.24998<br>0.0769<br>51 | 0.37827<br>0.0065<br>51 | 0.32274<br>0.0209<br>51 | -0.25516<br>0.0708<br>51 | 0.06960<br>0.6310<br>50 | 0.43431<br>0.0015<br>51 | 0.42367<br>0.0019<br>51 |
| PHENANTH | 0.19719<br>0.1655<br>51 | 0.76409<br>0.0001<br>50 | 0.86387<br>0.0001<br>50 | -0.04517<br>0.7529<br>51 | 0.47243<br>0.0005<br>51 | -0.30811<br>0.0278<br>51 | -0.40216<br>0.0034<br>51 | -0.16210<br>0.2558<br>51 | 0.15119<br>0.2896<br>51 | 0.84307<br>0.0001<br>50 | 0.64056<br>0.0001<br>51 | 0.63442<br>0.0001<br>51 |
| PYRENE | 0.20720<br>0.1488<br>50 | 0.52304<br>0.0001<br>48 | 0.85251<br>0.0001<br>49 | -0.10816<br>0.4547<br>50 | 0.69807<br>0.0001<br>50 | -0.21074<br>0.1270<br>50 | -0.29072<br>0.0405<br>50 | -0.22480<br>0.1165<br>50 | 0.14452<br>0.3167<br>50 | 0.92262<br>0.0001<br>49 | 0.80599<br>0.0001<br>50 | 0.82269<br>0.0001<br>50 |
| P_GROWTH | 0.52474<br>0.0001<br>52 | 0.47050<br>0.0006<br>50 | 0.53790<br>0.0001<br>51 | -0.02797<br>0.8440<br>52 | 0.70523<br>0.0001<br>52 | -0.51219<br>0.0001<br>52 | -0.53357<br>0.0001<br>52 | -0.15258<br>0.2802<br>52 | 0.34686<br>0.0118<br>52 | 0.52990<br>0.0001<br>51 | 0.39608<br>0.0026<br>52 | 0.41093<br>0.0023<br>52 |

/usr/cntl/bechtel/analysis/corr1.sas

R0063911

5355-

VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_REBURI | A_SURVIV | BERYLLIU | BIOMASS | BS_A_ANT | BS_A_PYR | BS_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURVIV | -0.26249 | -0.37389 | -0.25929 | -0.11296 | -0.34314 | 0.21775 | 0.24971 | 0.01714 | -0.07691 | -0.29140 | -0.30999 | -0.28668 |
| | 0.0601 | 0.0075 | 0.0662 | 0.4253 | 0.0128 | 0.1210 | 0.0742 | 0.9060 | 0.5878 | 0.0380 | 0.0253 | 0.0393 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| SAND | -0.08732 | 0.13808 | -0.05057 | 0.85333 | -0.17608 | 0.17060 | 0.17314 | 0.54919 | -0.10467 | -0.07767 | -0.14546 | -0.15008 |
| | 0.5382 | 0.3389 | 0.7245 | 0.0001 | 0.2110 | 0.2266 | 0.2196 | 0.0001 | 0.4602 | 0.5660 | 0.3035 | 0.2882 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| SELENIUM | -0.13360 | 0.14607 | -0.09100 | 0.90501 | -0.20625 | 0.20045 | 0.19240 | 0.64573 | -0.09813 | -0.08310 | -0.12657 | -0.14226 |
| | 0.3451 | 0.3115 | 0.5256 | 0.0001 | 0.1424 | 0.1542 | 0.1718 | 0.0001 | 0.4889 | 0.5621 | 0.3712 | 0.3144 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| SHANNON | -0.31162 | -0.07532 | -0.05853 | 0.10719 | -0.03897 | 0.01823 | 0.05704 | 0.18852 | 0.26376 | -0.14420 | -0.14617 | -0.14476 |
| | 0.0245 | 0.6031 | 0.6833 | 0.4494 | 0.7838 | 0.8979 | 0.6879 | 0.1808 | 0.0588 | 0.3127 | 0.3012 | 0.3059 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| SILT | -0.34647 | 0.04964 | -0.27082 | 0.31630 | -0.47976 | 0.39112 | 0.44018 | 0.66224 | -0.36407 | -0.19351 | -0.04070 | -0.06891 |
| | 0.0119 | 0.7321 | 0.0546 | 0.0223 | 0.0003 | 0.0041 | 0.0011 | 0.0001 | 0.0049 | 0.1737 | 0.7745 | 0.6274 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| SILVER | -0.27107 | -0.03256 | -0.16174 | 0.38260 | -0.26607 | 0.22495 | 0.32138 | 0.48475 | -0.16108 | -0.11070 | -0.05894 | -0.06483 |
| | 0.0519 | 0.8225 | 0.3211 | 0.0091 | 0.0396 | 0.1069 | 0.0202 | 0.0003 | 0.1989 | 0.4393 | 0.6701 | 0.6479 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| SULFIDE | 0.56536 | 0.28024 | 0.55369 | -0.22135 | 0.97781 | -0.62605 | -0.68336 | -0.30382 | 0.65987 | 0.45861 | 0.36283 | 0.40881 |
| | 0.0001 | 0.0487 | 0.0001 | 0.0989 | 0.0001 | 0.0001 | 0.0001 | 0.0285 | 0.0001 | 0.0007 | 0.0091 | 0.0026 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| ZINC | -0.13789 | 0.31146 | 0.31859 | 0.78910 | 0.00083 | 0.17927 | 0.23691 | 0.71387 | -0.03794 | 0.28786 | 0.44229 | 0.44296 |
| | 0.3304 | 0.0277 | 0.0241 | 0.0001 | 0.9954 | 0.2035 | 0.0908 | 0.0001 | 0.8464 | 0.0408 | 0.0010 | 0.0010 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| ZINC_EX_ | -0.10633 | 0.01949 | -0.12007 | 0.74970 | -0.26977 | 0.21727 | 0.20685 | 0.42430 | -0.13033 | -0.12685 | -0.12060 | -0.11287 |
| | 0.4531 | 0.8931 | 0.6013 | 0.0001 | 0.0569 | 0.1218 | 0.1412 | 0.0017 | 0.3571 | 0.3383 | 0.3982 | 0.4296 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| ZINC_EXT | -0.06933 | 0.35095 | 0.35739 | 0.56501 | 0.09300 | 0.07196 | 0.11040 | 0.65236 | 0.01039 | 0.36928 | 0.56610 | 0.56903 |
| | 0.6253 | 0.0125 | 0.0100 | 0.0001 | 0.5120 | 0.6122 | 0.4356 | 0.0008 | 0.9417 | 0.0077 | 0.0001 | 0.0001 |
| | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 |
| TOC | . | . | . | . | . | . | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



R0063912

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | -0.03612<br>0.8013<br>51 | 0.05928<br>0.6763<br>52 | -0.10559<br>0.4563<br>52 | -0.07137<br>0.6151<br>52 | -0.03389<br>0.8115<br>52 | -0.16789<br>0.2341<br>52 | 0.17083<br>0.2307<br>51 | -0.26045<br>0.0622<br>52 | -0.10403<br>0.4630<br>52 | -0.10446<br>0.4611<br>52 | -0.01829<br>0.8976<br>52 | -0.28202<br>0.0450<br>51 |
| ACNPHTHY | 0.55103<br>0.0001<br>50 | 0.54111<br>0.0001<br>50 | 0.02406<br>0.8684<br>50 | 0.05167<br>0.7216<br>50 | -0.02209<br>0.8790<br>50 | 0.64981<br>0.0001<br>50 | 0.60447<br>0.0001<br>49 | 0.14483<br>0.3156<br>50 | 0.27061<br>0.0573<br>50 | 0.03725<br>0.7973<br>50 | 0.41039<br>0.0031<br>50 | -0.02345<br>0.8729<br>49 |
| ANTHRACE | 0.32422<br>0.0203<br>51 | 0.62267<br>0.0001<br>51 | 0.04361<br>0.7612<br>51 | -0.08005<br>0.5766<br>51 | -0.08676<br>0.5449<br>51 | 0.23569<br>0.0959<br>51 | 0.85799<br>0.0001<br>50 | -0.17056<br>0.2314<br>51 | 0.14158<br>0.3217<br>51 | -0.10696<br>0.4550<br>51 | 0.27082<br>0.0546<br>51 | -0.10893<br>0.4515<br>50 |
| ARSENIC | 0.22549<br>0.1116<br>51 | 0.06386<br>0.6530<br>52 | 0.45328<br>0.0007<br>52 | 0.78876<br>0.0001<br>52 | 0.59882<br>0.0001<br>52 | 0.73056<br>0.0001<br>52 | -0.00331<br>0.9816<br>51 | 0.36699<br>0.0074<br>52 | 0.45803<br>0.0006<br>52 | 0.74749<br>0.0001<br>52 | 0.50134<br>0.0002<br>52 | 0.12336<br>0.3884<br>51 |
| AVS | 0.10239<br>0.4746<br>51 | 0.37067<br>0.0068<br>52 | -0.05048<br>0.7223<br>52 | -0.18555<br>0.1879<br>52 | -0.06231<br>0.6608<br>52 | -0.13441<br>0.3421<br>52 | 0.57177<br>0.0001<br>51 | -0.18355<br>0.1927<br>52 | -0.04157<br>0.7698<br>52 | -0.24371<br>0.0817<br>52 | 0.07403<br>0.6019<br>52 | -0.31533<br>0.0242<br>51 |
| A_REBURI | -0.03311<br>0.8176<br>51 | -0.04204<br>0.7673<br>52 | 0.17902<br>0.2042<br>52 | 0.15609<br>0.2691<br>52 | 0.00018<br>0.9990<br>52 | 0.00525<br>0.9705<br>52 | -0.16688<br>0.2418<br>51 | 0.13789<br>0.3296<br>52 | 0.08795<br>0.5353<br>52 | 0.20507<br>0.1447<br>52 | 0.05642<br>0.6912<br>52 | 0.22912<br>0.1058<br>51 |
| A_SURVIV | 0.03851<br>0.7885<br>51 | -0.01316<br>0.9262<br>52 | 0.11450<br>0.4189<br>52 | 0.13202<br>0.3508<br>52 | 0.00304<br>0.9829<br>52 | 0.02259<br>0.8737<br>52 | -0.22058<br>0.1199<br>51 | 0.17700<br>0.2094<br>52 | 0.18363<br>0.1925<br>52 | 0.20474<br>0.1454<br>52 | 0.10408<br>0.4628<br>52 | 0.22726<br>0.1088<br>51 |
| BERYLLIU | 0.29389<br>0.0363<br>51 | 0.07263<br>0.6089<br>52 | 0.37099<br>0.0068<br>52 | 0.42946<br>0.0015<br>52 | 0.39480<br>0.0038<br>52 | 0.71205<br>0.0001<br>52 | -0.06290<br>0.6610<br>51 | 0.69712<br>0.0001<br>52 | 0.46282<br>0.0006<br>52 | 0.64769<br>0.0009<br>52 | 0.36378<br>0.0080<br>52 | 0.22251<br>0.1166<br>51 |
| BIOMASS | -0.03684<br>0.7975<br>51 | 0.00972<br>0.9455<br>52 | -0.06501<br>0.6471<br>52 | -0.10039<br>0.4789<br>52 | -0.02549<br>0.8576<br>52 | -0.21502<br>0.1258<br>52 | 0.13176<br>0.3567<br>51 | -0.13829<br>0.3282<br>52 | -0.12288<br>0.3858<br>52 | -0.11752<br>0.4067<br>52 | -0.05119<br>0.7186<br>52 | -0.31536<br>0.0242<br>51 |
| BZ_A_ANT | 0.43695<br>0.0013<br>51 | 0.71164<br>0.0001<br>51 | 0.04319<br>0.7635<br>51 | -0.10213<br>0.4757<br>51 | -0.08945<br>0.5325<br>51 | 0.33036<br>0.0179<br>51 | 0.94967<br>0.0001<br>50 | -0.01185<br>0.9342<br>51 | 0.25893<br>0.0666<br>51 | -0.12263<br>0.3913<br>51 | 0.33461<br>0.0166<br>51 | 0.02801<br>0.8469<br>50 |
| BZ_A_PYR | 0.77469<br>0.0001<br>51 | 0.95514<br>0.0001<br>52 | 0.10402<br>0.4630<br>52 | -0.16186<br>0.2516<br>52 | -0.17011<br>0.2279<br>52 | 0.32550<br>0.0185<br>52 | 0.90184<br>0.0001<br>51 | 0.11711<br>0.4083<br>52 | 0.55322<br>0.0001<br>52 | -0.08882<br>0.5312<br>52 | 0.55529<br>0.0001<br>52 | 0.08141<br>0.5701<br>51 |
| BZ_B_FLU | 0.72581<br>0.0001<br>51 | 0.93608<br>0.0001<br>52 | 0.09926<br>0.4839<br>52 | -0.16520<br>0.2419<br>52 | -0.15903<br>0.2601<br>52 | 0.28837<br>0.0382<br>52 | 0.90057<br>0.0001<br>51 | 0.07212<br>0.6116<br>52 | 0.54358<br>0.0001<br>52 | -0.08103<br>0.5679<br>52 | 0.53885<br>0.0001<br>52 | 0.06942<br>0.6283<br>51 |



R0063913

-345-

AUG 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | 1.00000<br>0.0<br>51 | 0.85720<br>0.0001<br>51 | 0.19603<br>0.1680<br>51 | -0.10822<br>0.4497<br>51 | -0.15273<br>0.2846<br>51 | 0.41011<br>0.0028<br>51 | 0.60920<br>0.0001<br>50 | 0.41552<br>0.0024<br>51 | 0.68008<br>0.0001<br>51 | -0.05001<br>0.7275<br>51 | 0.61858<br>0.0001<br>51 | 0.15013<br>0.2981<br>50 |
| BZ_K_FLU | 0.85720<br>0.0001<br>51 | 1.00000<br>0.0<br>52 | 0.10673<br>0.4514<br>52 | -0.17312<br>0.2197<br>52 | -0.20796<br>0.1390<br>52 | 0.28926<br>0.0375<br>52 | 0.85174<br>0.0001<br>51 | 0.18063<br>0.2000<br>52 | 0.54825<br>0.0001<br>52 | -0.09191<br>0.5169<br>52 | 0.56532<br>0.0001<br>52 | 0.04998<br>0.7276<br>51 |
| CADMIUM | 0.19603<br>0.1680<br>51 | 0.10673<br>0.4514<br>52 | 1.00000<br>0.0<br>52 | 0.44893<br>0.0008<br>52 | 0.59612<br>0.0001<br>52 | 0.30609<br>0.0273<br>52 | 0.13433<br>0.3473<br>51 | 0.35848<br>0.0091<br>52 | 0.27738<br>0.0465<br>52 | 0.21386<br>0.1279<br>52 | 0.05788<br>0.6836<br>52 | 0.10872<br>0.4476<br>51 |
| CAD_EX_A | -0.10822<br>0.4497<br>51 | -0.17312<br>0.2197<br>52 | 0.44893<br>0.0008<br>52 | 1.00000<br>0.0<br>52 | 0.72434<br>0.0001<br>52 | 0.43979<br>0.0011<br>52 | -0.14563<br>0.3079<br>51 | -0.12048<br>0.3949<br>52 | 0.10973<br>0.4387<br>52 | 0.84824<br>0.0001<br>52 | 0.27233<br>0.0508<br>52 | -0.08186<br>0.5680<br>51 |
| CAD_EXTR | -0.15273<br>0.2846<br>51 | -0.20796<br>0.1390<br>52 | 0.59612<br>0.0001<br>52 | 0.72434<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.35338<br>0.0102<br>52 | -0.11855<br>0.4074<br>51 | 0.07724<br>0.5863<br>52 | 0.08073<br>0.5694<br>52 | 0.48791<br>0.0002<br>52 | 0.14594<br>0.3019<br>52 | 0.00838<br>0.9534<br>51 |
| CHROMIUM | 0.41011<br>0.0028<br>51 | 0.28926<br>0.0375<br>52 | 0.30609<br>0.0273<br>52 | 0.43979<br>0.0011<br>52 | 0.35338<br>0.0102<br>52 | 1.00000<br>0.0<br>52 | 0.32742<br>0.0190<br>51 | 0.44320<br>0.0010<br>52 | 0.54562<br>0.0001<br>52 | 0.43236<br>0.0014<br>52 | 0.50823<br>0.0001<br>52 | 0.27496<br>0.0509<br>51 |
| CHRYSENE | 0.60920<br>0.0001<br>50 | 0.85174<br>0.0001<br>51 | 0.13433<br>0.3473<br>51 | -0.14563<br>0.3079<br>51 | -0.11855<br>0.4074<br>51 | 0.32742<br>0.0190<br>51 | 1.00000<br>0.0<br>51 | 0.07385<br>0.6065<br>51 | 0.38693<br>0.0050<br>51 | -0.17113<br>0.2299<br>51 | 0.40497<br>0.0032<br>51 | 0.02593<br>0.8581<br>50 |
| CLAY | 0.41552<br>0.0024<br>51 | 0.18063<br>0.2000<br>52 | 0.35848<br>0.0091<br>52 | -0.12048<br>0.3949<br>52 | 0.07724<br>0.5863<br>52 | 0.44320<br>0.0010<br>52 | 0.07385<br>0.6065<br>51 | 1.00000<br>0.0<br>52 | 0.39513<br>0.0037<br>52 | -0.09678<br>0.4949<br>52 | 0.14043<br>0.3207<br>52 | 0.32987<br>0.0181<br>51 |
| COPPER | 0.68008<br>0.0001<br>51 | 0.54825<br>0.0001<br>52 | 0.27738<br>0.0465<br>52 | 0.10973<br>0.4387<br>52 | 0.08073<br>0.5694<br>52 | 0.54562<br>0.0001<br>52 | 0.38693<br>0.0050<br>51 | 0.39513<br>0.0037<br>52 | 1.00000<br>0.0<br>52 | 0.23543<br>0.0929<br>52 | 0.77409<br>0.0001<br>52 | 0.36683<br>0.0001<br>51 |
| COP_EX_A | -0.05001<br>0.7275<br>51 | -0.09191<br>0.5169<br>52 | 0.21386<br>0.1279<br>52 | 0.84824<br>0.0001<br>52 | 0.48791<br>0.0002<br>52 | 0.43236<br>0.0014<br>52 | -0.17113<br>0.2299<br>51 | -0.09678<br>0.4949<br>52 | 0.23543<br>0.0929<br>52 | 1.00000<br>0.0<br>52 | 0.41685<br>0.0021<br>52 | 0.01224<br>0.9320<br>51 |
| COP_EXTR | 0.61858<br>0.0001<br>51 | 0.56532<br>0.0001<br>52 | 0.05788<br>0.6836<br>52 | 0.27233<br>0.0508<br>52 | 0.14594<br>0.3019<br>52 | 0.50823<br>0.0001<br>52 | 0.40497<br>0.0032<br>51 | 0.14043<br>0.3207<br>52 | 0.77409<br>0.0001<br>52 | 0.41685<br>0.0021<br>52 | 1.00000<br>0.0<br>52 | 0.28068<br>0.0460<br>51 |
| DDD | 0.15013<br>0.2981<br>50 | 0.04998<br>0.7276<br>51 | 0.10872<br>0.4476<br>51 | -0.08186<br>0.5680<br>51 | 0.00838<br>0.9534<br>51 | 0.27496<br>0.0509<br>51 | 0.02593<br>0.8581<br>50 | 0.32987<br>0.0181<br>51 | 0.36683<br>0.0001<br>51 | 0.01224<br>0.9320<br>51 | 0.28068<br>0.0460<br>51 | 1.00000<br>0.0<br>51 |

/user/cntl/bechtel/analysis/corr1.sas

R0063914

0355-- VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | 0.20990<br>0.1393<br>51 | -0.02665<br>0.8513<br>52 | 0.60860<br>0.0001<br>52 | 0.12683<br>0.3703<br>52 | 0.30615<br>0.0273<br>52 | 0.27877<br>0.0454<br>52 | -0.08192<br>0.5677<br>51 | 0.47285<br>0.0004<br>52 | 0.31569<br>0.0226<br>52 | 0.06747<br>0.6346<br>52 | 0.02342<br>0.8691<br>52 | 0.39288<br>0.0043<br>51 |
| DIBENZO_ | 0.78704<br>0.0001<br>44 | 0.62438<br>0.0001<br>44 | 0.20845<br>0.1745<br>44 | 0.02168<br>0.8889<br>44 | 0.01498<br>0.9231<br>44 | 0.52610<br>0.0002<br>44 | 0.46631<br>0.0014<br>44 | 0.45316<br>0.0020<br>44 | 0.38343<br>0.0102<br>44 | 0.01409<br>0.9277<br>44 | 0.48862<br>0.0008<br>44 | 0.07698<br>0.6237<br>43 |
| DINOCTYL | 0.55676<br>0.0001<br>50 | 0.44465<br>0.0012<br>50 | 0.38858<br>0.0053<br>50 | 0.37765<br>0.0069<br>50 | 0.20033<br>0.1630<br>50 | 0.41514<br>0.0027<br>50 | 0.33453<br>0.0188<br>49 | 0.19847<br>0.1671<br>50 | 0.30162<br>0.0333<br>50 | 0.25022<br>0.0797<br>50 | 0.43510<br>0.0016<br>50 | -0.24344<br>0.0919<br>49 |
| E_NORM_D | 0.03860<br>0.7880<br>51 | -0.11212<br>0.4287<br>52 | 0.34750<br>0.0116<br>52 | -0.06291<br>0.6577<br>52 | 0.06212<br>0.6618<br>52 | 0.03518<br>0.8044<br>52 | -0.16192<br>0.2563<br>51 | 0.33010<br>0.0169<br>52 | -0.00146<br>0.9918<br>52 | -0.20654<br>0.1418<br>52 | -0.24208<br>0.0838<br>52 | 0.19162<br>0.1780<br>51 |
| E_SURVIV | 0.11795<br>0.4098<br>51 | 0.13668<br>0.3339<br>52 | 0.21797<br>0.1206<br>52 | -0.09573<br>0.4996<br>52 | -0.03029<br>0.8312<br>52 | 0.06364<br>0.6540<br>52 | 0.16855<br>0.2371<br>51 | 0.15118<br>0.2847<br>52 | -0.02765<br>0.8457<br>52 | -0.22779<br>0.1044<br>52 | -0.09205<br>0.5163<br>52 | 0.20315<br>0.1528<br>51 |
| FINES | 0.33401<br>0.0166<br>51 | 0.12733<br>0.3684<br>52 | 0.37491<br>0.0469<br>52 | -0.09036<br>0.5241<br>52 | 0.02212<br>0.8763<br>52 | 0.44233<br>0.0010<br>52 | -0.07399<br>0.6059<br>51 | 0.53305<br>0.0001<br>52 | 0.33041<br>0.0167<br>52 | -0.01444<br>0.9191<br>52 | 0.14441<br>0.3070<br>52 | 0.32665<br>0.0193<br>51 |
| FLUORANT | 0.26521<br>0.0655<br>49 | 0.58468<br>0.0001<br>50 | -0.00094<br>0.9948<br>50 | -0.08475<br>0.5584<br>50 | -0.08366<br>0.5635<br>50 | 0.27341<br>0.0547<br>50 | 0.88111<br>0.0001<br>49 | -0.14069<br>0.3298<br>50 | 0.12986<br>0.3687<br>50 | -0.11834<br>0.4131<br>90 | 0.24231<br>0.0900<br>50 | 0.00016<br>0.9991<br>49 |
| GRAVEL | -0.02876<br>0.8412<br>51 | -0.09179<br>0.5175<br>52 | 0.32234<br>0.0198<br>52 | 0.90372<br>0.0001<br>52 | 0.69933<br>0.0001<br>52 | 0.50831<br>0.0001<br>52 | -0.02893<br>0.8403<br>51 | -0.05016<br>0.7240<br>52 | 0.17172<br>0.2235<br>52 | 0.79491<br>0.0001<br>52 | 0.39067<br>0.0042<br>52 | -0.11363<br>0.4272<br>51 |
| INDENO_1 | 0.97427<br>0.0001<br>51 | 0.88790<br>0.0001<br>51 | 0.20065<br>0.1580<br>51 | -0.11554<br>0.4199<br>51 | -0.14358<br>0.3148<br>51 | 0.40688<br>0.0030<br>51 | 0.67783<br>0.0001<br>50 | 0.40929<br>0.0032<br>51 | 0.60690<br>0.0001<br>51 | -0.11092<br>0.4400<br>51 | 0.54490<br>0.0001<br>51 | 0.09190<br>0.5256<br>50 |
| LEAD | 0.61236<br>0.0001<br>51 | 0.40597<br>0.0028<br>52 | 0.37637<br>0.0060<br>52 | 0.04650<br>0.7434<br>52 | 0.16176<br>0.2519<br>52 | 0.56808<br>0.0001<br>52 | 0.21110<br>0.1370<br>51 | 0.67203<br>0.0001<br>52 | 0.82228<br>0.0001<br>52 | 0.17528<br>0.2139<br>52 | 0.59695<br>0.0001<br>52 | 0.46041<br>0.0007<br>51 |
| LEAD_EX_ | -0.07994<br>0.5780<br>51 | -0.09578<br>0.4994<br>52 | 0.10342<br>0.4648<br>52 | 0.58859<br>0.0001<br>52 | 0.21063<br>0.1339<br>52 | 0.25214<br>0.0713<br>52 | -0.23751<br>0.0933<br>51 | -0.08382<br>0.5547<br>52 | 0.16127<br>0.2534<br>52 | 0.88054<br>0.0001<br>52 | 0.34658<br>0.0780<br>52 | 0.06239<br>0.6638<br>51 |
| LEAD_EXT | 0.58490<br>0.0001<br>51 | 0.43700<br>0.0012<br>52 | 0.25691<br>0.0660<br>52 | -0.17305<br>0.2199<br>52 | 0.08675<br>0.5409<br>52 | 0.37751<br>0.0058<br>52 | 0.27379<br>0.0519<br>51 | 0.57128<br>0.0001<br>52 | 0.63052<br>0.0001<br>52 | -0.07056<br>0.6191<br>52 | 0.48918<br>0.0002<br>52 | 0.43898<br>0.0013<br>51 |

/user/cntl/bechtel/analysis/corri.sas

R0063915

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | -0.11650<br>0.4156<br>51 | -0.07819<br>0.5816<br>52 | -0.07808<br>0.5822<br>52 | -0.02326<br>0.8700<br>52 | 0.05222<br>0.7131<br>52 | -0.07445<br>0.5999<br>52 | 0.11215<br>0.4333<br>51 | -0.17057<br>0.2267<br>52 | -0.12515<br>0.3767<br>52 | -0.02760<br>0.8456<br>52 | -0.06316<br>0.6564<br>52 | -0.35297<br>0.0111<br>51 |
| MEAN_GRS | -0.03490<br>0.8099<br>50 | -0.11043<br>0.4404<br>51 | 0.32289<br>0.0208<br>51 | 0.92017<br>0.0001<br>51 | 0.69725<br>0.0001<br>51 | 0.53073<br>0.0001<br>51 | -0.06546<br>0.6818<br>50 | -0.03146<br>0.8268<br>51 | 0.17637<br>0.2197<br>51 | 0.81627<br>0.0001<br>51 | 0.38898<br>0.0048<br>51 | -0.07840<br>0.5884<br>50 |
| MEDIAN_G | -0.03949<br>0.7832<br>51 | -0.10856<br>0.4436<br>52 | 0.31247<br>0.0241<br>52 | 0.91668<br>0.0001<br>52 | 0.68778<br>0.0001<br>52 | 0.52733<br>0.0001<br>52 | -0.06161<br>0.6676<br>51 | -0.04130<br>0.7713<br>52 | 0.16366<br>0.2483<br>52 | 0.81472<br>0.0001<br>52 | 0.38022<br>0.0054<br>52 | -0.08567<br>0.5500<br>51 |
| MERCURY | 0.60886<br>0.0001<br>51 | 0.42118<br>0.0019<br>52 | 0.05503<br>0.6984<br>52 | -0.14492<br>0.3053<br>52 | -0.20748<br>0.1400<br>52 | 0.23565<br>0.0929<br>52 | 0.09126<br>0.5242<br>51 | 0.39942<br>0.0034<br>52 | 0.70124<br>0.0001<br>52 | 0.07535<br>0.5955<br>52 | 0.64653<br>0.0001<br>52 | 0.50642<br>0.0001<br>51 |
| MERC_EX_ | -0.08489<br>0.5537<br>51 | -0.03759<br>0.7913<br>52 | -0.01103<br>0.9381<br>52 | 0.49362<br>0.0002<br>52 | 0.14291<br>0.3122<br>52 | 0.18071<br>0.1998<br>52 | -0.17985<br>0.2066<br>51 | -0.14644<br>0.3003<br>52 | 0.12322<br>0.3841<br>52 | 0.83832<br>0.0001<br>52 | 0.24285<br>0.0828<br>52 | 0.01510<br>0.9163<br>51 |
| MERC_EXT | 0.16725<br>0.2408<br>51 | 0.17733<br>0.2085<br>52 | -0.29335<br>0.0348<br>52 | 0.11209<br>0.4289<br>52 | 0.06401<br>0.6521<br>52 | 0.16184<br>0.2517<br>52 | -0.06976<br>0.6267<br>51 | -0.08661<br>0.5415<br>52 | 0.17477<br>0.2153<br>52 | 0.35022<br>0.0109<br>52 | 0.41414<br>0.0023<br>52 | 0.07962<br>0.5786<br>51 |
| NICKEL | 0.20408<br>0.1509<br>51 | 0.00578<br>0.9676<br>52 | 0.44541<br>0.0009<br>52 | 0.67216<br>0.0001<br>52 | 0.55940<br>0.0001<br>52 | 0.73807<br>0.0001<br>52 | -0.07118<br>0.6198<br>51 | 0.50783<br>0.0001<br>52 | 0.41745<br>0.0031<br>52 | 0.64006<br>0.0001<br>52 | 0.38443<br>0.0049<br>52 | 0.12204<br>0.3936<br>51 |
| NSPECIES | -0.07970<br>0.5783<br>51 | 0.02044<br>0.8856<br>52 | -0.08350<br>0.5562<br>52 | -0.03596<br>0.8002<br>52 | 0.02944<br>0.8358<br>52 | -0.13835<br>0.3280<br>52 | 0.21149<br>0.1363<br>51 | -0.28130<br>0.0434<br>52 | -0.12333<br>0.3837<br>52 | -0.05959<br>0.6747<br>52 | -0.03072<br>0.8288<br>52 | -0.38466<br>0.0053<br>51 |
| PCB_1260 | 0.62401<br>0.0001<br>50 | 0.47838<br>0.0004<br>51 | 0.05131<br>0.7207<br>51 | -0.11793<br>0.4098<br>51 | -0.17777<br>0.2120<br>51 | 0.26815<br>0.0571<br>51 | 0.19326<br>0.1787<br>50 | 0.37976<br>0.0060<br>51 | 0.83898<br>0.0001<br>51 | 0.11051<br>0.4401<br>51 | 0.62401<br>0.0001<br>51 | 0.47937<br>0.0004<br>51 |
| PHENANTH | 0.29121<br>0.0402<br>50 | 0.51958<br>0.0001<br>51 | -0.02425<br>0.8659<br>51 | -0.06224<br>0.6644<br>51 | -0.06991<br>0.6259<br>51 | 0.47447<br>0.0004<br>51 | 0.78412<br>0.0001<br>50 | -0.12727<br>0.3735<br>51 | 0.14668<br>0.3044<br>51 | -0.08861<br>0.5364<br>51 | 0.24494<br>0.0832<br>51 | 0.00458<br>0.9748<br>50 |
| PYRENE | 0.34530<br>0.0151<br>49 | 0.69088<br>0.0001<br>50 | 0.00364<br>0.9800<br>50 | -0.11132<br>0.4415<br>50 | -0.09853<br>0.4960<br>50 | 0.19000<br>0.1863<br>50 | 0.91004<br>0.0001<br>49 | -0.15356<br>0.2870<br>50 | 0.17847<br>0.2150<br>50 | -0.15092<br>0.2955<br>50 | 0.29203<br>0.0396<br>50 | -0.04651<br>0.7510<br>49 |
| P_GROWTH | 0.12133<br>0.3964<br>51 | 0.32781<br>0.0177<br>52 | -0.15866<br>0.2613<br>52 | 0.09236<br>0.5149<br>52 | 0.04693<br>0.7411<br>52 | 0.13417<br>0.3430<br>52 | 0.50081<br>0.0002<br>51 | -0.30748<br>0.0266<br>52 | -0.03672<br>0.7961<br>52 | 0.00493<br>0.9723<br>52 | 0.13823<br>0.3284<br>52 | -0.30142<br>0.0316<br>51 |

/usr/cnt1/bechtel/analysis/corr1.sas

R0063916

3575 OCT 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURVIV | -0.11287<br>0.4304<br>51 | -0.21826<br>0.1201<br>52 | 0.13513<br>0.3395<br>52 | -0.14592<br>0.3020<br>52 | -0.09997<br>0.4807<br>52 | -0.29295<br>0.0351<br>52 | -0.33122<br>0.0176<br>51 | 0.13304<br>0.3471<br>52 | -0.11627<br>0.4118<br>52 | -0.09108<br>0.5208<br>52 | -0.27279<br>0.0504<br>52 | 0.06803<br>0.6352<br>51 |
| SAND | -0.05201<br>0.7170<br>51 | -0.13975<br>0.3231<br>52 | 0.25101<br>0.0727<br>52 | 0.88823<br>0.0001<br>52 | 0.63981<br>0.0001<br>52 | 0.53254<br>0.0001<br>52 | -0.12188<br>0.3942<br>51 | -0.03515<br>0.8046<br>52 | 0.12193<br>0.3892<br>52 | 0.80592<br>0.0001<br>52 | 0.34359<br>0.0126<br>52 | -0.08519<br>0.5522<br>51 |
| SELENIUM | 0.03073<br>0.8305<br>51 | -0.09972<br>0.4818<br>52 | 0.42599<br>0.0016<br>52 | 0.89613<br>0.0001<br>52 | 0.71929<br>0.0001<br>52 | 0.57587<br>0.0001<br>52 | -0.09806<br>0.4936<br>51 | 0.12563<br>0.3748<br>52 | 0.18746<br>0.1833<br>52 | 0.77885<br>0.0001<br>52 | 0.34793<br>0.0115<br>52 | -0.04152<br>0.7724<br>51 |
| SHANNON | -0.07564<br>0.5978<br>51 | -0.20319<br>0.1485<br>52 | 0.00333<br>0.9813<br>52 | 0.00477<br>0.9732<br>52 | 0.05280<br>0.7101<br>52 | 0.06153<br>0.6648<br>52 | -0.16080<br>0.2596<br>51 | 0.18504<br>0.1891<br>52 | -0.04309<br>0.7617<br>52 | 0.06903<br>0.6248<br>52 | -0.05211<br>0.7137<br>52 | -0.12053<br>0.3995<br>51 |
| SILT | 0.25140<br>0.0752<br>51 | 0.08460<br>0.5510<br>52 | 0.20133<br>0.1524<br>52 | -0.06393<br>0.6525<br>52 | -0.00847<br>0.9525<br>52 | 0.38698<br>0.0046<br>52 | -0.13935<br>0.3294<br>51 | 0.64529<br>0.0001<br>52 | 0.25669<br>0.0662<br>52 | 0.02894<br>0.8386<br>52 | 0.12852<br>0.3639<br>52 | 0.28433<br>0.0432<br>51 |
| SILVER | 0.10194<br>0.4766<br>51 | -0.02399<br>0.8659<br>52 | 0.09186<br>0.5172<br>52 | 0.09921<br>0.4841<br>52 | 0.01469<br>0.9177<br>52 | 0.29998<br>0.0307<br>52 | -0.09921<br>0.4885<br>51 | 0.34227<br>0.0130<br>52 | 0.24782<br>0.0765<br>52 | 0.14109<br>0.3184<br>52 | 0.10450<br>0.4610<br>52 | 0.13091<br>0.3599<br>51 |
| SULFIDE | 0.05512<br>0.7008<br>51 | 0.28020<br>0.0442<br>52 | -0.03887<br>0.7844<br>52 | -0.16098<br>0.2543<br>52 | -0.04284<br>0.7630<br>52 | -0.15673<br>0.2672<br>52 | 0.48026<br>0.0004<br>51 | -0.19351<br>0.1693<br>52 | -0.07213<br>0.6113<br>52 | -0.21748<br>0.1214<br>52 | 0.03987<br>0.7790<br>52 | -0.35475<br>0.0106<br>51 |
| ZINC | 0.54065<br>0.0001<br>51 | 0.44862<br>0.0009<br>52 | 0.53074<br>0.0001<br>52 | 0.61130<br>0.0025<br>52 | 0.39339<br>0.0039<br>52 | 0.68468<br>0.0001<br>52 | 0.37067<br>0.0074<br>51 | 0.46766<br>0.0005<br>52 | 0.76215<br>0.0001<br>52 | 0.42582<br>0.0016<br>52 | 0.63393<br>0.0001<br>52 | 0.21788<br>0.1246<br>51 |
| ZINC_EX_ | -0.07766<br>0.5881<br>51 | -0.12005<br>0.3966<br>52 | 0.29497<br>0.0330<br>52 | 0.90064<br>0.0001<br>52 | 0.53810<br>0.0001<br>52 | 0.41662<br>0.0021<br>52 | -0.18273<br>0.1993<br>51 | -0.11263<br>0.4266<br>52 | 0.18572<br>0.1874<br>52 | 0.90586<br>0.0001<br>52 | 0.34390<br>0.0126<br>52 | -0.01870<br>0.8964<br>51 |
| ZINC_EXT | 0.63084<br>0.0001<br>51 | 0.56742<br>0.0001<br>52 | 0.61089<br>0.0025<br>52 | 0.26373<br>0.0589<br>52 | 0.37708<br>0.0039<br>52 | 0.55732<br>0.0001<br>52 | 0.46945<br>0.0005<br>51 | 0.33728<br>0.0145<br>52 | 0.80953<br>0.0001<br>52 | 0.29256<br>0.0353<br>52 | 0.80895<br>0.0001<br>52 | 0.30734<br>0.0282<br>51 |
| TOC | . | . | . | . | . | . | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



R0063917



VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | -0.15305<br>0.2787<br>52 | -0.01179<br>0.9395<br>44 | 0.09212<br>0.5246<br>50 | -0.36397<br>0.0080<br>52 | -0.31311<br>0.0238<br>52 | -0.34615<br>0.0119<br>52 | 0.20415<br>0.1550<br>50 | 0.01781<br>0.9002<br>52 | -0.00904<br>0.9498<br>51 | -0.26350<br>0.0591<br>52 | -0.15835<br>0.2622<br>52 | -0.20755<br>0.1398<br>52 |
| ACNPHTHY | -0.03265<br>0.8219<br>50 | 0.77122<br>0.0001<br>44 | 0.60001<br>0.0001<br>49 | -0.12815<br>0.3751<br>50 | 0.01561<br>0.9143<br>50 | 0.08896<br>0.5390<br>50 | 0.54397<br>0.0001<br>48 | 0.17084<br>0.2355<br>50 | 0.60485<br>0.0001<br>50 | 0.18695<br>0.1916<br>50 | -0.08465<br>0.5589<br>50 | 0.18860<br>0.1896<br>50 |
| ANTHRACE | -0.22710<br>0.1090<br>51 | 0.25219<br>0.0986<br>44 | 0.28716<br>0.0432<br>50 | -0.25239<br>0.0740<br>51 | 0.05872<br>0.6823<br>51 | -0.25820<br>0.0673<br>51 | 0.87989<br>0.0001<br>49 | 0.04769<br>0.7397<br>51 | 0.39182<br>0.0045<br>51 | 0.00188<br>0.9896<br>51 | -0.18415<br>0.1958<br>51 | 0.08967<br>0.5315<br>51 |
| ARSENIC | 0.29091<br>0.0364<br>52 | 0.29438<br>0.0524<br>44 | 0.47787<br>0.0004<br>50 | 0.05132<br>0.7179<br>52 | -0.00589<br>0.9669<br>52 | 0.36328<br>0.0081<br>52 | -0.09935<br>0.4925<br>50 | 0.84356<br>0.0001<br>52 | 0.20248<br>0.1542<br>51 | 0.51795<br>0.0001<br>52 | 0.47512<br>0.0004<br>52 | 0.22574<br>0.1076<br>52 |
| AVS | -0.25566<br>0.0674<br>52 | 0.16532<br>0.2835<br>44 | 0.26115<br>0.0670<br>50 | -0.40421<br>0.0030<br>52 | -0.06532<br>0.6495<br>52 | -0.41455<br>0.0022<br>52 | 0.56708<br>0.0001<br>50 | 0.01219<br>0.9316<br>52 | 0.16401<br>0.2501<br>51 | -0.15784<br>0.2637<br>52 | -0.35160<br>0.0106<br>52 | -0.07568<br>0.5939<br>52 |
| A_REBURI | 0.07024<br>0.6207<br>52 | -0.18353<br>0.2330<br>44 | -0.07393<br>0.6099<br>50 | 0.27257<br>0.0506<br>52 | 0.13054<br>0.3563<br>52 | 0.33366<br>0.0156<br>52 | -0.20945<br>0.1443<br>50 | 0.00006<br>0.9997<br>52 | -0.07125<br>0.6193<br>51 | 0.14743<br>0.2969<br>52 | 0.26921<br>0.0536<br>52 | 0.07768<br>0.5841<br>52 |
| A_SURVIV | 0.04682<br>0.7417<br>52 | -0.18330<br>0.2337<br>44 | -0.06488<br>0.6844<br>50 | 0.30020<br>0.0306<br>52 | 0.10780<br>0.4481<br>52 | 0.38350<br>0.0050<br>52 | -0.31652<br>0.0291<br>50 | 0.00240<br>0.9865<br>52 | -0.01460<br>0.9190<br>51 | 0.23319<br>0.0982<br>52 | 0.26538<br>0.0573<br>52 | 0.13233<br>0.3497<br>52 |
| BERYLLIU | 0.39128<br>0.0362<br>52 | 0.35308<br>0.0187<br>44 | 0.38292<br>0.0061<br>50 | 0.17180<br>0.2241<br>52 | 0.02324<br>0.8701<br>52 | 0.73454<br>0.0001<br>52 | -0.21737<br>0.1296<br>50 | 0.50370<br>0.0001<br>52 | 0.25031<br>0.0765<br>51 | 0.67428<br>0.0001<br>52 | 0.28012<br>0.0443<br>52 | 0.39191<br>0.0041<br>52 |
| BIOMASS | -0.05160<br>0.7164<br>52 | 0.01552<br>0.9203<br>44 | 0.15993<br>0.2672<br>50 | -0.31936<br>0.0210<br>52 | -0.25607<br>0.0691<br>52 | -0.32870<br>0.0174<br>52 | 0.14663<br>0.3096<br>50 | 0.04626<br>0.7447<br>52 | -0.01869<br>0.8966<br>51 | -0.17060<br>0.2266<br>52 | -0.16616<br>0.2391<br>52 | -0.10826<br>0.4449<br>52 |
| BZ_A_ANT | -0.16097<br>0.2591<br>51 | 0.38959<br>0.0089<br>44 | 0.22843<br>0.1106<br>50 | -0.17130<br>0.2294<br>51 | 0.16169<br>0.3213<br>51 | -0.14414<br>0.3129<br>51 | 0.96913<br>0.0001<br>49 | 0.00895<br>0.9503<br>51 | 0.50521<br>0.0002<br>51 | 0.09313<br>0.5187<br>51 | -0.19296<br>0.1769<br>51 | 0.16116<br>0.2586<br>51 |
| BZ_A_PYR | -0.00410<br>0.9770<br>52 | 0.60573<br>0.0001<br>44 | 0.39389<br>0.0047<br>50 | -0.15530<br>0.2716<br>52 | 0.13109<br>0.3543<br>52 | 0.01336<br>0.9251<br>52 | 0.64914<br>0.0001<br>50 | -0.06615<br>0.6413<br>52 | 0.79316<br>0.0001<br>51 | 0.38405<br>0.0049<br>52 | -0.10661<br>0.4527<br>52 | 0.40722<br>0.0027<br>52 |
| BZ_B_FLU | -0.01177<br>0.9340<br>52 | 0.82634<br>0.0002<br>44 | 0.34078<br>0.0154<br>50 | -0.30140<br>0.1522<br>52 | 0.08283<br>0.5594<br>52 | -0.02393<br>0.8685<br>52 | 0.88288<br>0.0001<br>50 | -0.06801<br>0.6319<br>52 | 0.76363<br>0.0001<br>51 | 0.36894<br>0.0070<br>52 | -0.09081<br>0.5267<br>52 | 0.39370<br>0.0039<br>52 |

/usr/cntl/bechtel/analysis/corr1.sas

R0063918

2545 OCT 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | 0.20990<br>0.1393<br>51 | 0.78704<br>0.0001<br>44 | 0.55676<br>0.0001<br>50 | 0.03860<br>0.7880<br>51 | 0.11795<br>0.4098<br>51 | 0.33401<br>0.0166<br>51 | 0.26521<br>0.0655<br>49 | -0.02876<br>0.8412<br>51 | 0.97427<br>0.0001<br>51 | 0.61236<br>0.0001<br>51 | -0.07954<br>0.5790<br>51 | 0.58490<br>0.0001<br>51 |
| BZ_K_FLU | -0.02665<br>0.8513<br>52 | 0.62438<br>0.0001<br>44 | 0.44465<br>0.0012<br>50 | -0.11212<br>0.4287<br>52 | 0.13668<br>0.3339<br>52 | 0.12733<br>0.3684<br>52 | 0.58448<br>0.0001<br>50 | -0.09179<br>0.5175<br>52 | 0.86790<br>0.0001<br>51 | 0.40597<br>0.0028<br>52 | -0.09578<br>0.4994<br>52 | 0.43700<br>0.0012<br>52 |
| CADMIUM | 0.60860<br>0.0001<br>52 | 0.20845<br>0.1745<br>44 | 0.38858<br>0.0053<br>50 | 0.34750<br>0.0116<br>52 | 0.21797<br>0.1206<br>52 | 0.27691<br>0.0469<br>52 | -0.00094<br>0.9948<br>50 | 0.32234<br>0.0198<br>52 | 0.20065<br>0.1580<br>51 | 0.37637<br>0.0060<br>52 | 0.10362<br>0.4648<br>52 | 0.25691<br>0.0660<br>52 |
| CAD_EX_A | 0.12683<br>0.3703<br>52 | 0.02168<br>0.8899<br>44 | 0.37765<br>0.0069<br>50 | -0.06291<br>0.6577<br>52 | -0.09573<br>0.4996<br>52 | -0.09036<br>0.5241<br>52 | -0.08475<br>0.5584<br>50 | 0.90372<br>0.0001<br>52 | -0.11554<br>0.4195<br>51 | 0.04650<br>0.7434<br>52 | 0.58859<br>0.0001<br>52 | -0.17305<br>0.2199<br>52 |
| CAD_EXTR | 0.30615<br>0.0273<br>52 | 0.01498<br>0.9231<br>44 | 0.20033<br>0.1630<br>50 | 0.06212<br>0.6618<br>52 | -0.03029<br>0.8312<br>52 | 0.02212<br>0.8763<br>52 | -0.08366<br>0.5635<br>50 | 0.69933<br>0.0001<br>52 | -0.14358<br>0.3148<br>51 | 0.16176<br>0.2519<br>52 | 0.21063<br>0.1339<br>52 | 0.08675<br>0.5409<br>52 |
| CHROMIUM | 0.27877<br>0.0454<br>52 | 0.52610<br>0.0002<br>44 | 0.41514<br>0.0027<br>50 | 0.03518<br>0.8044<br>52 | 0.06364<br>0.6540<br>52 | 0.44233<br>0.0010<br>52 | 0.27341<br>0.0547<br>50 | 0.50831<br>0.0001<br>52 | 0.40688<br>0.0030<br>51 | 0.56808<br>0.0001<br>52 | 0.25214<br>0.0713<br>52 | 0.37751<br>0.0058<br>52 |
| CHRYSENE | -0.08192<br>0.5677<br>51 | 0.46631<br>0.0014<br>44 | 0.33453<br>0.0188<br>49 | -0.16192<br>0.2563<br>51 | 0.16855<br>0.2371<br>51 | -0.07399<br>0.6059<br>51 | 0.88111<br>0.0001<br>49 | -0.02893<br>0.8403<br>51 | 0.67783<br>0.0001<br>50 | 0.21110<br>0.1370<br>51 | -0.23751<br>0.0933<br>51 | 0.27379<br>0.0519<br>51 |
| CLAY | 0.47285<br>0.0006<br>52 | 0.45316<br>0.0020<br>44 | 0.19847<br>0.1671<br>50 | 0.33010<br>0.0169<br>52 | 0.15118<br>0.2847<br>52 | 0.83305<br>0.0001<br>52 | -0.14069<br>0.3298<br>50 | -0.05016<br>0.7240<br>52 | 0.40829<br>0.0032<br>51 | 0.67203<br>0.0001<br>52 | -0.08382<br>0.5547<br>52 | 0.57128<br>0.0001<br>52 |
| COPPER | 0.31569<br>0.0226<br>52 | 0.38343<br>0.0102<br>44 | 0.30162<br>0.0333<br>50 | -0.00146<br>0.9918<br>52 | -0.02765<br>0.8457<br>52 | 0.33041<br>0.0167<br>52 | 0.12986<br>0.3687<br>50 | 0.17172<br>0.2235<br>52 | 0.60690<br>0.0001<br>51 | 0.82228<br>0.0001<br>52 | 0.16127<br>0.2534<br>52 | 0.63052<br>0.0001<br>52 |
| COP_EX_A | 0.06747<br>0.6346<br>52 | 0.01409<br>0.9277<br>44 | 0.25022<br>0.0797<br>50 | -0.20654<br>0.1418<br>52 | -0.22779<br>0.1044<br>52 | -0.01444<br>0.9191<br>52 | -0.11834<br>0.4131<br>50 | 0.79491<br>0.0001<br>52 | -0.11053<br>0.4400<br>51 | 0.17528<br>0.2139<br>52 | 0.88056<br>0.0001<br>52 | -0.07056<br>0.6191<br>52 |
| COP_EXTR | 0.02342<br>0.8691<br>52 | 0.48862<br>0.0008<br>44 | 0.43510<br>0.0016<br>50 | -0.24208<br>0.0838<br>52 | -0.09205<br>0.5163<br>52 | 0.14443<br>0.3070<br>52 | 0.24231<br>0.0900<br>50 | 0.39067<br>0.0042<br>52 | 0.54450<br>0.0001<br>51 | 0.59695<br>0.0001<br>52 | 0.24658<br>0.0780<br>52 | 0.48915<br>0.0002<br>52 |
| DDD | 0.39288<br>0.0043<br>51 | 0.07698<br>0.6237<br>43 | -0.24344<br>0.0919<br>49 | 0.19162<br>0.1780<br>51 | 0.20315<br>0.1528<br>51 | 0.32665<br>0.0193<br>51 | 0.00016<br>0.9991<br>49 | -0.11363<br>0.4272<br>51 | 0.09190<br>0.5256<br>50 | 0.46041<br>0.0007<br>51 | 0.06235<br>0.6638<br>51 | 0.43898<br>0.0013<br>51 |



R0063919

3457 VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | 1.00000<br>0.0<br>52 | 0.19630<br>0.2016<br>44 | 0.02653<br>0.8549<br>50 | 0.30478<br>0.0280<br>52 | 0.14263<br>0.3131<br>52 | 0.30124<br>0.0300<br>52 | -0.24055<br>0.0924<br>50 | 0.07448<br>0.5998<br>52 | 0.17070<br>0.2311<br>51 | 0.46338<br>0.0005<br>52 | 0.09637<br>0.4968<br>52 | 0.39925<br>0.0034<br>52 |
| DIBENZO_ | 0.19630<br>0.2016<br>44 | 1.00000<br>0.0<br>44 | 0.67813<br>0.0001<br>44 | 0.04923<br>0.7510<br>44 | 0.13381<br>0.3865<br>44 | 0.37424<br>0.0123<br>44 | 0.24426<br>0.1101<br>44 | 0.10041<br>0.5167<br>44 | 0.80372<br>0.0001<br>44 | 0.38991<br>0.0089<br>44 | -0.06341<br>0.6826<br>44 | 0.37039<br>0.0133<br>44 |
| DINOCTYL | 0.02653<br>0.8549<br>50 | 0.67813<br>0.0001<br>44 | 1.00000<br>0.0<br>50 | -0.04000<br>0.7827<br>50 | -0.00023<br>0.9988<br>50 | 0.17167<br>0.2332<br>50 | 0.12620<br>0.3927<br>48 | 0.42893<br>0.0019<br>50 | 0.57565<br>0.0001<br>50 | 0.27396<br>0.0542<br>50 | 0.05842<br>0.6870<br>50 | 0.17754<br>0.2176<br>50 |
| E_NORM_D | 0.30478<br>0.0280<br>52 | 0.04923<br>0.7510<br>44 | -0.04000<br>0.7827<br>50 | 1.00000<br>0.0<br>52 | 0.65961<br>0.0001<br>52 | 0.37669<br>0.0059<br>52 | -0.21012<br>0.1430<br>50 | -0.16764<br>0.2349<br>52 | 0.04326<br>0.7631<br>51 | 0.11639<br>0.4113<br>52 | -0.20641<br>0.1421<br>52 | 0.05151<br>0.7169<br>52 |
| E_SURVIV | 0.14263<br>0.3131<br>52 | 0.13381<br>0.3865<br>44 | -0.00023<br>0.9988<br>50 | 0.65961<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.11086<br>0.4340<br>52 | 0.14465<br>0.3162<br>50 | -0.12303<br>0.3849<br>52 | 0.17706<br>0.2139<br>51 | 0.03301<br>0.8163<br>52 | -0.25933<br>0.0634<br>52 | 0.05294<br>0.7093<br>52 |
| FINES | 0.30124<br>0.0300<br>52 | 0.37424<br>0.0123<br>44 | 0.17167<br>0.2332<br>50 | 0.37669<br>0.0059<br>52 | 0.11086<br>0.4340<br>52 | 1.00000<br>0.0<br>52 | -0.24713<br>0.0836<br>50 | -0.11046<br>0.4356<br>52 | 0.28195<br>0.0450<br>51 | 0.60305<br>0.0001<br>52 | 0.05144<br>0.7172<br>52 | 0.47234<br>0.0004<br>52 |
| FLUORANT | -0.24055<br>0.0924<br>50 | 0.24426<br>0.1101<br>44 | 0.12620<br>0.3927<br>48 | -0.21012<br>0.1430<br>50 | 0.14465<br>0.3162<br>50 | -0.24713<br>0.0836<br>50 | 1.00000<br>0.0<br>50 | 0.00167<br>0.9908<br>50 | 0.33945<br>0.0170<br>49 | -0.04424<br>0.7603<br>50 | -0.17781<br>0.2172<br>50 | 0.05337<br>0.7128<br>50 |
| GRAVEL | 0.07448<br>0.5998<br>52 | 0.10041<br>0.5167<br>44 | 0.42893<br>0.0019<br>50 | -0.16764<br>0.2349<br>52 | -0.12303<br>0.3849<br>52 | -0.11046<br>0.4356<br>52 | 0.00167<br>0.9908<br>50 | 1.00000<br>0.0<br>52 | -0.02442<br>0.8649<br>51 | 0.16778<br>0.2958<br>52 | 0.43662<br>0.0012<br>52 | -0.07259<br>0.6091<br>52 |
| INDENO_1 | 0.17070<br>0.2311<br>51 | 0.80372<br>0.0001<br>44 | 0.57565<br>0.0001<br>50 | 0.04326<br>0.7631<br>51 | 0.17706<br>0.2139<br>51 | 0.28195<br>0.0450<br>51 | 0.33945<br>0.0170<br>49 | -0.02442<br>0.8649<br>51 | 1.00000<br>0.0<br>51 | 0.52978<br>0.0001<br>51 | -0.15364<br>0.2817<br>51 | 0.53974<br>0.0001<br>51 |
| LEAD | 0.46338<br>0.0005<br>52 | 0.38991<br>0.0089<br>44 | 0.27396<br>0.0542<br>50 | 0.11639<br>0.4113<br>52 | 0.03301<br>0.8163<br>52 | 0.60305<br>0.0001<br>52 | -0.04424<br>0.7603<br>50 | 0.16778<br>0.2958<br>52 | 0.52978<br>0.0001<br>51 | 1.00000<br>0.0<br>52 | 0.13174<br>0.3519<br>52 | 0.87132<br>0.0001<br>52 |
| LEAD_EX_ | 0.09637<br>0.4968<br>52 | -0.06341<br>0.6826<br>44 | 0.05842<br>0.6870<br>50 | -0.20641<br>0.1421<br>52 | -0.25933<br>0.0634<br>52 | 0.05144<br>0.7172<br>52 | -0.17781<br>0.2172<br>50 | 0.43662<br>0.0012<br>52 | -0.15364<br>0.2817<br>51 | 0.13174<br>0.3519<br>52 | 1.00000<br>0.0<br>52 | -0.03792<br>0.7895<br>52 |
| LEAD_EXT | 0.39925<br>0.0034<br>52 | 0.37039<br>0.0133<br>44 | 0.17754<br>0.2176<br>50 | 0.05151<br>0.7169<br>52 | 0.05294<br>0.7093<br>52 | 0.47234<br>0.0004<br>52 | 0.05337<br>0.7128<br>50 | -0.07259<br>0.6091<br>52 | 0.53974<br>0.0001<br>51 | 0.87132<br>0.0001<br>52 | -0.03792<br>0.7895<br>52 | 1.00000<br>0.0<br>52 |



R0063920

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | 0.03091<br>0.8278<br>52 | -0.05461<br>0.7248<br>44 | 0.06118<br>0.6730<br>50 | -0.47913<br>0.0003<br>52 | -0.50012<br>0.0002<br>52 | -0.30681<br>0.0269<br>52 | 0.14647<br>0.3101<br>50 | 0.12693<br>0.3699<br>52 | -0.11003<br>0.4421<br>51 | -0.16307<br>0.2480<br>52 | -0.06990<br>0.6225<br>52 | -0.14021<br>0.3215<br>52 |
| MEAN_GRS | 0.09594<br>0.5030<br>51 | 0.10037<br>0.5219<br>43 | 0.40413<br>0.0040<br>49 | -0.14036<br>0.3259<br>51 | -0.11359<br>0.4274<br>51 | -0.06792<br>0.6358<br>51 | -0.03691<br>0.8012<br>49 | 0.99492<br>0.0001<br>51 | -0.03414<br>0.8139<br>50 | 0.15753<br>0.2696<br>51 | 0.46865<br>0.0005<br>51 | -0.06957<br>0.6276<br>51 |
| MEDIAN_G | 0.08856<br>0.5324<br>52 | 0.09093<br>0.5572<br>44 | 0.40225<br>0.0038<br>50 | -0.15886<br>0.2606<br>52 | -0.13311<br>0.3469<br>52 | -0.06680<br>0.6380<br>52 | -0.03093<br>0.8311<br>50 | 0.98829<br>0.0001<br>52 | -0.03967<br>0.7823<br>51 | 0.15079<br>0.2859<br>52 | 0.47312<br>0.0004<br>52 | -0.07386<br>0.6029<br>52 |
| MERCURY | 0.23510<br>0.0934<br>52 | 0.39206<br>0.0085<br>44 | 0.09489<br>0.5122<br>50 | 0.06634<br>0.6403<br>52 | 0.07344<br>0.6049<br>52 | 0.47660<br>0.0004<br>52 | -0.12503<br>0.3870<br>50 | -0.15935<br>0.2591<br>52 | 0.50570<br>0.0002<br>51 | 0.69450<br>0.0001<br>52 | 0.16819<br>0.2333<br>52 | 0.62553<br>0.0001<br>52 |
| MERC_EX_ | -0.04914<br>0.7294<br>52 | -0.07819<br>0.6139<br>44 | 0.02211<br>0.8788<br>50 | -0.25810<br>0.0647<br>52 | -0.20480<br>0.1451<br>52 | -0.02963<br>0.8348<br>52 | -0.12556<br>0.3849<br>50 | 0.39057<br>0.0042<br>52 | -0.14137<br>0.3224<br>51 | 0.06773<br>0.6333<br>52 | 0.95674<br>0.0001<br>52 | -0.07949<br>0.5754<br>52 |
| MERC_EXT | -0.21210<br>0.1312<br>52 | 0.07123<br>0.6459<br>44 | 0.03191<br>0.8259<br>50 | -0.43669<br>0.0012<br>52 | -0.27830<br>0.0457<br>52 | 0.07854<br>0.5800<br>52 | -0.08867<br>0.5403<br>50 | 0.13753<br>0.3309<br>52 | 0.07795<br>0.5867<br>51 | 0.20905<br>0.1369<br>52 | 0.38480<br>0.0049<br>52 | 0.24088<br>0.0854<br>52 |
| NICKEL | 0.29426<br>0.0342<br>52 | 0.29277<br>0.0538<br>44 | 0.44770<br>0.0011<br>50 | 0.08986<br>0.5264<br>52 | -0.03111<br>0.8267<br>52 | 0.55320<br>0.0001<br>52 | -0.17546<br>0.2229<br>50 | 0.71835<br>0.0001<br>52 | 0.16437<br>0.2491<br>51 | 0.54975<br>0.0001<br>52 | 0.41608<br>0.0022<br>52 | 0.24824<br>0.0760<br>52 |
| NSPECIES | -0.06112<br>0.6669<br>52 | -0.02970<br>0.8482<br>44 | 0.10500<br>0.4680<br>50 | -0.52246<br>0.0001<br>52 | -0.47515<br>0.0004<br>52 | -0.41762<br>0.0021<br>52 | 0.24169<br>0.0909<br>50 | 0.10509<br>0.4584<br>52 | -0.05814<br>0.6853<br>51 | -0.24751<br>0.0769<br>52 | -0.11542<br>0.4152<br>52 | -0.19930<br>0.1565<br>52 |
| PCB_1260 | 0.31331<br>0.0252<br>51 | 0.26391<br>0.0873<br>43 | 0.02713<br>0.8532<br>49 | 0.09120<br>0.5245<br>51 | 0.00617<br>0.9657<br>51 | 0.37386<br>0.0069<br>51 | -0.10114<br>0.4893<br>49 | -0.10568<br>0.4605<br>51 | 0.50801<br>0.0002<br>50 | 0.75899<br>0.0001<br>51 | 0.17216<br>0.2270<br>51 | 0.63446<br>0.0001<br>51 |
| PHENANTH | -0.15312<br>0.2834<br>51 | 0.35431<br>0.0183<br>44 | 0.20977<br>0.1561<br>49 | -0.20643<br>0.1461<br>51 | 0.10881<br>0.4472<br>51 | -0.20879<br>0.1415<br>51 | 0.86817<br>0.0001<br>49 | 0.02881<br>0.8410<br>51 | 0.36881<br>0.0084<br>50 | -0.00839<br>0.9534<br>51 | -0.15160<br>0.2876<br>51 | 0.08280<br>0.5615<br>51 |
| PYRENE | -0.22947<br>0.1089<br>50 | 0.35910<br>0.0167<br>44 | 0.23150<br>0.1134<br>49 | -0.23948<br>0.0939<br>50 | 0.14384<br>0.3190<br>50 | -0.27150<br>0.0565<br>50 | 0.89944<br>0.0001<br>50 | -0.01072<br>0.9411<br>50 | 0.41997<br>0.0027<br>49 | -0.02596<br>0.8580<br>50 | -0.22381<br>0.1188<br>50 | 0.05654<br>0.6965<br>50 |
| P_GROWTH | -0.42824<br>0.0015<br>52 | 0.22917<br>0.1346<br>44 | 0.31146<br>0.0277<br>50 | -0.54497<br>0.0001<br>52 | -0.23371<br>0.0954<br>52 | -0.38393<br>0.0050<br>52 | 0.56800<br>0.0001<br>50 | 0.20799<br>0.1381<br>52 | 0.18236<br>0.2003<br>51 | -0.24936<br>0.0748<br>52 | -0.18104<br>0.2041<br>52 | -0.22936<br>0.1019<br>52 |



R0063921

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURV1V | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURV1V | 0.12341<br>0.3834<br>52 | -0.20878<br>0.1738<br>44 | -0.11548<br>0.4245<br>50 | 0.22991<br>0.1011<br>52 | 0.03410<br>0.8103<br>52 | 0.25906<br>0.0637<br>52 | -0.31245<br>0.0272<br>50 | -0.25074<br>0.0730<br>52 | -0.13911<br>0.3303<br>51 | 0.05568<br>0.6950<br>52 | 0.07146<br>0.6147<br>52 | 0.04750<br>0.7381<br>52 |
| SAND | 0.09598<br>0.4985<br>52 | 0.08565<br>0.5813<br>44 | 0.37441<br>0.0074<br>50 | -0.20148<br>0.1521<br>52 | -0.18672<br>0.1850<br>52 | -0.01040<br>0.9417<br>52 | -0.09014<br>0.5336<br>50 | 0.94463<br>0.0001<br>52 | -0.06095<br>0.6709<br>51 | 0.13872<br>0.3267<br>52 | 0.49887<br>0.0002<br>52 | -0.07872<br>0.5791<br>52 |
| SELENIUM | 0.19626<br>0.1632<br>52 | 0.16822<br>0.2750<br>44 | 0.43778<br>0.0015<br>50 | -0.04512<br>0.7508<br>52 | -0.10803<br>0.4459<br>52 | 0.14363<br>0.3097<br>52 | -0.11223<br>0.4378<br>50 | 0.92068<br>0.0001<br>52 | 0.01607<br>0.9109<br>51 | 0.21359<br>0.1286<br>52 | 0.46958<br>0.0004<br>52 | -0.02760<br>0.8460<br>52 |
| SHANNON | 0.24888<br>0.0752<br>52 | -0.01025<br>0.9473<br>44 | -0.03453<br>0.8118<br>50 | -0.08840<br>0.5332<br>52 | -0.20246<br>0.1500<br>52 | 0.09336<br>0.5103<br>52 | -0.18440<br>0.1999<br>50 | 0.09171<br>0.5179<br>52 | -0.10035<br>0.4491<br>51 | 0.13920<br>0.3250<br>52 | 0.10313<br>0.4669<br>52 | 0.11247<br>0.4273<br>52 |
| SILT | 0.17716<br>0.2090<br>52 | 0.29307<br>0.0535<br>44 | 0.13684<br>0.3433<br>50 | 0.35348<br>0.0102<br>52 | 0.07674<br>0.5887<br>52 | 0.96017<br>0.0001<br>52 | -0.37657<br>0.0519<br>50 | -0.12721<br>0.3688<br>52 | 0.18693<br>0.1949<br>51 | 0.69333<br>0.0002<br>52 | 0.11338<br>0.4235<br>52 | 0.36372<br>0.0080<br>52 |
| SILVER | 0.10628<br>0.4533<br>52 | 0.10309<br>0.5055<br>44 | 0.05822<br>0.6880<br>50 | 0.28446<br>0.0410<br>52 | 0.09129<br>0.5198<br>52 | 0.41804<br>0.0020<br>52 | -0.16149<br>0.2625<br>50 | 0.13275<br>0.3482<br>52 | 0.06794<br>0.6357<br>51 | 0.34226<br>0.0130<br>52 | 0.10240<br>0.4701<br>52 | 0.16282<br>0.2488<br>52 |
| SULFIDE | -0.23362<br>0.0955<br>52 | 0.12743<br>0.4098<br>44 | 0.27359<br>0.0555<br>50 | -0.42423<br>0.0017<br>52 | -0.14455<br>0.3068<br>52 | -0.43066<br>0.0014<br>52 | 0.48683<br>0.0003<br>50 | 0.03518<br>0.8045<br>52 | 0.11117<br>0.4374<br>51 | -0.17890<br>0.2044<br>52 | -0.32203<br>0.0199<br>52 | -0.10327<br>0.4663<br>52 |
| ZINC | 0.33168<br>0.0163<br>52 | 0.38977<br>0.0089<br>44 | 0.52474<br>0.0001<br>50 | 0.03088<br>0.8280<br>52 | 0.01473<br>0.9176<br>52 | 0.46677<br>0.0009<br>52 | 0.15499<br>0.2825<br>50 | 0.51719<br>0.0001<br>52 | 0.49988<br>0.0002<br>51 | 0.78049<br>0.0001<br>52 | 0.23928<br>0.0876<br>52 | 0.84562<br>0.0001<br>52 |
| ZINC_EX_ | 0.09750<br>0.4917<br>52 | 0.00118<br>0.9939<br>44 | 0.27494<br>0.0533<br>50 | -0.16342<br>0.2470<br>52 | -0.19513<br>0.1657<br>52 | -0.03043<br>0.8304<br>52 | -0.12687<br>0.3800<br>50 | 0.79962<br>0.0001<br>52 | -0.11896<br>0.4057<br>51 | 0.12197<br>0.3890<br>52 | 0.87002<br>0.0001<br>52 | -0.11130<br>0.4321<br>52 |
| ZINC_EXT | 0.30609<br>0.0273<br>52 | 0.41967<br>0.0046<br>44 | 0.45427<br>0.0009<br>50 | -0.08585<br>0.5451<br>52 | -0.00031<br>0.9982<br>52 | 0.25793<br>0.0669<br>52 | 0.25100<br>0.0787<br>50 | 0.37638<br>0.0060<br>52 | 0.60155<br>0.0001<br>51 | 0.78232<br>0.0001<br>52 | 0.12919<br>0.3613<br>52 | 0.72164<br>0.0001<br>52 |
| TOC | . | . | . | . | . | . | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



R0063922

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_GRS | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | 0.49283<br>0.0002<br>52 | -0.04637<br>0.7466<br>51 | -0.05118<br>0.7186<br>52 | -0.20879<br>0.1374<br>52 | -0.09685<br>0.4946<br>52 | 0.03695<br>0.7948<br>52 | -0.25672<br>0.0662<br>52 | 0.69895<br>0.0001<br>52 | -0.22740<br>0.1085<br>51 | 0.19719<br>0.1655<br>51 | 0.20720<br>0.1488<br>50 | 0.52474<br>0.0001<br>52 |
| ACNPHTHY | 0.12288<br>0.3952<br>50 | 0.15151<br>0.2987<br>49 | 0.14975<br>0.2993<br>50 | 0.07374<br>0.6108<br>50 | -0.06464<br>0.6556<br>50 | 0.09273<br>0.5218<br>50 | 0.17193<br>0.2325<br>50 | 0.17390<br>0.2271<br>50 | 0.01129<br>0.9386<br>49 | 0.76409<br>0.0001<br>50 | 0.52304<br>0.0001<br>48 | 0.47050<br>0.0006<br>50 |
| ANTHRACE | 0.28920<br>0.0396<br>51 | -0.01065<br>0.9418<br>50 | 0.01011<br>0.9439<br>51 | -0.12577<br>0.3792<br>51 | -0.11867<br>0.4069<br>51 | -0.01347<br>0.9292<br>51 | -0.12264<br>0.3912<br>51 | 0.36984<br>0.0076<br>51 | -0.09215<br>0.5245<br>50 | 0.86387<br>0.0001<br>50 | 0.85251<br>0.0001<br>49 | 0.53790<br>0.0001<br>51 |
| ARSENIC | -0.09448<br>0.5053<br>52 | 0.86889<br>0.0001<br>51 | 0.86459<br>0.0001<br>52 | 0.20242<br>0.1501<br>52 | 0.38759<br>0.0045<br>52 | 0.17511<br>0.2144<br>52 | 0.93688<br>0.0001<br>52 | -0.16900<br>0.2310<br>52 | 0.22819<br>0.1073<br>51 | -0.04517<br>0.7529<br>51 | -0.10816<br>0.4547<br>50 | -0.02797<br>0.8440<br>52 |
| AVS | 0.47484<br>0.0004<br>52 | -0.07798<br>0.5865<br>51 | -0.08400<br>0.5538<br>52 | -0.34758<br>0.0116<br>52 | -0.23753<br>0.0900<br>52 | -0.08800<br>0.5350<br>52 | -0.29767<br>0.0321<br>52 | 0.59984<br>0.0001<br>52 | -0.30271<br>0.0308<br>51 | 0.47243<br>0.0005<br>51 | 0.69807<br>0.0001<br>50 | 0.70523<br>0.0001<br>52 |
| A_REBURI | -0.48503<br>0.0003<br>52 | 0.10599<br>0.4591<br>51 | 0.11255<br>0.4270<br>52 | 0.19751<br>0.1605<br>52 | 0.10671<br>0.1851<br>52 | -0.08397<br>0.5539<br>52 | 0.26815<br>0.0546<br>52 | -0.60457<br>0.0001<br>52 | 0.24998<br>0.0769<br>51 | -0.30811<br>0.0278<br>51 | -0.21874<br>0.1270<br>50 | -0.51219<br>0.0001<br>52 |
| A_SURVIV | -0.49297<br>0.0002<br>52 | 0.09367<br>0.5132<br>51 | 0.10883<br>0.4425<br>52 | 0.29244<br>0.0354<br>52 | 0.19379<br>0.1687<br>52 | 0.01673<br>0.9063<br>52 | 0.32611<br>0.0183<br>52 | -0.62398<br>0.0001<br>52 | 0.37627<br>0.0065<br>51 | -0.40216<br>0.0034<br>51 | -0.29072<br>0.0405<br>50 | -0.53357<br>0.0001<br>52 |
| BERYLLIU | -0.13947<br>0.3241<br>52 | 0.93354<br>0.0001<br>51 | 0.93019<br>0.0001<br>52 | 0.32392<br>0.0191<br>52 | 0.20319<br>0.1485<br>52 | 0.16407<br>0.2451<br>52 | 0.92134<br>0.0001<br>52 | -0.26252<br>0.0601<br>52 | 0.32276<br>0.0209<br>51 | -0.16210<br>0.2558<br>51 | -0.22480<br>0.1165<br>50 | -0.19258<br>0.2802<br>52 |
| BIOMASS | 0.73059<br>0.0001<br>52 | -0.04398<br>0.7593<br>51 | -0.04434<br>0.7569<br>52 | -0.25252<br>0.0709<br>52 | -0.09687<br>0.4945<br>52 | 0.03384<br>0.8118<br>52 | -0.18605<br>0.1868<br>52 | 0.79831<br>0.0001<br>52 | -0.25916<br>0.0708<br>51 | 0.19119<br>0.2898<br>51 | 0.14452<br>0.3167<br>50 | 0.34686<br>0.0118<br>52 |
| BZ_A_ANT | 0.13418<br>0.3479<br>51 | -0.02761<br>0.8503<br>50 | -0.02020<br>0.8881<br>51 | -0.01240<br>0.9312<br>51 | -0.13838<br>0.3329<br>51 | -0.07554<br>0.5983<br>51 | -0.09111<br>0.5249<br>51 | 0.21907<br>0.1229<br>51 | 0.06960<br>0.6310<br>50 | 0.86307<br>0.0001<br>50 | 0.92242<br>0.0001<br>49 | 0.92990<br>0.0001<br>51 |
| BZ_A_PYR | 0.00448<br>0.9748<br>52 | -0.09332<br>0.5148<br>51 | -0.09372<br>0.5087<br>52 | 0.33607<br>0.0149<br>52 | -0.04646<br>0.7436<br>52 | 0.10830<br>0.4447<br>52 | -0.03627<br>0.8094<br>52 | 0.09835<br>0.4879<br>52 | 0.43631<br>0.0015<br>51 | 0.64056<br>0.0001<br>51 | 0.80599<br>0.0001<br>50 | 0.39688<br>0.0036<br>52 |
| BZ_B_FLU | 0.04278<br>0.7633<br>52 | -0.09863<br>0.4911<br>51 | -0.09713<br>0.4933<br>52 | 0.30999<br>0.0253<br>52 | -0.02498<br>0.8605<br>52 | 0.11335<br>0.4236<br>52 | -0.05563<br>0.6953<br>52 | 0.13693<br>0.3331<br>52 | 0.42367<br>0.0019<br>51 | 0.63442<br>0.0001<br>51 | 0.82269<br>0.0001<br>50 | 0.41093<br>0.0025<br>52 |

/user/cntl/bechtel/analysis/corr1.sas

R0063923

-1575-

VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_GRS | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | -0.11650<br>0.4156<br>51 | -0.03490<br>0.8099<br>50 | -0.03949<br>0.7832<br>51 | 0.60886<br>0.0001<br>51 | -0.08489<br>0.5537<br>51 | 0.16725<br>0.2408<br>51 | 0.20408<br>0.1509<br>51 | -0.07970<br>0.5783<br>51 | 0.62401<br>0.0001<br>50 | 0.29121<br>0.0402<br>50 | 0.34530<br>0.0151<br>49 | 0.12133<br>0.3964<br>51 |
| BZ_K_FLU | -0.07819<br>0.5816<br>52 | -0.11043<br>0.4404<br>51 | -0.10856<br>0.4436<br>52 | 0.42118<br>0.0019<br>52 | -0.03759<br>0.7913<br>52 | 0.17733<br>0.2085<br>52 | 0.00578<br>0.9676<br>52 | 0.02044<br>0.8856<br>52 | 0.47838<br>0.0004<br>51 | 0.51958<br>0.0001<br>51 | 0.69088<br>0.0001<br>50 | 0.32781<br>0.0177<br>52 |
| CADMIUM | -0.07808<br>0.5822<br>52 | 0.32289<br>0.0208<br>51 | 0.31247<br>0.0241<br>52 | 0.05503<br>0.6984<br>52 | -0.01103<br>0.9381<br>52 | -0.29335<br>0.0348<br>52 | 0.44541<br>0.0009<br>52 | -0.08350<br>0.5562<br>52 | 0.05131<br>0.7207<br>51 | -0.02425<br>0.8659<br>51 | 0.00364<br>0.9800<br>50 | -0.15866<br>0.2613<br>52 |
| CAD_EX_A | -0.02326<br>0.8700<br>52 | 0.92017<br>0.0001<br>51 | 0.91668<br>0.0001<br>52 | -0.14492<br>0.3053<br>52 | 0.49362<br>0.0002<br>52 | 0.11209<br>0.4289<br>52 | 0.67216<br>0.0001<br>52 | -0.03596<br>0.8002<br>52 | -0.11793<br>0.4098<br>51 | -0.08224<br>0.6644<br>51 | -0.11132<br>0.4419<br>50 | 0.09238<br>0.5149<br>52 |
| CAD_EXTR | 0.05222<br>0.7131<br>52 | 0.69725<br>0.0001<br>51 | 0.68778<br>0.0001<br>52 | -0.20748<br>0.1400<br>52 | 0.14291<br>0.3122<br>52 | 0.06401<br>0.6521<br>52 | 0.55940<br>0.0001<br>52 | 0.02944<br>0.8358<br>52 | -0.17777<br>0.2120<br>51 | -0.06991<br>0.6259<br>51 | -0.09853<br>0.4960<br>50 | 0.04693<br>0.7411<br>52 |
| CHROMIUM | -0.07445<br>0.5999<br>52 | 0.53073<br>0.0001<br>51 | 0.52733<br>0.0001<br>52 | 0.23545<br>0.0929<br>52 | 0.18071<br>0.1998<br>52 | 0.16184<br>0.2517<br>52 | 0.73507<br>0.0001<br>52 | -0.13835<br>0.3280<br>52 | 0.26815<br>0.0571<br>51 | 0.47447<br>0.0004<br>51 | 0.19000<br>0.1863<br>50 | 0.13417<br>0.3430<br>52 |
| CHRYSENE | 0.11215<br>0.4333<br>51 | -0.06546<br>0.6515<br>50 | -0.06161<br>0.6676<br>51 | 0.09126<br>0.5242<br>51 | -0.17985<br>0.2066<br>51 | -0.06976<br>0.6267<br>51 | -0.07118<br>0.6196<br>51 | 0.21149<br>0.1363<br>51 | 0.19326<br>0.1787<br>50 | 0.78412<br>0.0001<br>50 | 0.91004<br>0.0001<br>49 | 0.50081<br>0.0002<br>51 |
| CLAY | -0.17057<br>0.2267<br>52 | -0.03146<br>0.8266<br>51 | -0.04130<br>0.7713<br>52 | 0.39942<br>0.0034<br>52 | -0.14644<br>0.3003<br>52 | -0.08661<br>0.5415<br>52 | 0.50783<br>0.0001<br>52 | -0.28130<br>0.0434<br>52 | 0.37976<br>0.0060<br>51 | -0.12727<br>0.3735<br>51 | -0.15356<br>0.2870<br>50 | -0.30748<br>0.0266<br>52 |
| COPPER | -0.12515<br>0.3767<br>52 | 0.17637<br>0.2157<br>51 | 0.16366<br>0.2463<br>52 | 0.70124<br>0.0001<br>52 | 0.12322<br>0.3841<br>52 | 0.17477<br>0.2153<br>52 | 0.41745<br>0.0021<br>52 | -0.13333<br>0.3837<br>52 | 0.63898<br>0.0001<br>51 | 0.14668<br>0.3044<br>51 | 0.17847<br>0.2150<br>50 | -0.03672<br>0.7961<br>52 |
| COP_EX_A | -0.02768<br>0.8456<br>52 | 0.81627<br>0.0001<br>51 | 0.81472<br>0.0001<br>52 | 0.07535<br>0.5955<br>52 | 0.83832<br>0.0001<br>52 | 0.35022<br>0.0109<br>52 | 0.64006<br>0.0001<br>52 | -0.05959<br>0.6747<br>52 | 0.11051<br>0.4401<br>51 | -0.08861<br>0.5364<br>51 | -0.15092<br>0.2955<br>50 | 0.00493<br>0.9723<br>52 |
| COP_EXTR | -0.06316<br>0.6564<br>52 | 0.38898<br>0.0048<br>51 | 0.38022<br>0.0054<br>52 | 0.44653<br>0.0001<br>52 | 0.24285<br>0.0828<br>52 | 0.41414<br>0.0023<br>52 | 0.38443<br>0.0049<br>52 | -0.03072<br>0.8288<br>52 | 0.62401<br>0.0001<br>51 | 0.24494<br>0.0822<br>51 | 0.29203<br>0.0396<br>80 | 0.13823<br>0.3284<br>52 |
| DDD | -0.35297<br>0.0111<br>51 | -0.07840<br>0.5884<br>50 | -0.08567<br>0.5500<br>51 | 0.50642<br>0.0001<br>51 | 0.01810<br>0.9183<br>51 | 0.07962<br>0.5786<br>51 | 0.12204<br>0.3936<br>51 | -0.38464<br>0.0053<br>51 | 0.47937<br>0.0004<br>51 | 0.00488<br>0.9748<br>50 | -0.04851<br>0.7910<br>49 | -0.30142<br>0.0316<br>51 |



R0063924

0575 VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEP | MEAN_ORG | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | 0.03091<br>0.8278<br>52 | 0.09594<br>0.5030<br>51 | 0.08856<br>0.5324<br>52 | 0.23510<br>0.0934<br>52 | -0.04914<br>0.7296<br>52 | -0.21210<br>0.1312<br>52 | 0.29426<br>0.0342<br>52 | -0.06112<br>0.6669<br>52 | 0.31331<br>0.0252<br>51 | -0.15312<br>0.2834<br>51 | -0.22947<br>0.1089<br>50 | -0.42826<br>0.0015<br>52 |
| DIBENZO_ | -0.05461<br>0.7248<br>44 | 0.10037<br>0.5219<br>43 | 0.09093<br>0.5572<br>44 | 0.39206<br>0.0085<br>44 | -0.07819<br>0.6139<br>44 | 0.07123<br>0.6459<br>44 | 0.29277<br>0.0538<br>44 | -0.02970<br>0.8482<br>44 | 0.26391<br>0.0873<br>43 | 0.35431<br>0.0183<br>44 | 0.35910<br>0.0167<br>44 | 0.22917<br>0.1346<br>44 |
| DINOCTYL | 0.06118<br>0.6730<br>50 | 0.40413<br>0.0040<br>49 | 0.40225<br>0.0038<br>50 | 0.09489<br>0.5122<br>50 | 0.02211<br>0.8788<br>50 | 0.03191<br>0.8259<br>50 | 0.44770<br>0.0011<br>50 | 0.10500<br>0.4680<br>50 | 0.02713<br>0.8532<br>49 | 0.20577<br>0.1561<br>49 | 0.23150<br>0.1134<br>48 | 0.31146<br>0.0277<br>50 |
| E_NORM_D | -0.47913<br>0.0003<br>52 | -0.14036<br>0.3259<br>51 | -0.15886<br>0.2606<br>52 | 0.06634<br>0.6403<br>52 | -0.25810<br>0.0647<br>52 | -0.43669<br>0.0012<br>52 | 0.08986<br>0.5264<br>52 | -0.52246<br>0.0001<br>52 | 0.09120<br>0.5245<br>51 | -0.20643<br>0.1461<br>51 | -0.23948<br>0.0939<br>50 | -0.54497<br>0.0001<br>52 |
| E_SURVIV | -0.50012<br>0.0002<br>52 | -0.11359<br>0.4274<br>51 | -0.13311<br>0.3469<br>52 | 0.07344<br>0.6049<br>52 | -0.20488<br>0.1451<br>52 | -0.27830<br>0.0457<br>52 | -0.03111<br>0.8267<br>52 | -0.47515<br>0.0004<br>52 | 0.00617<br>0.9657<br>51 | 0.10882<br>0.4472<br>51 | 0.14384<br>0.3190<br>50 | -0.23371<br>0.0954<br>52 |
| FINES | -0.30481<br>0.0269<br>52 | -0.06792<br>0.6358<br>51 | -0.06680<br>0.6380<br>52 | 0.47660<br>0.0004<br>52 | -0.02963<br>0.8348<br>52 | 0.07854<br>0.5800<br>52 | 0.55320<br>0.0001<br>52 | -0.41762<br>0.0021<br>52 | 0.37386<br>0.0069<br>51 | -0.20879<br>0.1418<br>51 | -0.27150<br>0.0565<br>50 | -0.38393<br>0.0050<br>52 |
| FLUORANT | 0.14647<br>0.3101<br>50 | -0.03691<br>0.8012<br>49 | -0.03093<br>0.8311<br>50 | -0.12503<br>0.3870<br>50 | -0.12556<br>0.3849<br>50 | -0.08967<br>0.5403<br>50 | -0.17546<br>0.2229<br>50 | 0.24169<br>0.0909<br>50 | -0.10114<br>0.4893<br>49 | 0.86817<br>0.0001<br>49 | 0.89944<br>0.0001<br>50 | 0.96800<br>0.0001<br>50 |
| GRAVEL | 0.12693<br>0.3699<br>52 | 0.99492<br>0.0001<br>51 | 0.98829<br>0.0001<br>52 | -0.15935<br>0.2591<br>52 | 0.39057<br>0.0042<br>52 | 0.13753<br>0.3309<br>52 | 0.71835<br>0.0001<br>52 | 0.10509<br>0.4584<br>52 | -0.10568<br>0.4605<br>51 | 0.02881<br>0.8410<br>51 | -0.01072<br>0.9411<br>50 | 0.20795<br>0.1391<br>52 |
| INDENO_1 | -0.11003<br>0.4421<br>51 | -0.03414<br>0.8139<br>50 | -0.03967<br>0.7823<br>51 | 0.50570<br>0.0002<br>51 | -0.14137<br>0.3224<br>51 | 0.07795<br>0.5867<br>51 | 0.16437<br>0.2491<br>51 | -0.05814<br>0.6853<br>51 | 0.50801<br>0.0002<br>50 | 0.36881<br>0.0084<br>50 | 0.41997<br>0.0027<br>49 | 0.18236<br>0.2003<br>51 |
| LEAD | -0.16307<br>0.2480<br>52 | 0.15753<br>0.2696<br>51 | 0.15079<br>0.2859<br>52 | 0.69450<br>0.0001<br>52 | 0.06773<br>0.6333<br>52 | 0.20905<br>0.1369<br>52 | 0.54975<br>0.0001<br>52 | -0.24751<br>0.0769<br>52 | 0.75895<br>0.0001<br>51 | -0.00839<br>0.9534<br>51 | -0.02596<br>0.8580<br>50 | -0.24936<br>0.0746<br>52 |
| LEAD_EX_ | -0.06990<br>0.6225<br>52 | 0.46865<br>0.0005<br>51 | 0.47312<br>0.0004<br>52 | 0.16819<br>0.2333<br>52 | 0.95674<br>0.0001<br>52 | 0.38480<br>0.0049<br>52 | 0.41606<br>0.0022<br>52 | -0.11542<br>0.4152<br>52 | 0.17216<br>0.2270<br>51 | -0.15180<br>0.2876<br>51 | -0.22381<br>0.1182<br>50 | -0.16104<br>0.2541<br>52 |
| LPAD_EXT | -0.14021<br>0.3215<br>52 | -0.06957<br>0.6276<br>51 | -0.07384<br>0.6029<br>52 | 0.62553<br>0.0001<br>52 | -0.07949<br>0.5756<br>52 | 0.24088<br>0.0854<br>52 | 0.24824<br>0.0760<br>52 | -0.19938<br>0.1565<br>52 | 0.63446<br>0.0001<br>51 | 0.08280<br>0.5835<br>51 | 0.05654<br>0.6969<br>50 | -0.22936<br>0.1019<br>52 |



R0063925

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_GRS | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | 1.00000<br>0.0<br>52 | 0.06434<br>0.6537<br>51 | 0.08318<br>0.5577<br>52 | -0.34199<br>0.0131<br>52 | -0.06889<br>0.6275<br>52 | -0.01148<br>0.9356<br>52 | -0.05741<br>0.6860<br>52 | 0.94785<br>0.0001<br>52 | -0.30628<br>0.0288<br>51 | 0.17164<br>0.2285<br>51 | 0.15438<br>0.2844<br>50 | 0.33536<br>0.0151<br>52 |
| MEAN_GRS | 0.06434<br>0.6537<br>51 | 1.00000<br>0.0<br>51 | 0.99742<br>0.0001<br>51 | -0.13300<br>0.3522<br>51 | 0.40931<br>0.0029<br>51 | 0.13553<br>0.3430<br>51 | 0.74818<br>0.0001<br>51 | 0.02751<br>0.8480<br>51 | -0.07637<br>0.5981<br>50 | -0.00837<br>0.9540<br>50 | -0.04932<br>0.7365<br>49 | 0.15625<br>0.2735<br>51 |
| MEDIAN_G | 0.08318<br>0.5577<br>52 | 0.99742<br>0.0001<br>51 | 1.00000<br>0.0<br>52 | -0.13965<br>0.3235<br>52 | 0.41098<br>0.0025<br>52 | 0.14518<br>0.3045<br>52 | 0.75327<br>0.0001<br>52 | 0.03836<br>0.7871<br>52 | -0.08329<br>0.5612<br>51 | -0.00227<br>0.9874<br>51 | -0.04645<br>0.7487<br>50 | 0.15380<br>0.2763<br>52 |
| MERCURY | -0.34199<br>0.0131<br>52 | -0.13300<br>0.3522<br>51 | -0.13965<br>0.3235<br>52 | 1.00000<br>0.0<br>52 | 0.14392<br>0.3087<br>52 | 0.37301<br>0.0065<br>52 | 0.18610<br>0.1865<br>52 | -0.34952<br>0.0111<br>52 | 0.83176<br>0.0001<br>51 | -0.13022<br>0.3624<br>51 | -0.11993<br>0.4068<br>50 | -0.32708<br>0.0179<br>52 |
| MERC_EX_ | -0.06889<br>0.6275<br>52 | 0.40931<br>0.0029<br>51 | 0.41098<br>0.0025<br>52 | 0.14392<br>0.3087<br>52 | 1.00000<br>0.0<br>52 | 0.47094<br>0.0004<br>52 | 0.31690<br>0.0221<br>52 | -0.07919<br>0.5768<br>52 | 0.14651<br>0.3049<br>51 | -0.09951<br>0.4872<br>51 | -0.15849<br>0.2716<br>50 | -0.06263<br>0.6591<br>52 |
| MERC_EXT | -0.01148<br>0.9356<br>52 | 0.13553<br>0.3430<br>51 | 0.14518<br>0.3045<br>52 | 0.37301<br>0.0065<br>52 | 0.47094<br>0.0004<br>52 | 1.00000<br>0.0<br>52 | 0.16616<br>0.2391<br>52 | 0.01020<br>0.9428<br>52 | 0.27607<br>0.0499<br>51 | 0.00891<br>0.9505<br>51 | -0.13697<br>0.3429<br>50 | 0.17904<br>0.2041<br>52 |
| NICKEL | -0.05741<br>0.6860<br>52 | 0.74818<br>0.0001<br>51 | 0.75327<br>0.0001<br>52 | 0.18610<br>0.1865<br>52 | 0.31690<br>0.0221<br>52 | 0.16616<br>0.2391<br>52 | 1.00000<br>0.0<br>52 | -0.17616<br>0.2116<br>52 | 0.21597<br>0.1280<br>51 | -0.11449<br>0.4237<br>51 | -0.19560<br>0.1734<br>50 | -0.09293<br>0.5123<br>52 |
| NSPECIES | 0.94785<br>0.0001<br>52 | 0.02751<br>0.8480<br>51 | 0.03836<br>0.7871<br>52 | -0.34952<br>0.0111<br>52 | -0.07919<br>0.5768<br>52 | 0.01020<br>0.9428<br>52 | -0.17616<br>0.2116<br>52 | 1.00000<br>0.0<br>52 | -0.32526<br>0.0199<br>51 | 0.25159<br>0.0749<br>51 | 0.26147<br>0.0666<br>50 | 0.49715<br>0.0002<br>52 |
| PCB_1260 | -0.30628<br>0.0288<br>51 | -0.07637<br>0.5981<br>50 | -0.08329<br>0.5612<br>51 | 0.83176<br>0.0001<br>51 | 0.14651<br>0.3049<br>51 | 0.27607<br>0.0499<br>51 | 0.21597<br>0.1280<br>51 | -0.32526<br>0.0199<br>51 | 1.00000<br>0.0<br>51 | -0.11290<br>0.4350<br>50 | -0.02651<br>0.8565<br>49 | -0.30292<br>0.0307<br>51 |
| PHENANTH | 0.17164<br>0.2285<br>51 | -0.00837<br>0.9540<br>50 | -0.00227<br>0.9874<br>51 | -0.13022<br>0.3624<br>51 | -0.09951<br>0.4872<br>51 | 0.00891<br>0.9505<br>51 | -0.11449<br>0.4237<br>51 | 0.25159<br>0.0749<br>51 | -0.11290<br>0.4350<br>50 | 1.00000<br>0.0<br>51 | 0.78624<br>0.0001<br>49 | 0.54784<br>0.0001<br>51 |
| PYRENE | 0.15438<br>0.2844<br>50 | -0.04932<br>0.7365<br>49 | -0.04645<br>0.7487<br>50 | -0.11993<br>0.4068<br>50 | -0.15849<br>0.2716<br>50 | -0.13697<br>0.3429<br>50 | -0.19560<br>0.1734<br>50 | 0.26147<br>0.0666<br>50 | -0.02651<br>0.8565<br>49 | 0.78624<br>0.0001<br>49 | 1.00000<br>0.0<br>50 | 0.61666<br>0.0001<br>50 |
| P_GROWTH | 0.33536<br>0.0151<br>52 | 0.15625<br>0.2735<br>51 | 0.15380<br>0.2763<br>52 | -0.32708<br>0.0179<br>52 | -0.06263<br>0.6591<br>52 | 0.17904<br>0.2041<br>52 | -0.09293<br>0.5123<br>52 | 0.49715<br>0.0002<br>52 | -0.30292<br>0.0307<br>51 | 0.54784<br>0.0001<br>51 | 0.61666<br>0.0001<br>50 | 1.00000<br>0.0<br>52 |

/usr/cnt1/bechtel/analysis/corr1.sas

R0063926

C3555--

VOL 18 10A

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_GRS | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURVIV | -0.21156<br>0.1322<br>52 | -0.24305<br>0.0857<br>51 | -0.23698<br>0.0907<br>52 | 0.16240<br>0.2500<br>52 | 0.06753<br>0.6343<br>52 | -0.04189<br>0.7681<br>52 | -0.01547<br>0.9133<br>52 | -0.26281<br>0.0598<br>52 | 0.11039<br>0.4406<br>51 | -0.41751<br>0.0023<br>51 | -0.39713<br>0.0043<br>50 | -0.39741<br>0.0035<br>52 |
| SAND | 0.09029<br>0.5244<br>52 | 0.96862<br>0.0001<br>51 | 0.97963<br>0.0001<br>52 | -0.12735<br>0.3683<br>52 | 0.42100<br>0.0019<br>52 | 0.19859<br>0.1581<br>52 | 0.77261<br>0.0001<br>52 | 0.01790<br>0.8998<br>52 | -0.08255<br>0.5647<br>51 | -0.04764<br>0.7399<br>51 | -0.11496<br>0.4266<br>50 | 0.11497<br>0.4170<br>52 |
| SELENIUM | 0.02516<br>0.8593<br>52 | 0.94685<br>0.0001<br>51 | 0.94838<br>0.0001<br>52 | -0.06964<br>0.6237<br>52 | 0.37453<br>0.0062<br>52 | 0.14146<br>0.3171<br>52 | 0.84499<br>0.0001<br>52 | -0.04203<br>0.7674<br>52 | -0.08743<br>0.5890<br>51 | -0.08563<br>0.5502<br>51 | -0.14296<br>0.3220<br>50 | 0.05603<br>0.6932<br>52 |
| SHANNON | 0.58702<br>0.0001<br>52 | 0.08372<br>0.5592<br>51 | 0.10635<br>0.4530<br>52 | -0.06913<br>0.6263<br>52 | 0.04863<br>0.7321<br>52 | -0.02297<br>0.8716<br>52 | 0.20569<br>0.1435<br>52 | 0.32616<br>0.0183<br>52 | -0.06375<br>0.6567<br>51 | -0.13421<br>0.3478<br>51 | -0.19028<br>0.1857<br>50 | -0.26699<br>0.0557<br>52 |
| SILT | -0.33753<br>0.0144<br>52 | -0.07793<br>0.5868<br>51 | -0.07139<br>0.6150<br>52 | 0.45641<br>0.0007<br>52 | 0.03305<br>0.8161<br>52 | 0.15221<br>0.2814<br>52 | 0.50742<br>0.0001<br>52 | -0.43462<br>0.0013<br>52 | 0.32430<br>0.0203<br>51 | -0.22407<br>0.1140<br>51 | -0.30436<br>0.0316<br>50 | -0.37488<br>0.0062<br>52 |
| SILVER | -0.18008<br>0.2014<br>52 | 0.15544<br>0.2781<br>51 | 0.15938<br>0.2591<br>52 | 0.20913<br>0.1368<br>52 | 0.04989<br>0.7254<br>52 | -0.02330<br>0.8698<br>52 | 0.44469<br>0.0010<br>52 | -0.26449<br>0.0581<br>52 | 0.21879<br>0.1230<br>51 | -0.14093<br>0.3239<br>51 | -0.18693<br>0.1936<br>50 | -0.24501<br>0.0800<br>52 |
| SULFIDE | 0.54801<br>0.0001<br>52 | -0.06062<br>0.6726<br>51 | -0.06736<br>0.6351<br>52 | -0.36527<br>0.0078<br>52 | -0.21464<br>0.1265<br>52 | -0.04565<br>0.7480<br>52 | -0.29161<br>0.0359<br>52 | 0.67330<br>0.0001<br>52 | -0.34070<br>0.0146<br>51 | 0.41990<br>0.0022<br>51 | 0.58750<br>0.0001<br>50 | 0.70067<br>0.0001<br>52 |
| ZINC | 0.00869<br>0.9513<br>52 | 0.80710<br>0.0001<br>51 | 0.81461<br>0.0001<br>52 | 0.43445<br>0.0013<br>52 | 0.17782<br>0.2072<br>52 | 0.16909<br>0.2308<br>52 | 0.76688<br>0.0001<br>52 | -0.04025<br>0.7769<br>52 | 0.49150<br>0.0002<br>51 | 0.18285<br>0.1990<br>51 | 0.17294<br>0.2297<br>50 | 0.00396<br>0.9776<br>52 |
| ZINC_EX_ | -0.04543<br>0.7492<br>52 | 0.82342<br>0.0001<br>51 | 0.82186<br>0.0001<br>52 | 0.01860<br>0.8959<br>52 | 0.81028<br>0.0001<br>52 | 0.28999<br>0.0370<br>52 | 0.63818<br>0.0001<br>52 | -0.06995<br>0.6222<br>52 | 0.04618<br>0.7503<br>51 | -0.09033<br>0.4934<br>51 | -0.16219<br>0.2604<br>50 | -0.00349<br>0.9804<br>52 |
| ZINC_EXT | -0.02838<br>0.8417<br>52 | 0.35989<br>0.0095<br>51 | 0.35705<br>0.0094<br>52 | 0.55243<br>0.0001<br>52 | 0.10304<br>0.4673<br>52 | 0.28027<br>0.0442<br>52 | 0.47754<br>0.0003<br>52 | -0.02300<br>0.8716<br>52 | 0.58489<br>0.0001<br>51 | 0.26679<br>0.0584<br>51 | 0.27306<br>0.0580<br>50 | 0.03857<br>0.7860<br>52 |
| TOC | . | . | . | . | . | . | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



R0063927



AOI 18

---------- NORMAL=carbon ----------

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | -0.26249<br>0.0601<br>52 | -0.08732<br>0.5382<br>52 | -0.13360<br>0.3451<br>52 | -0.31162<br>0.0245<br>52 | -0.34647<br>0.0119<br>52 | -0.27107<br>0.0519<br>52 | 0.54536<br>0.0001<br>52 | -0.13769<br>0.3304<br>52 | -0.10633<br>0.4531<br>52 | -0.06933<br>0.6253<br>52 | . <br>0 |
| ACNPHTHY | -0.37389<br>0.0075<br>50 | 0.13808<br>0.3389<br>50 | 0.14607<br>0.3115<br>50 | -0.07532<br>0.6031<br>50 | 0.04964<br>0.7321<br>50 | -0.03256<br>0.8225<br>50 | 0.28024<br>0.0487<br>50 | 0.31146<br>0.0277<br>50 | 0.01949<br>0.8931<br>50 | 0.35095<br>0.0125<br>50 | . <br>0 |
| ANTHRACE | -0.25929<br>0.0662<br>51 | -0.05057<br>0.7245<br>51 | -0.09100<br>0.5254<br>51 | -0.05853<br>0.6833<br>51 | -0.27082<br>0.0546<br>51 | -0.14174<br>0.3211<br>51 | 0.55349<br>0.0001<br>51 | 0.31559<br>0.0241<br>51 | -0.12007<br>0.4013<br>51 | 0.35739<br>0.0100<br>51 | . <br>0 |
| ARSENIC | -0.11294<br>0.4253<br>52 | 0.85333<br>0.0001<br>52 | 0.90501<br>0.0001<br>52 | 0.10719<br>0.4494<br>52 | 0.31630<br>0.0223<br>52 | 0.38260<br>0.0051<br>52 | -0.23135<br>0.0989<br>52 | 0.75910<br>0.0001<br>52 | 0.74570<br>0.0001<br>52 | 0.54501<br>0.0001<br>52 | . <br>0 |
| AVS | -0.34314<br>0.0128<br>52 | -0.17608<br>0.2118<br>52 | -0.20625<br>0.1424<br>52 | -0.03897<br>0.7830<br>52 | -0.47976<br>0.0003<br>52 | -0.28807<br>0.0398<br>52 | 0.97781<br>0.0001<br>52 | 0.00083<br>0.9954<br>52 | -0.26577<br>0.0569<br>52 | 0.09300<br>0.5120<br>52 | . <br>0 |
| A_REBURI | 0.21775<br>0.1210<br>52 | 0.17060<br>0.2266<br>52 | 0.20045<br>0.1542<br>52 | 0.01823<br>0.8979<br>52 | 0.39112<br>0.0041<br>52 | 0.22495<br>0.1089<br>52 | -0.62605<br>0.0001<br>52 | 0.17927<br>0.2035<br>52 | 0.21727<br>0.1218<br>52 | 0.07196<br>0.6122<br>52 | . <br>0 |
| A_SURVIV | 0.24971<br>0.0742<br>52 | 0.17314<br>0.2196<br>52 | 0.19240<br>0.1718<br>52 | 0.05704<br>0.6879<br>52 | 0.44018<br>0.0011<br>52 | 0.32138<br>0.0202<br>52 | -0.68336<br>0.0001<br>52 | 0.23691<br>0.0908<br>52 | 0.20685<br>0.1412<br>52 | 0.11048<br>0.4356<br>52 | . <br>0 |
| BERYLLIU | 0.01714<br>0.9040<br>52 | 0.54919<br>0.0001<br>52 | 0.64573<br>0.0001<br>52 | 0.18852<br>0.1808<br>52 | 0.66224<br>0.0001<br>52 | 0.48475<br>0.0003<br>52 | -0.30382<br>0.0285<br>52 | 0.71387<br>0.0001<br>52 | 0.42430<br>0.0017<br>52 | 0.45236<br>0.0008<br>52 | . <br>0 |
| BIOMASS | -0.07691<br>0.5878<br>52 | -0.10467<br>0.4602<br>52 | -0.09813<br>0.4889<br>52 | 0.26376<br>0.0588<br>52 | -0.38407<br>0.0049<br>52 | -0.18108<br>0.1989<br>52 | 0.65987<br>0.0001<br>52 | -0.02754<br>0.8464<br>52 | -0.13033<br>0.3571<br>52 | 0.01039<br>0.9417<br>52 | . <br>0 |
| BZ_A_ANT | -0.29140<br>0.0380<br>51 | -0.07767<br>0.5880<br>51 | -0.08310<br>0.5621<br>51 | -0.14420<br>0.3127<br>51 | -0.19351<br>0.1737<br>51 | -0.11070<br>0.4393<br>51 | 0.45841<br>0.0007<br>51 | 0.28756<br>0.0408<br>51 | -0.13685<br>0.3383<br>51 | 0.36928<br>0.0077<br>51 | . <br>0 |
| BZ_A_PYR | -0.30999<br>0.0253<br>52 | -0.14546<br>0.3035<br>52 | -0.12657<br>0.3712<br>52 | -0.14617<br>0.3012<br>52 | -0.04070<br>0.7745<br>52 | -0.05894<br>0.6701<br>52 | 0.38283<br>0.0051<br>52 | 0.44229<br>0.0010<br>52 | -0.12040<br>0.3952<br>52 | 0.56610<br>0.0001<br>52 | . <br>0 |
| BZ_B_FLU | -0.28668<br>0.0393<br>52 | -0.15008<br>0.2882<br>52 | -0.14226<br>0.3144<br>52 | -0.14476<br>0.3059<br>52 | -0.06891<br>0.6274<br>52 | -0.06483<br>0.6479<br>52 | 0.40881<br>0.0026<br>52 | 0.44296<br>0.0010<br>52 | -0.11287<br>0.4256<br>52 | 0.56903<br>0.0001<br>52 | . <br>0 |

/usr/cntl/bechtel/analysis/corr1.sas

R0063928

2555-

VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | -0.11287 | -0.05201 | 0.03073 | -0.07564 | 0.25140 | 0.10194 | 0.05512 | 0.54045 | -0.07766 | 0.63084 | . |
| | 0.4304 | 0.7170 | 0.8305 | 0.5978 | 0.0752 | 0.4766 | 0.7008 | 0.0001 | 0.5881 | 0.0001 | |
| | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 0 |
| BZ_K_FLU | -0.21826 | -0.13975 | -0.09972 | -0.20319 | 0.08460 | -0.02399 | 0.28020 | 0.44862 | -0.12005 | 0.56742 | . |
| | 0.1201 | 0.3231 | 0.4818 | 0.1485 | 0.5510 | 0.8659 | 0.0442 | 0.0009 | 0.3966 | 0.0001 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| CADMIUM | 0.13513 | 0.25101 | 0.42599 | 0.00333 | 0.20133 | 0.09186 | -0.03887 | 0.53074 | 0.29497 | 0.41089 | . |
| | 0.3395 | 0.0727 | 0.0016 | 0.9813 | 0.1524 | 0.5172 | 0.7844 | 0.0001 | 0.0338 | 0.0025 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| CAD_EX_A | -0.14592 | 0.88823 | 0.89613 | 0.00477 | -0.06393 | 0.09921 | -0.16098 | 0.61130 | 0.90064 | 0.26373 | . |
| | 0.3020 | 0.0001 | 0.0001 | 0.9732 | 0.6525 | 0.4841 | 0.2543 | 0.0025 | 0.0001 | 0.0589 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| CAD_EXTR | -0.09997 | 0.63981 | 0.71929 | 0.05280 | -0.00847 | 0.01469 | -0.04284 | 0.39339 | 0.53810 | 0.37708 | . |
| | 0.4807 | 0.0001 | 0.0001 | 0.7101 | 0.9525 | 0.9177 | 0.7630 | 0.0039 | 0.0001 | 0.0059 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| CHROMIUM | -0.29295 | 0.53254 | 0.57587 | 0.06153 | 0.38698 | 0.29998 | -0.15673 | 0.68448 | 0.41642 | 0.55732 | . |
| | 0.0351 | 0.0001 | 0.0001 | 0.6648 | 0.0046 | 0.0307 | 0.2672 | 0.0001 | 0.0021 | 0.0001 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| CHRYSENE | -0.33122 | -0.12188 | -0.09806 | -0.18080 | -0.13935 | -0.09921 | 0.48026 | 0.37067 | -0.10273 | 0.46945 | . |
| | 0.0176 | 0.3942 | 0.4936 | 0.2596 | 0.3294 | 0.4885 | 0.0004 | 0.0074 | 0.1993 | 0.0005 | |
| | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 0 |
| CLAY | 0.13304 | -0.03515 | 0.12563 | 0.18504 | 0.64529 | 0.34227 | -0.19351 | 0.46766 | -0.11263 | 0.33728 | . |
| | 0.3471 | 0.8046 | 0.3748 | 0.1891 | 0.0001 | 0.0130 | 0.1693 | 0.0009 | 0.4266 | 0.0145 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| COPPER | -0.11627 | 0.12193 | 0.10746 | -0.04309 | 0.25669 | 0.24782 | -0.07213 | 0.74215 | 0.18572 | 0.80953 | . |
| | 0.4118 | 0.3892 | 0.1833 | 0.7617 | 0.0662 | 0.0765 | 0.6113 | 0.0001 | 0.1874 | 0.0001 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| COP_EX_A | -0.09108 | 0.80592 | 0.77885 | 0.06903 | 0.02894 | 0.14109 | -0.21748 | 0.42582 | 0.98564 | 0.29254 | . |
| | 0.5208 | 0.0001 | 0.0001 | 0.6268 | 0.8386 | 0.3184 | 0.1214 | 0.0016 | 0.0001 | 0.0353 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| COP_EXTR | -0.27279 | 0.34359 | 0.34793 | -0.05211 | 0.12852 | 0.10450 | 0.03987 | 0.63393 | 0.34390 | 0.80695 | . |
| | 0.0504 | 0.0126 | 0.0115 | 0.7137 | 0.3639 | 0.4610 | 0.7790 | 0.0001 | 0.0126 | 0.0001 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| DDD | 0.06803 | -0.08519 | -0.04152 | -0.12093 | 0.28433 | 0.13091 | -0.35475 | 0.21788 | -0.01870 | 0.30736 | . |
| | 0.6352 | 0.5522 | 0.7724 | 0.3995 | 0.0432 | 0.3599 | 0.0106 | 0.1246 | 0.8964 | 0.0282 | |
| | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 0 |

/usr/cntl/bechtel/analysis/corr1.sas

R0063929

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | 0.12341 | 0.09598 | 0.19626 | 0.24888 | 0.17716 | 0.10628 | -0.23362 | 0.33168 | 0.09750 | 0.30609 | . |
| | 0.3834 | 0.4985 | 0.1632 | 0.0752 | 0.2090 | 0.4533 | 0.0955 | 0.0163 | 0.4917 | 0.0273 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| DIBENZO_ | -0.20878 | 0.08565 | 0.16822 | -0.01025 | 0.29307 | 0.10309 | 0.12743 | 0.38977 | 0.00118 | 0.61967 | . |
| | 0.1738 | 0.5813 | 0.2750 | 0.9473 | 0.0535 | 0.5055 | 0.4098 | 0.0089 | 0.9939 | 0.0046 | |
| | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 0 |
| DINOCTYL | -0.11548 | 0.37441 | 0.43778 | -0.03453 | 0.13684 | 0.05822 | 0.27259 | 0.52474 | 0.27496 | 0.45427 | . |
| | 0.4265 | 0.0074 | 0.0015 | 0.8118 | 0.3433 | 0.6880 | 0.0555 | 0.0001 | 0.0533 | 0.0009 | |
| | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 0 |
| E_NORM_D | 0.22991 | -0.20148 | -0.04512 | -0.08840 | 0.35345 | 0.28446 | -0.42423 | 0.03088 | -0.18342 | -0.08585 | . |
| | 0.1011 | 0.1521 | 0.7508 | 0.5332 | 0.0102 | 0.0410 | 0.0017 | 0.8280 | 0.2470 | 0.5451 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| E_SURVIV | 0.03410 | -0.18672 | -0.10803 | -0.20248 | 0.07674 | 0.09129 | -0.14455 | 0.01473 | -0.19513 | -0.00031 | . |
| | 0.8103 | 0.1850 | 0.4459 | 0.1500 | 0.5887 | 0.5198 | 0.3066 | 0.9174 | 0.1657 | 0.9982 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| FINES | 0.25906 | -0.01040 | 0.14363 | 0.09336 | 0.96017 | 0.41804 | -0.43086 | 0.44677 | -0.03043 | 0.25793 | . |
| | 0.0637 | 0.9417 | 0.3087 | 0.5103 | 0.0001 | 0.0020 | 0.0014 | 0.0009 | 0.8306 | 0.0649 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| FLUORANT | -0.31245 | -0.09014 | -0.11223 | -0.18440 | -0.27657 | -0.16149 | 0.48683 | 0.15499 | -0.12687 | 0.25100 | . |
| | 0.0272 | 0.5336 | 0.4378 | 0.1999 | 0.0519 | 0.2625 | 0.0003 | 0.2825 | 0.3800 | 0.0787 | |
| | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 0 |
| GRAVEL | -0.25074 | 0.94463 | 0.92068 | 0.09171 | -0.13721 | 0.13275 | 0.03518 | 0.51719 | 0.79982 | 0.37638 | . |
| | 0.0730 | 0.0001 | 0.0001 | 0.5179 | 0.3688 | 0.3482 | 0.8045 | 0.0001 | 0.0001 | 0.0060 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| INDENO_1 | -0.13811 | -0.08098 | 0.01607 | -0.10935 | 0.18683 | 0.06796 | 0.11117 | 0.49988 | -0.11896 | 0.60188 | . |
| | 0.3303 | 0.6709 | 0.9109 | 0.4491 | 0.1949 | 0.6357 | 0.4374 | 0.0002 | 0.4097 | 0.0001 | |
| | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 0 |
| LEAD | 0.05568 | 0.13872 | 0.21359 | 0.13920 | 0.49333 | 0.34226 | -0.17890 | 0.78049 | 0.12197 | 0.78232 | . |
| | 0.6950 | 0.3267 | 0.1284 | 0.3250 | 0.0002 | 0.0130 | 0.2044 | 0.0001 | 0.3880 | 0.0001 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| LEAD_EX_ | 0.07146 | 0.49887 | 0.46958 | 0.10313 | 0.11338 | 0.10240 | -0.32203 | 0.23928 | 0.87002 | 0.12919 | . |
| | 0.6147 | 0.0002 | 0.0004 | 0.4669 | 0.4235 | 0.4701 | 0.0199 | 0.0876 | 0.0001 | 0.3613 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |
| LEAD_EXT | 0.04750 | -0.07872 | -0.02760 | 0.11247 | 0.36372 | 0.16282 | -0.10327 | 0.54562 | -0.11130 | 0.72164 | . |
| | 0.7381 | 0.5791 | 0.8460 | 0.4273 | 0.0080 | 0.2488 | 0.4663 | 0.0001 | 0.4321 | 0.0001 | |
| | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 0 |



R0063930

5557--

VOL 18

---------- NORMAL=carbon ----------

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | -0.21156<br>0.1322<br>52 | 0.09029<br>0.5244<br>52 | 0.02518<br>0.8593<br>52 | 0.58702<br>0.0001<br>52 | -0.33753<br>0.0146<br>52 | -0.18008<br>0.2014<br>52 | 0.54801<br>0.0001<br>52 | 0.00869<br>0.9513<br>52 | -0.04542<br>0.7492<br>52 | -0.02838<br>0.8417<br>52 | . <br> <br> <br> 0 |
| MEAN_GRS | -0.24305<br>0.0857<br>51 | 0.96862<br>0.0001<br>51 | 0.94685<br>0.0001<br>51 | 0.08372<br>0.5592<br>51 | -0.07793<br>0.5868<br>51 | 0.15544<br>0.2761<br>51 | -0.06062<br>0.6726<br>51 | 0.50710<br>0.0001<br>51 | 0.82342<br>0.0001<br>51 | 0.35989<br>0.0095<br>51 | . <br> <br> <br> 0 |
| MEDIAN_G | -0.23698<br>0.0907<br>52 | 0.97963<br>0.0001<br>52 | 0.94838<br>0.0001<br>52 | 0.10635<br>0.4530<br>52 | -0.07139<br>0.6150<br>52 | 0.15938<br>0.2591<br>52 | -0.06736<br>0.6351<br>52 | 0.51681<br>0.0001<br>52 | 0.82186<br>0.0001<br>52 | 0.35708<br>0.0094<br>52 | . <br> <br> <br> 0 |
| MERCURY | 0.16240<br>0.2500<br>52 | -0.12735<br>0.3683<br>52 | -0.06964<br>0.6237<br>52 | -0.06913<br>0.6263<br>52 | 0.45641<br>0.0007<br>52 | 0.20913<br>0.1360<br>52 | -0.36527<br>0.0078<br>52 | 0.43449<br>0.0012<br>52 | 0.01880<br>0.8989<br>52 | 0.55263<br>0.0001<br>52 | . <br> <br> <br> 0 |
| MERC_EX_ | 0.04793<br>0.6343<br>52 | 0.42100<br>0.0019<br>52 | 0.37483<br>0.0062<br>52 | 0.04863<br>0.7321<br>52 | 0.03309<br>0.8161<br>52 | 0.04969<br>0.7254<br>52 | -0.21484<br>0.1268<br>52 | 0.17762<br>0.2072<br>52 | 0.81028<br>0.0001<br>52 | 0.10304<br>0.4673<br>52 | . <br> <br> <br> 0 |
| MERC_EXT | -0.04189<br>0.7681<br>52 | 0.19859<br>0.1581<br>52 | 0.14146<br>0.3171<br>52 | -0.02297<br>0.8716<br>52 | 0.15221<br>0.2814<br>52 | -0.02330<br>0.8698<br>52 | -0.04565<br>0.7480<br>52 | 0.16909<br>0.2308<br>52 | 0.28999<br>0.0370<br>52 | 0.28027<br>0.0442<br>52 | . <br> <br> <br> 0 |
| NICKEL | -0.01547<br>0.9133<br>52 | 0.77261<br>0.0001<br>52 | 0.84695<br>0.0001<br>52 | 0.20569<br>0.1435<br>52 | 0.50742<br>0.0001<br>52 | 0.44449<br>0.0010<br>52 | -0.29161<br>0.0359<br>52 | 0.76688<br>0.0001<br>52 | 0.63518<br>0.0001<br>52 | 0.47754<br>0.0003<br>52 | . <br> <br> <br> 0 |
| NSPECIES | -0.26281<br>0.0598<br>52 | 0.01790<br>0.8998<br>52 | -0.04203<br>0.7674<br>52 | 0.32616<br>0.0183<br>52 | -0.43462<br>0.0013<br>52 | -0.26449<br>0.0561<br>52 | 0.67330<br>0.0001<br>52 | -0.04025<br>0.7769<br>52 | -0.06995<br>0.6222<br>52 | -0.02100<br>0.8714<br>52 | . <br> <br> <br> 0 |
| PCB_1260 | 0.11039<br>0.4406<br>51 | -0.08255<br>0.5647<br>51 | -0.05742<br>0.6690<br>51 | -0.06375<br>0.6567<br>51 | 0.32430<br>0.0203<br>51 | 0.21879<br>0.1230<br>51 | -0.34070<br>0.0144<br>51 | 0.49150<br>0.0002<br>51 | 0.04418<br>0.7582<br>51 | 0.50489<br>0.0001<br>51 | . <br> <br> <br> 0 |
| PHENANTH | -0.41751<br>0.0023<br>51 | -0.04764<br>0.7399<br>51 | -0.08563<br>0.5502<br>51 | -0.13421<br>0.3478<br>51 | -0.22407<br>0.1140<br>51 | -0.14093<br>0.3239<br>51 | 0.41990<br>0.0022<br>51 | 0.16285<br>0.1990<br>51 | -0.09033<br>0.4924<br>51 | 0.26679<br>0.0584<br>51 | . <br> <br> <br> 0 |
| PYRENE | -0.39713<br>0.0043<br>50 | -0.11496<br>0.4266<br>50 | -0.14296<br>0.3220<br>50 | -0.19020<br>0.1857<br>50 | -0.30436<br>0.0316<br>50 | -0.18693<br>0.1936<br>50 | 0.58750<br>0.0001<br>50 | 0.17294<br>0.2297<br>50 | -0.16219<br>0.2604<br>50 | 0.27306<br>0.0550<br>50 | . <br> <br> <br> 0 |
| P_GROWTH | -0.39741<br>0.0035<br>52 | 0.11497<br>0.4170<br>52 | 0.05603<br>0.6932<br>52 | -0.26699<br>0.0557<br>52 | -0.37488<br>0.0062<br>52 | -0.24501<br>0.0800<br>52 | 0.70067<br>0.0001<br>52 | 0.00396<br>0.9776<br>52 | -0.00349<br>0.9804<br>52 | 0.03857<br>0.7860<br>52 | . <br> <br> <br> 0 |

/usr/cnt1/bechtel/analysis/corr1.sas

R0063931

5555--

VOL 18

NORMAL=carbon

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURVIV | 1.00000<br>0.0<br>52 | -0.20848<br>0.1380<br>52 | -0.18191<br>0.1968<br>52 | 0.07394<br>0.6024<br>52 | 0.29055<br>0.0367<br>52 | 0.18561<br>0.1877<br>52 | -0.31722<br>0.0219<br>52 | -0.02074<br>0.8840<br>52 | -0.06808<br>0.6315<br>52 | -0.07693<br>0.5878<br>52 | . |
| SAND | -0.20848<br>0.1380<br>52 | 1.00000<br>0.0<br>52 | 0.94938<br>0.0001<br>52 | 0.14990<br>0.2888<br>52 | 0.00339<br>0.9810<br>52 | 0.17573<br>0.2127<br>52 | -0.15706<br>0.2637<br>52 | 0.47834<br>0.0003<br>52 | 0.81265<br>0.0001<br>52 | 0.30184<br>0.0297<br>52 | 0 |
| SELENIUM | -0.18191<br>0.1968<br>52 | 0.94938<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.12711<br>0.3692<br>52 | 0.13488<br>0.3404<br>52 | 0.20624<br>0.1424<br>52 | -0.18096<br>0.1992<br>52 | 0.55135<br>0.0001<br>52 | 0.79597<br>0.0001<br>52 | 0.35124<br>0.0107<br>52 | 0 |
| SHANNON | 0.07394<br>0.6024<br>52 | 0.14990<br>0.2888<br>52 | 0.12711<br>0.3692<br>52 | 1.00000<br>0.0<br>52 | 0.03546<br>0.8029<br>52 | 0.10291<br>0.4678<br>52 | -0.00627<br>0.9648<br>52 | 0.11670<br>0.4100<br>52 | 0.04260<br>0.7643<br>52 | 0.01190<br>0.9333<br>52 | 0 |
| SILT | 0.29055<br>0.0367<br>52 | 0.00339<br>0.9810<br>52 | 0.13488<br>0.3404<br>52 | 0.03546<br>0.8029<br>52 | 1.00000<br>0.0<br>52 | 0.40441<br>0.0029<br>52 | -0.49697<br>0.0002<br>52 | 0.38074<br>0.0054<br>52 | 0.01487<br>0.9167<br>52 | 0.18583<br>0.1872<br>52 | 0 |
| SILVER | 0.18561<br>0.1877<br>52 | 0.17573<br>0.2127<br>52 | 0.20624<br>0.1424<br>52 | 0.10291<br>0.4678<br>52 | 0.40441<br>0.0029<br>52 | 1.00000<br>0.0<br>52 | -0.28392<br>0.0414<br>52 | 0.35572<br>0.0097<br>52 | 0.12316<br>0.3846<br>52 | 0.15472<br>0.2734<br>52 | 0 |
| SULFIDE | -0.31722<br>0.0219<br>52 | -0.15706<br>0.2837<br>52 | -0.18096<br>0.1992<br>52 | -0.00627<br>0.9648<br>52 | -0.49697<br>0.0002<br>52 | -0.28392<br>0.0414<br>52 | 1.00000<br>0.0<br>52 | -0.02378<br>0.8671<br>52 | -0.23761<br>0.0899<br>52 | 0.08257<br>0.8594<br>52 | 0 |
| ZINC | -0.02074<br>0.8840<br>52 | 0.47834<br>0.0003<br>52 | 0.55135<br>0.0001<br>52 | 0.11670<br>0.4100<br>52 | 0.38074<br>0.0054<br>52 | 0.35572<br>0.0097<br>52 | -0.02378<br>0.8671<br>52 | 1.00000<br>0.0<br>52 | 0.40344<br>0.0030<br>52 | 0.84633<br>0.0001<br>52 | 0 |
| ZINC_EX_ | -0.06808<br>0.6315<br>52 | 0.81265<br>0.0001<br>52 | 0.79597<br>0.0001<br>52 | 0.04260<br>0.7643<br>52 | 0.01487<br>0.9167<br>52 | 0.12316<br>0.3844<br>52 | -0.23761<br>0.0899<br>52 | 0.40344<br>0.0030<br>52 | 1.00000<br>0.0<br>52 | 0.26853<br>0.0571<br>52 | 0 |
| ZINC_EXT | -0.07693<br>0.5878<br>52 | 0.30184<br>0.0297<br>52 | 0.35124<br>0.0107<br>52 | 0.01190<br>0.9333<br>52 | 0.18583<br>0.1872<br>52 | 0.15472<br>0.2734<br>52 | 0.08257<br>0.8594<br>52 | 0.84633<br>0.0001<br>52 | 0.26853<br>0.0571<br>52 | 1.00000<br>0.0<br>52 | 0 |
| TOC | . | . | . | . | . | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



R0063932

9555-- VOL 18

NORMAL=none

Correlation Analysis

59 'VAR' Variables: ABUNDANC ACNPHTHY ANTHRACE ARSENIC AVS A_REBURI A_SURVIV BERYLLIU BIOMASS BZ_A_ANT BZ_A_PYR BZ_B_FLU BZ_GHI_P BZ_K_FLU
CADMIUN CAD_EX_A CAD_EXTR CHROMIUM CHRYSENE CLAY COPPER COP_EX_A COP_EXTR DDD DDE DIBENZO_ DINOCTYL E_NORM_D
E_SURVIV FINES FLUORANT GRAVEL INDENO_1 LEAD LEAD_EX_ LEAD_EXT MARGALEF MEAN_GRS MEDIAN_G MERCURY MERC_EX_ MERC_EXT
NICKEL NSPECIES PCB_1260 PHENANTH PYRENE P_GROWTH P_SURVIV SAND SELENIUM SHANNON SILT SILVER SULFIDE ZINC
ZINC_EX_ ZINC_EXT TOC



R0063933

-155-

VOL 18

NORMAL=none

Correlation Analysis

Simple Statistics

| Variable | N | Mean | Std Dev | Sum | Minimum | Maximum |
|---|---|---|---|---|---|---|
| ABUNDANC | 52 | 426.246795 | 734.750336 | 22165 | 14.000000 | 4264.000000 |
| ACNPHTHY | 50 | 39.206667 | 71.644432 | 1960.333333 | 5.000000 | 500.000000 |
| ANTHRACE | 51 | 114.954248 | 264.200782 | 5862.666667 | 5.000000 | 1400.000000 |
| ARSENIC | 52 | 9.407051 | 3.571781 | 489.166667 | 1.600000 | 19.000000 |
| AVS | 52 | 700.370513 | 1227.682983 | 36419 | 4.300000 | 4000.000000 |
| A_REBURI | 52 | 0.905231 | 0.148529 | 47.072000 | 0.246000 | 1.000000 |
| A_SURVIV | 52 | 0.801795 | 0.190710 | 41.693333 | 0.163000 | 0.988000 |
| BERYLLIU | 52 | 0.528269 | 0.189521 | 27.470000 | 0.050000 | 1.000000 |
| BIOMASS | 52 | 20.383862 | 50.505324 | 1059.960833 | 0.055000 | 293.701000 |
| BZ_A_ANT | 51 | 145.660131 | 383.997482 | 7428.666667 | 5.000000 | 1900.000000 |
| BZ_A_PYR | 52 | 223.685897 | 302.766269 | 11580 | 5.000000 | 1500.000000 |
| BZ_B_FLU | 52 | 273.429487 | 382.493108 | 14218 | 5.000000 | 1800.000000 |
| BZ_GHI_P | 51 | 101.562092 | 106.930912 | 5179.666667 | 5.000000 | 440.000000 |
| BZ_K_FLU | 52 | 249.269231 | 291.975974 | 12962 | 5.000000 | 1300.000000 |
| CADMIUM | 52 | 0.572333 | 0.448426 | 29.761333 | 0.078000 | 2.400000 |
| CAD_EX_A | 52 | 0.019271 | 0.045941 | 0.704069 | 0.000139 | 0.301797 |
| CAD_EXTR | 52 | 0.713910 | 0.556145 | 37.123333 | 0.200000 | 2.800000 |
| CHROMIUN | 52 | 46.393590 | 42.738743 | 2412.466667 | 9.800000 | 330.000000 |
| CHRYSENE | 51 | 222.176471 | 410.879189 | 11331 | 5.000000 | 2100.000000 |
| CLAY | 52 | 27.451442 | 12.007834 | 1427.475000 | 1.762000 | 51.617000 |
| COPPER | 52 | 123.551282 | 91.900531 | 6424.666667 | 13.000000 | 530.000000 |
| COP_EX_A | 52 | 1.457692 | 3.333279 | 75.799965 | 0.035000 | 22.093023 |
| COP_EXTR | 52 | 93.064103 | 68.464040 | 4839.333333 | 11.000000 | 330.000000 |
| DDD | 51 | 9.321569 | 9.327568 | 475.400000 | 0.350000 | 42.000000 |
| DDE | 52 | 70.166667 | 43.294175 | 3648.666667 | 6.000000 | 190.000000 |
| DIBENZO_ | 44 | 39.053030 | 64.168260 | 1716.333333 | 5.000000 | 330.000000 |
| DINOCTYL | 90 | 73.913333 | 67.392202 | 3695.666667 | 15.000000 | 210.000000 |
| E_NORM_D | 52 | 0.378077 | 0.416124 | 19.660000 | 0 | 0.961000 |
| E_SURVIV | 52 | 0.740962 | 0.207934 | 39.570000 | 0.250000 | 1.000000 |
| FINES | 52 | 66.236795 | 20.451603 | 3444.313333 | 3.879000 | 93.930000 |
| FLUORANT | 90 | 274.033333 | 824.443297 | 13702 | 5.000000 | 4400.000000 |
| GRAVEL | 52 | 2.833199 | 7.360702 | 147.326333 | 0 | 36.768000 |
| INDENO_1 | 51 | 104.751634 | 119.845212 | 5342.333333 | 5.000000 | 850.000000 |
| LEAD | 52 | 51.971795 | 28.314980 | 2702.533333 | 5.200000 | 180.000000 |
| LEAD_EX_ | 52 | 0.726766 | 1.561336 | 37.791836 | 0.018056 | 10.465116 |
| LEAD_EXT | 52 | 49.280769 | 30.302209 | 2562.600000 | 2.600000 | 190.000000 |
| MARGALEP | 52 | 7.074507 | 2.658618 | 367.874388 | 2.202606 | 16.498435 |
| MEAN_GRS | 51 | 30.550281 | 89.013829 | 1558.064333 | 2.425000 | 637.841000 |
| MEDIAN_G | 52 | 44.803333 | 79.803632 | 2329.773333 | 3.489000 | 611.808000 |
| MERCURY | 52 | 0.463353 | 0.302482 | 24.094333 | 0.015000 | 1.800000 |
| MERC_EX_ | 52 | 0.001042 | 0.003632 | 0.054167 | 0.000005000 | 0.025581 |
| MERC_EXT | 52 | 0.039750 | 0.031694 | 2.067000 | 0.005000 | 0.140000 |
| NICKEL | 52 | 24.707692 | 7.589204 | 1284.800000 | 7.800000 | 61.000000 |
| NSPECIES | 52 | 39.807693 | 22.710295 | 2070.000000 | 8.000000 | 106.000000 |
| PCB_1260 | 51 | 140.392157 | 172.640213 | 7160.000000 | 5.000000 | 880.000000 |
| PHENANTH | 51 | 122.947712 | 391.867973 | 6270.333333 | 5.000000 | 2700.000000 |
| PYRENE | 50 | 290.590000 | 689.432536 | 14530 | 5.000000 | 3300.000000 |
| P_GROWTH | 52 | 0.103308 | 0.028545 | 5.372000 | 0.056000 | 0.187000 |



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8555

VOL 18

NORMAL=none

Correlation Analysis

Simple Statistics

| Variable | N | Mean | Std Dev | Sum | Minimum | Maximum |
|---|---|---|---|---|---|---|
| P_SURVIV | 52 | 0.939295 | 0.056850 | 48.843333 | 0.760000 | 1.000000 |
| SAND | 52 | 30.929955 | 19.995099 | 1608.357667 | 5.614000 | 84.636000 |
| SELENIUM | 52 | 0.574038 | 0.320308 | 29.850000 | 0.350000 | 1.700000 |
| SHANNON | 52 | 2.709660 | 0.562196 | 140.902329 | 1.128306 | 3.682892 |
| SILT | 52 | 38.785353 | 13.355132 | 2016.838333 | 2.117000 | 68.339333 |
| SILVER | 52 | 2.608654 | 2.456115 | 135.650000 | 0.350000 | 19.000000 |
| SULFIDE | 52 | 869.265385 | 1629.600105 | 45202 | 1.100000 | 5400.000000 |
| ZINC | 52 | 188.096154 | 107.676477 | 9781.000000 | 33.000000 | 630.000000 |
| ZINC_EX_ | 52 | 2.439658 | 8.388367 | 126.862220 | 0.061111 | 30.232558 |
| ZINC_EXT | 52 | 151.091026 | 102.864014 | 7858.333333 | 20.000000 | 580.000000 |
| TOC | 52 | 1.108814 | 0.582077 | 57.658333 | 0.069000 | 2.323000 |



R0063935

5555--

VOL 18

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_REBURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | 1.00000<br>0.0<br>52 | 0.23183<br>0.1052<br>50 | 0.24164<br>0.0876<br>51 | -0.01458<br>0.9183<br>52 | 0.47366<br>0.0004<br>52 | -0.62568<br>0.0001<br>52 | -0.65057<br>0.0001<br>52 | -0.01328<br>0.9258<br>52 | 0.50391<br>0.0001<br>52 | 0.18559<br>0.1923<br>51 | 0.17319<br>0.2195<br>52 | 0.17746<br>0.2082<br>52 |
| ACNPHTHY | 0.23183<br>0.1052<br>50 | 1.00000<br>0.0<br>50 | 0.76328<br>0.0001<br>50 | 0.34241<br>0.0149<br>50 | 0.49709<br>0.0002<br>50 | -0.48725<br>0.0003<br>50 | -0.55873<br>0.0001<br>50 | 0.14269<br>0.3229<br>50 | 0.20324<br>0.1569<br>50 | 0.71990<br>0.0001<br>50 | 0.73115<br>0.0001<br>50 | 0.69548<br>0.0001<br>50 |
| ANTHRACE | 0.24164<br>0.0876<br>51 | 0.76328<br>0.0001<br>50 | 1.00000<br>0.0<br>51 | 0.31510<br>0.0243<br>51 | 0.67174<br>0.0001<br>51 | -0.26253<br>0.0627<br>51 | -0.37864<br>0.0061<br>51 | 0.02646<br>0.8538<br>51 | 0.26690<br>0.0583<br>51 | 0.91547<br>0.0001<br>51 | 0.85095<br>0.0001<br>51 | 0.85412<br>0.0001<br>51 |
| ARSENIC | -0.01458<br>0.9183<br>52 | 0.34241<br>0.0149<br>50 | 0.31510<br>0.0243<br>51 | 1.00000<br>0.0<br>52 | 0.25287<br>0.0705<br>52 | -0.15989<br>0.2575<br>52 | -0.14634<br>0.3006<br>52 | 0.68348<br>0.0001<br>52 | 0.02924<br>0.8370<br>52 | 0.32750<br>0.0190<br>51 | 0.53096<br>0.0001<br>52 | 0.52488<br>0.0001<br>52 |
| AVS | 0.47366<br>0.0004<br>52 | 0.49709<br>0.0002<br>50 | 0.67174<br>0.0001<br>51 | 0.25287<br>0.0705<br>52 | 1.00000<br>0.0<br>52 | -0.54849<br>0.0001<br>52 | -0.62388<br>0.0001<br>52 | 0.33002<br>0.0169<br>52 | 0.52312<br>0.0001<br>52 | 0.61856<br>0.0001<br>51 | 0.69840<br>0.0001<br>52 | 0.71115<br>0.0001<br>52 |
| A_REBURI | -0.62568<br>0.0001<br>52 | -0.48725<br>0.0003<br>50 | -0.26253<br>0.0627<br>51 | -0.15989<br>0.2575<br>52 | -0.54849<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.92488<br>0.0001<br>52 | -0.30455<br>0.0282<br>52 | -0.55283<br>0.0001<br>52 | -0.26644<br>0.0813<br>51 | -0.27740<br>0.0685<br>52 | -0.27226<br>0.0508<br>52 |
| A_SURVIV | -0.65057<br>0.0001<br>52 | -0.55873<br>0.0001<br>50 | -0.37864<br>0.0061<br>51 | -0.14634<br>0.3006<br>52 | -0.62388<br>0.0001<br>52 | 0.92488<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | -0.22394<br>0.1105<br>52 | -0.60843<br>0.0001<br>52 | -0.34606<br>0.0128<br>51 | -0.32632<br>0.0182<br>52 | -0.31887<br>0.0212<br>52 |
| BERYLLIU | -0.01328<br>0.9256<br>52 | 0.14269<br>0.3229<br>50 | 0.02646<br>0.8538<br>51 | 0.68348<br>0.0001<br>52 | 0.33002<br>0.0169<br>52 | -0.30455<br>0.0282<br>52 | -0.22396<br>0.1105<br>52 | 1.00000<br>0.0<br>52 | 0.07262<br>0.6089<br>52 | 0.11247<br>0.4320<br>51 | 0.28839<br>0.0381<br>52 | 0.28095<br>0.0436<br>52 |
| BIOMASS | 0.50391<br>0.0001<br>52 | 0.20324<br>0.1569<br>50 | 0.26690<br>0.0583<br>51 | 0.02924<br>0.8370<br>52 | 0.52312<br>0.0001<br>52 | -0.55283<br>0.0001<br>52 | -0.60843<br>0.0001<br>52 | 0.07262<br>0.6089<br>52 | 1.00000<br>0.0<br>52 | 0.12428<br>0.3849<br>51 | 0.13560<br>0.3750<br>52 | 0.13560<br>0.3378<br>52 |
| BZ_A_ANT | 0.18559<br>0.1923<br>51 | 0.71990<br>0.0001<br>50 | 0.91547<br>0.0001<br>51 | 0.32750<br>0.0190<br>51 | 0.61856<br>0.0001<br>51 | -0.26644<br>0.0813<br>51 | -0.34606<br>0.0129<br>51 | 0.11247<br>0.4320<br>51 | 0.12428<br>0.3849<br>51 | 1.00000<br>0.0<br>51 | 0.88713<br>0.0001<br>51 | 0.87025<br>0.0001<br>51 |
| BZ_A_PYR | 0.17319<br>0.2195<br>52 | 0.73115<br>0.0001<br>50 | 0.85095<br>0.0001<br>51 | 0.53096<br>0.0001<br>52 | 0.69840<br>0.0001<br>52 | -0.27740<br>0.0465<br>52 | -0.32632<br>0.0182<br>52 | 0.28839<br>0.0381<br>52 | 0.13560<br>0.3750<br>52 | 0.88713<br>0.0001<br>51 | 1.00000<br>0.0<br>52 | 0.99444<br>0.0001<br>52 |
| BZ_B_FLU | 0.17746<br>0.2082<br>52 | 0.69548<br>0.0001<br>50 | 0.85412<br>0.0001<br>51 | 0.52488<br>0.0001<br>52 | 0.71115<br>0.0001<br>52 | -0.27226<br>0.0509<br>52 | -0.31887<br>0.0212<br>52 | 0.28095<br>0.0436<br>52 | 0.13560<br>0.3378<br>52 | 0.87025<br>0.0001<br>51 | 0.99444<br>0.0001<br>52 | 1.00000<br>0.0<br>52 |



R0063936

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_RESURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | 0.11015<br>0.4416<br>51 | 0.63423<br>0.0001<br>50 | 0.58997<br>0.0001<br>51 | 0.65954<br>0.0001<br>51 | 0.46099<br>0.0007<br>51 | -0.30244<br>0.0310<br>51 | -0.28125<br>0.0456<br>51 | 0.41963<br>0.0022<br>51 | 0.11342<br>0.4281<br>51 | 0.60008<br>0.0001<br>51 | 0.83906<br>0.0001<br>51 | 0.81497<br>0.0001<br>51 |
| BZ_K_FLU | 0.16144<br>0.2529<br>52 | 0.65079<br>0.0001<br>50 | 0.81567<br>0.0001<br>51 | 0.54193<br>0.0001<br>52 | 0.69301<br>0.0001<br>52 | -0.22437<br>0.1098<br>52 | -0.26918<br>0.0536<br>52 | 0.31285<br>0.0239<br>52 | 0.11400<br>0.4210<br>52 | 0.83899<br>0.0001<br>51 | 0.98254<br>0.0001<br>52 | 0.97593<br>0.0001<br>52 |
| CADMIUM | 0.18035<br>0.2007<br>52 | 0.08338<br>0.5649<br>50 | 0.25495<br>0.0710<br>51 | 0.52675<br>0.0001<br>52 | 0.33442<br>0.0154<br>52 | -0.08793<br>0.5354<br>52 | -0.20684<br>0.1412<br>52 | 0.24165<br>0.0844<br>52 | 0.14831<br>0.2941<br>52 | 0.18014<br>0.2059<br>51 | 0.28366<br>0.0416<br>52 | 0.29472<br>0.0339<br>52 |
| CAD_EX_A | -0.02796<br>0.8440<br>52 | -0.11519<br>0.4257<br>50 | -0.10099<br>0.4807<br>51 | 0.18458<br>0.1902<br>52 | -0.17824<br>0.2062<br>52 | 0.12558<br>0.3750<br>52 | 0.06525<br>0.6458<br>52 | -0.19212<br>0.2817<br>52 | -0.09802<br>0.4896<br>52 | -0.11440<br>0.4241<br>51 | -0.10038<br>0.4789<br>52 | -0.10507<br>0.4585<br>52 |
| CAD_EXTR | 0.26081<br>0.0618<br>52 | 0.15093<br>0.2954<br>50 | 0.18330<br>0.1979<br>51 | 0.34986<br>0.0110<br>52 | 0.30315<br>0.0289<br>52 | -0.30416<br>0.0284<br>52 | -0.35857<br>0.0090<br>52 | 0.19352<br>0.1692<br>52 | 0.20014<br>0.1549<br>52 | 0.18104<br>0.2036<br>51 | 0.21779<br>0.1209<br>52 | 0.22681<br>0.1059<br>52 |
| CHROMIUM | 0.14704<br>0.2982<br>52 | 0.92888<br>0.0001<br>50 | 0.71292<br>0.0001<br>51 | 0.50365<br>0.0001<br>52 | 0.40615<br>0.0028<br>52 | -0.40409<br>0.0030<br>52 | -0.46634<br>0.0005<br>52 | 0.29302<br>0.0350<br>52 | 0.03329<br>0.8148<br>52 | 0.72373<br>0.0001<br>51 | 0.71178<br>0.0001<br>52 | 0.68305<br>0.0001<br>52 |
| CHRYSENE | 0.20294<br>0.1532<br>51 | 0.72960<br>0.0001<br>49 | 0.92307<br>0.0001<br>50 | 0.41890<br>0.0022<br>51 | 0.69940<br>0.0001<br>51 | -0.25547<br>0.0704<br>51 | -0.35123<br>0.0115<br>51 | 0.19827<br>0.1631<br>51 | 0.14240<br>0.3188<br>51 | 0.96874<br>0.0001<br>50 | 0.94101<br>0.0001<br>51 | 0.94098<br>0.0001<br>51 |
| CLAY | 0.21661<br>0.1230<br>52 | 0.29872<br>0.0351<br>50 | 0.25484<br>0.0711<br>51 | 0.69697<br>0.0001<br>52 | 0.48989<br>0.0002<br>52 | -0.36545<br>0.0077<br>52 | -0.41046<br>0.0025<br>52 | 0.79186<br>0.0001<br>52 | 0.25201<br>0.0718<br>52 | 0.34429<br>0.0134<br>51 | 0.42862<br>0.0015<br>52 | 0.41680<br>0.0021<br>52 |
| COPPER | 0.15058<br>0.2866<br>52 | 0.44178<br>0.0013<br>50 | 0.45164<br>0.0009<br>51 | 0.78690<br>0.0001<br>52 | 0.45373<br>0.0007<br>52 | -0.21539<br>0.1251<br>52 | -0.22597<br>0.1072<br>52 | 0.54613<br>0.0001<br>52 | 0.09513<br>0.5023<br>52 | 0.48886<br>0.0003<br>51 | 0.68754<br>0.0001<br>52 | 0.68893<br>0.0001<br>52 |
| COP_EX_A | -0.09547<br>0.5008<br>52 | -0.13424<br>0.3527<br>50 | -0.13790<br>0.3345<br>51 | 0.16583<br>0.2400<br>52 | -0.22967<br>0.1014<br>52 | 0.18458<br>0.1902<br>52 | 0.16932<br>0.2301<br>52 | -0.09074<br>0.5226<br>52 | -0.10021<br>0.4797<br>52 | -0.13403<br>0.3684<br>51 | -0.07325<br>0.6058<br>52 | -0.05756<br>0.6852<br>52 |
| COP_EXTR | 0.23199<br>0.0979<br>52 | 0.57466<br>0.0001<br>50 | 0.60524<br>0.0001<br>51 | 0.66636<br>0.0001<br>52 | 0.58141<br>0.0001<br>52 | -0.29067<br>0.0366<br>52 | -0.32511<br>0.0187<br>52 | 0.42914<br>0.0015<br>52 | 0.16940<br>0.2299<br>52 | 0.62971<br>0.0001<br>51 | 0.80458<br>0.0001<br>52 | 0.80237<br>0.0001<br>52 |
| DDD | -0.14911<br>0.2963<br>51 | 0.33367<br>0.0191<br>49 | 0.21313<br>0.1373<br>50 | 0.45680<br>0.0008<br>51 | -0.11758<br>0.4112<br>51 | 0.05516<br>0.7006<br>51 | 0.01258<br>0.9302<br>51 | 0.26747<br>0.0800<br>51 | -0.25085<br>0.0758<br>51 | 0.36283<br>0.0168<br>50 | 0.32584<br>0.0196<br>51 | 0.31202<br>0.0258<br>51 |



R0063937



AUG 1 8 1995

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_REBURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | 0.20679<br>0.1413<br>52 | 0.21822<br>0.1279<br>50 | 0.09521<br>0.5063<br>51 | 0.59812<br>0.0001<br>52 | 0.16933<br>0.2301<br>52 | -0.28126<br>0.0434<br>52 | -0.35111<br>0.0107<br>52 | 0.35188<br>0.0105<br>52 | 0.22524<br>0.1086<br>52 | 0.04172<br>0.7713<br>51 | 0.21988<br>0.1173<br>52 | 0.21736<br>0.1217<br>52 |
| DIBENZO_ | 0.20405<br>0.1840<br>44 | 0.85170<br>0.0001<br>44 | 0.55392<br>0.0001<br>44 | 0.36768<br>0.0141<br>44 | 0.44734<br>0.0023<br>44 | -0.49757<br>0.0006<br>44 | -0.50933<br>0.0004<br>44 | 0.22830<br>0.1361<br>44 | 0.15211<br>0.3243<br>44 | 0.58439<br>0.0001<br>44 | 0.72239<br>0.0001<br>44 | 0.68718<br>0.0001<br>44 |
| DINOCTYL | 0.35957<br>0.0103<br>50 | 0.50264<br>0.0002<br>49 | 0.48432<br>0.0004<br>50 | 0.50064<br>0.0002<br>50 | 0.67142<br>0.0001<br>50 | -0.43209<br>0.0017<br>50 | -0.47506<br>0.0005<br>50 | 0.30304<br>0.0324<br>50 | 0.41143<br>0.0030<br>50 | 0.33111<br>0.0188<br>50 | 0.57891<br>0.0001<br>50 | 0.56943<br>0.0001<br>50 |
| E_NORM_D | -0.36397<br>0.0080<br>52 | -0.18043<br>0.2099<br>50 | -0.24319<br>0.0855<br>51 | 0.28535<br>0.0403<br>52 | -0.41176<br>0.0024<br>52 | 0.27257<br>0.0506<br>52 | 0.30020<br>0.0306<br>52 | 0.25447<br>0.0687<br>52 | -0.31936<br>0.0210<br>52 | -0.20473<br>0.1495<br>51 | -0.22986<br>0.1012<br>52 | -0.25760<br>0.0651<br>52 |
| E_SURVIV | -0.31311<br>0.0238<br>52 | 0.06669<br>0.6454<br>50 | 0.10110<br>0.4802<br>51 | 0.32863<br>0.0174<br>52 | -0.06251<br>0.6597<br>52 | 0.13054<br>0.3963<br>52 | 0.10750<br>0.4481<br>52 | 0.26637<br>0.0563<br>52 | -0.25407<br>0.0691<br>52 | 0.13880<br>0.3314<br>51 | 0.13930<br>0.3244<br>52 | 0.11192<br>0.4296<br>52 |
| FINES | -0.05089<br>0.7201<br>52 | 0.10525<br>0.4670<br>50 | 0.03363<br>0.8140<br>51 | 0.70856<br>0.0001<br>52 | 0.16375<br>0.2461<br>52 | -0.05442<br>0.7016<br>52 | -0.09447<br>0.5053<br>52 | 0.74727<br>0.0001<br>52 | -0.06951<br>0.6244<br>52 | 0.13314<br>0.3517<br>51 | 0.23523<br>0.0932<br>52 | 0.22235<br>0.1131<br>52 |
| FLUORANT | 0.20544<br>0.1524<br>50 | 0.71912<br>0.0001<br>48 | 0.90682<br>0.0001<br>49 | 0.28179<br>0.0474<br>50 | 0.61122<br>0.0001<br>50 | -0.24365<br>0.0882<br>50 | -0.35602<br>0.0112<br>50 | 0.07331<br>0.6129<br>50 | 0.10651<br>0.4616<br>50 | 0.98831<br>0.0001<br>49 | 0.81967<br>0.0001<br>50 | 0.82295<br>0.0001<br>50 |
| GRAVEL | 0.50716<br>0.0001<br>52 | 0.24216<br>0.0902<br>50 | 0.38439<br>0.0054<br>51 | 0.02645<br>0.8523<br>52 | 0.60135<br>0.0001<br>52 | -0.68894<br>0.0001<br>52 | -0.65193<br>0.0001<br>52 | 0.07221<br>0.6110<br>52 | 0.66626<br>0.0001<br>52 | 0.22193<br>0.1175<br>51 | 0.22576<br>0.1076<br>52 | 0.24901<br>0.0751<br>52 |
| INDENO_1 | 0.12757<br>0.3724<br>51 | 0.70091<br>0.0001<br>50 | 0.65613<br>0.0001<br>51 | 0.65015<br>0.0001<br>51 | 0.50551<br>0.0002<br>51 | -0.31933<br>0.0224<br>51 | -0.31967<br>0.0222<br>51 | 0.40365<br>0.0033<br>51 | 0.11360<br>0.4273<br>51 | 0.66650<br>0.0001<br>51 | 0.87606<br>0.0001<br>51 | 0.85070<br>0.0001<br>51 |
| LEAD | 0.12588<br>0.3739<br>52 | 0.36013<br>0.0102<br>50 | 0.38837<br>0.0049<br>51 | 0.78458<br>0.0001<br>52 | 0.44976<br>0.0008<br>52 | -0.28428<br>0.0411<br>52 | -0.28660<br>0.0396<br>52 | 0.64919<br>0.0001<br>52 | 0.16472<br>0.2432<br>52 | 0.39563<br>0.0041<br>51 | 0.60707<br>0.0001<br>52 | 0.61558<br>0.0001<br>52 |
| LEAD_EX_ | -0.11213<br>0.4287<br>52 | -0.14227<br>0.3244<br>50 | -0.14805<br>0.2998<br>51 | 0.17438<br>0.2163<br>52 | -0.24315<br>0.0824<br>52 | 0.19078<br>0.1755<br>52 | 0.17207<br>0.2226<br>52 | -0.07885<br>0.5786<br>52 | -0.10903<br>0.4417<br>52 | -0.14237<br>0.3189<br>51 | -0.08202<br>0.5632<br>52 | -0.06602<br>0.6419<br>52 |
| LEAD_EXT | 0.13795<br>0.3294<br>52 | 0.45787<br>0.0008<br>50 | 0.47082<br>0.0005<br>51 | 0.68666<br>0.0001<br>52 | 0.43756<br>0.0012<br>52 | -0.29460<br>0.0340<br>52 | -0.32166<br>0.0201<br>52 | 0.50839<br>0.0001<br>52 | 0.18061<br>0.2001<br>52 | 0.47048<br>0.0009<br>51 | 0.63979<br>0.0001<br>52 | 0.64556<br>0.0001<br>52 |



R0063938

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_REBURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | 0.49283<br>0.0002<br>52 | 0.16605<br>0.2491<br>50 | 0.25550<br>0.0704<br>51 | -0.21827<br>0.1201<br>52 | 0.43076<br>0.0014<br>52 | -0.48503<br>0.0003<br>52 | -0.49297<br>0.0002<br>52 | -0.14153<br>0.3169<br>52 | 0.73059<br>0.0001<br>52 | 0.12315<br>0.3893<br>51 | 0.09192<br>0.5169<br>52 | 0.11803<br>0.4047<br>52 |
| MEAN_GRS | -0.01482<br>0.9178<br>51 | -0.07115<br>0.6271<br>49 | -0.01278<br>0.9298<br>50 | -0.29482<br>0.0357<br>51 | -0.06605<br>0.6452<br>51 | 0.10682<br>0.4556<br>51 | 0.08496<br>0.5534<br>51 | -0.44388<br>0.0011<br>51 | 0.00701<br>0.9611<br>51 | -0.04220<br>0.7711<br>50 | -0.11238<br>0.4324<br>51 | -0.10413<br>0.4671<br>51 |
| MEDIAN_G | 0.02956<br>0.8352<br>52 | -0.07627<br>0.5986<br>50 | 0.28399<br>0.0434<br>51 | -0.35315<br>0.0102<br>52 | 0.05559<br>0.6955<br>52 | 0.16988<br>0.2286<br>52 | 0.14095<br>0.3189<br>52 | -0.60110<br>0.0001<br>52 | 0.17727<br>0.2087<br>52 | 0.10626<br>0.4580<br>51 | 0.01161<br>0.9349<br>52 | 0.04301<br>0.7621<br>52 |
| MERCURY | 0.02447<br>0.8633<br>52 | 0.10583<br>0.4645<br>50 | 0.07734<br>0.5896<br>51 | 0.70246<br>0.0001<br>52 | 0.02726<br>0.8479<br>52 | -0.06233<br>0.6607<br>52 | -0.02280<br>0.8725<br>52 | 0.42717<br>0.0016<br>52 | -0.06386<br>0.6539<br>52 | 0.14604<br>0.3065<br>51 | 0.35502<br>0.0098<br>52 | 0.36094<br>0.0086<br>52 |
| MERC_EX_ | -0.07156<br>0.6142<br>52 | -0.10259<br>0.4784<br>50 | -0.10004<br>0.4849<br>51 | 0.09631<br>0.4970<br>52 | -0.19682<br>0.2669<br>52 | 0.12869<br>0.3632<br>52 | 0.12430<br>0.3800<br>52 | -0.06503<br>0.6470<br>52 | -0.05287<br>0.7097<br>52 | -0.09955<br>0.4870<br>51 | -0.04615<br>0.7453<br>52 | -0.03140<br>0.8251<br>52 |
| MERC_EXT | 0.35193<br>0.0105<br>52 | 0.41502<br>0.0027<br>50 | 0.26731<br>0.0579<br>51 | 0.15839<br>0.2621<br>52 | 0.32064<br>0.0205<br>52 | -0.54217<br>0.0001<br>52 | -0.46623<br>0.0005<br>52 | 0.09263<br>0.5137<br>52 | 0.34775<br>0.0115<br>52 | 0.20689<br>0.1452<br>51 | 0.29631<br>0.0329<br>52 | 0.28558<br>0.0401<br>52 |
| NICKEL | 0.12952<br>0.3601<br>52 | 0.20377<br>0.1558<br>50 | 0.26952<br>0.0558<br>51 | 0.80227<br>0.0001<br>52 | 0.38906<br>0.0044<br>52 | -0.25061<br>0.0731<br>52 | -0.25262<br>0.0708<br>52 | 0.73657<br>0.0001<br>52 | 0.25295<br>0.0704<br>52 | 0.24183<br>0.0873<br>51 | 0.38351<br>0.0050<br>52 | 0.38498<br>0.0048<br>52 |
| NSPECIES | 0.69895<br>0.0001<br>52 | 0.25673<br>0.0719<br>50 | 0.34687<br>0.0126<br>51 | -0.11788<br>0.4052<br>52 | 0.56784<br>0.0001<br>52 | -0.60457<br>0.0001<br>52 | -0.62398<br>0.0001<br>52 | -0.08356<br>0.5560<br>52 | 0.79831<br>0.0001<br>52 | 0.21617<br>0.1276<br>51 | 0.21246<br>0.1309<br>52 | 0.23401<br>0.0950<br>52 |
| PCB_1260 | -0.16482<br>0.2478<br>51 | -0.03391<br>0.8171<br>49 | -0.07358<br>0.6116<br>50 | 0.54761<br>0.0001<br>51 | -0.19423<br>0.1720<br>51 | 0.17498<br>0.2194<br>51 | 0.26914<br>0.0562<br>51 | 0.35096<br>0.0116<br>51 | -0.18661<br>0.1898<br>51 | 0.01810<br>0.9007<br>50 | 0.26397<br>0.0612<br>51 | 0.25991<br>0.0655<br>51 |
| PHENANTH | 0.19338<br>0.1739<br>51 | 0.93387<br>0.0001<br>50 | 0.89754<br>0.0001<br>50 | 0.29701<br>0.0343<br>51 | 0.51530<br>0.0001<br>51 | -0.34552<br>0.0130<br>51 | -0.44552<br>0.0011<br>51 | 0.04113<br>0.7744<br>51 | 0.11986<br>0.4021<br>51 | 0.86098<br>0.0001<br>50 | 0.77895<br>0.0001<br>51 | 0.76079<br>0.0001<br>51 |
| PYRENE | 0.22066<br>0.1236<br>50 | 0.70476<br>0.0001<br>48 | 0.89743<br>0.0001<br>49 | 0.34792<br>0.0133<br>50 | 0.73573<br>0.0001<br>50 | -0.25532<br>0.0735<br>50 | -0.34745<br>0.0136<br>50 | 0.15439<br>0.2844<br>50 | 0.11801<br>0.4144<br>50 | 0.95070<br>0.0001<br>49 | 0.93047<br>0.0001<br>50 | 0.93527<br>0.0001<br>50 |
| P_GROWTH | 0.52674<br>0.0001<br>52 | 0.53787<br>0.0001<br>50 | 0.57420<br>0.0001<br>51 | 0.00500<br>0.9719<br>52 | 0.74046<br>0.0001<br>52 | -0.51219<br>0.0001<br>52 | -0.53357<br>0.0001<br>52 | 0.03287<br>0.8170<br>52 | 0.34686<br>0.0118<br>52 | 0.56018<br>0.0001<br>51 | 0.54423<br>0.0001<br>52 | 0.54594<br>0.0001<br>52 |

/usr/cnt1/bechtel/analysis/corr1.sas

R0063939

3055 VOL 18

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | ABUNDANC | ACNPHTHY | ANTHRACE | ARSENIC | AVS | A_REBURI | A_SURVIV | BERYLLIU | BIOMASS | BZ_A_ANT | BZ_A_PYR | BZ_B_FLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURVIV | -0.26249<br>0.0601<br>52 | -0.47912<br>0.0004<br>50 | -0.34371<br>0.0135<br>51 | -0.09268<br>0.5135<br>52 | -0.41571<br>0.0022<br>52 | 0.21775<br>0.1210<br>52 | 0.24971<br>0.0742<br>52 | -0.08771<br>0.5364<br>52 | -0.07691<br>0.5878<br>52 | -0.35450<br>0.0107<br>51 | -0.46474<br>0.0005<br>52 | -0.43903<br>0.0011<br>52 |
| SAND | -0.13515<br>0.3396<br>52 | -0.19759<br>0.1690<br>50 | -0.17768<br>0.2123<br>51 | -0.73451<br>0.0001<br>52 | -0.38945<br>0.0043<br>52 | 0.30996<br>0.0253<br>52 | 0.33727<br>0.0145<br>52 | -0.81144<br>0.0001<br>52 | -0.17483<br>0.2151<br>52 | -0.21859<br>0.1233<br>51 | -0.32393<br>0.0191<br>52 | -0.31934<br>0.0210<br>52 |
| SELENIUM | 0.10115<br>0.4755<br>52 | 0.04518<br>0.7554<br>50 | 0.08300<br>0.5626<br>51 | 0.38170<br>0.0052<br>52 | 0.18098<br>0.1992<br>52 | -0.06316<br>0.6564<br>52 | -0.16790<br>0.2361<br>52 | 0.17200<br>0.2227<br>52 | 0.18689<br>0.1847<br>52 | 0.10842<br>0.4488<br>51 | 0.13391<br>0.3439<br>52 | 0.12848<br>0.3640<br>52 |
| SHANNON | -0.31162<br>0.0245<br>52 | -0.13493<br>0.3502<br>50 | -0.09585<br>0.5039<br>51 | -0.23603<br>0.0921<br>52 | -0.09687<br>0.4945<br>52 | 0.01823<br>0.8979<br>52 | 0.05704<br>0.6879<br>52 | -0.11948<br>0.3989<br>52 | 0.26376<br>0.0588<br>52 | -0.17459<br>0.2204<br>51 | -0.18652<br>0.1855<br>52 | -0.17007<br>0.2281<br>52 |
| SILT | -0.27269<br>0.0505<br>52 | -0.10303<br>0.4764<br>50 | -0.17279<br>0.2253<br>51 | 0.45842<br>0.0006<br>52 | -0.18971<br>0.1780<br>52 | 0.24525<br>0.0797<br>52 | 0.22438<br>0.1098<br>52 | 0.46300<br>0.0005<br>52 | -0.33303<br>0.0158<br>52 | -0.10086<br>0.4813<br>51 | -0.02515<br>0.8595<br>52 | -0.03425<br>0.8095<br>52 |
| SILVER | -0.08229<br>0.5619<br>52 | -0.01978<br>0.8915<br>50 | 0.02861<br>0.8421<br>51 | 0.36983<br>0.0070<br>52 | 0.01697<br>0.9049<br>52 | 0.00613<br>0.9656<br>52 | 0.06096<br>0.6677<br>52 | 0.36529<br>0.0077<br>52 | 0.00622<br>0.9651<br>52 | 0.02418<br>0.8663<br>51 | 0.05457<br>0.7008<br>52 | 0.06254<br>0.6596<br>52 |
| SULFIDE | 0.55069<br>0.0001<br>52 | 0.47104<br>0.0006<br>50 | 0.61269<br>0.0001<br>51 | 0.23181<br>0.0982<br>52 | 0.98183<br>0.0001<br>52 | -0.61301<br>0.0001<br>52 | -0.68398<br>0.0001<br>52 | 0.31767<br>0.0217<br>52 | 0.58723<br>0.0001<br>52 | 0.53049<br>0.0001<br>51 | 0.60575<br>0.0001<br>52 | 0.61850<br>0.0001<br>52 |
| ZINC | 0.22466<br>0.1093<br>52 | 0.42919<br>0.0019<br>50 | 0.67776<br>0.0001<br>51 | 0.73004<br>0.0001<br>52 | 0.60762<br>0.0001<br>52 | -0.24817<br>0.0761<br>52 | -0.28813<br>0.0383<br>52 | 0.43917<br>0.0011<br>52 | 0.30992<br>0.0256<br>52 | 0.57297<br>0.0001<br>51 | 0.73244<br>0.0001<br>52 | 0.75152<br>0.0001<br>52 |
| ZINC_EX_ | -0.08377<br>0.5549<br>52 | -0.14207<br>0.3250<br>50 | -0.14116<br>0.3231<br>51 | 0.21032<br>0.1345<br>52 | -0.23957<br>0.0872<br>52 | 0.18943<br>0.1801<br>52 | 0.19090<br>0.2856<br>52 | -0.11084<br>0.4341<br>52 | -0.11131<br>0.4321<br>52 | -0.14182<br>0.3208<br>51 | -0.08618<br>0.5435<br>52 | -0.07990<br>0.5948<br>52 |
| ZINC_EXT | 0.22694<br>0.1057<br>52 | 0.50139<br>0.0002<br>50 | 0.61804<br>0.0001<br>51 | 0.71106<br>0.0001<br>52 | 0.55196<br>0.0001<br>52 | -0.28168<br>0.0431<br>52 | -0.33357<br>0.0157<br>52 | 0.40541<br>0.0029<br>52 | 0.29396<br>0.0693<br>52 | 0.57870<br>0.0001<br>51 | 0.74007<br>0.0001<br>52 | 0.75272<br>0.0001<br>52 |
| TOC | 0.38108<br>0.0053<br>52 | 0.43398<br>0.0017<br>50 | 0.67703<br>0.0004<br>51 | 0.61934<br>0.0001<br>52 | 0.65478<br>0.0001<br>52 | -0.41809<br>0.0020<br>52 | -0.50027<br>0.0002<br>52 | 0.46127<br>0.0006<br>52 | 0.30207<br>0.0295<br>52 | 0.46584<br>0.0006<br>51 | 0.58239<br>0.0001<br>52 | 0.58589<br>0.0001<br>52 |



R0063940

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | 0.11015<br>0.4416<br>51 | 0.16144<br>0.2529<br>52 | 0.18035<br>0.2007<br>52 | -0.02796<br>0.8460<br>52 | 0.26081<br>0.0618<br>52 | 0.14704<br>0.2982<br>52 | 0.20294<br>0.1532<br>51 | 0.21661<br>0.1230<br>52 | 0.15058<br>0.2866<br>52 | -0.09547<br>0.5008<br>52 | 0.23199<br>0.0979<br>52 | -0.14911<br>0.2943<br>51 |
| ACNPHTHY | 0.63423<br>0.0001<br>50 | 0.65079<br>0.0001<br>50 | 0.08338<br>0.5649<br>50 | -0.11519<br>0.4257<br>50 | 0.15093<br>0.2954<br>50 | 0.92888<br>0.0001<br>50 | 0.72960<br>0.0001<br>49 | 0.29872<br>0.0351<br>50 | 0.44178<br>0.0013<br>50 | -0.13424<br>0.3527<br>50 | 0.57446<br>0.0001<br>50 | 0.33367<br>0.0191<br>49 |
| ANTHRACE | 0.58997<br>0.0001<br>51 | 0.81567<br>0.0001<br>51 | 0.25495<br>0.0710<br>51 | -0.10099<br>0.4807<br>51 | 0.18330<br>0.1979<br>51 | 0.71292<br>0.0001<br>51 | 0.92307<br>0.0001<br>50 | 0.25484<br>0.0711<br>51 | 0.45164<br>0.0009<br>51 | -0.13790<br>0.3345<br>51 | 0.60524<br>0.0001<br>51 | 0.21313<br>0.1373<br>50 |
| ARSENIC | 0.65954<br>0.0001<br>51 | 0.54193<br>0.0001<br>52 | 0.52675<br>0.0001<br>52 | 0.18458<br>0.1902<br>52 | 0.34986<br>0.0110<br>52 | 0.50365<br>0.0001<br>52 | 0.41890<br>0.0022<br>51 | 0.69697<br>0.0001<br>52 | 0.78690<br>0.0001<br>52 | 0.16583<br>0.2400<br>52 | 0.66636<br>0.0001<br>52 | 0.45480<br>0.0008<br>51 |
| AVS | 0.46099<br>0.0007<br>51 | 0.69301<br>0.0001<br>52 | 0.33442<br>0.0154<br>52 | -0.17824<br>0.2062<br>52 | 0.30315<br>0.0289<br>52 | 0.40615<br>0.0028<br>52 | 0.69940<br>0.0001<br>51 | 0.48989<br>0.0002<br>52 | 0.45373<br>0.0007<br>52 | -0.22967<br>0.1014<br>52 | 0.58161<br>0.0001<br>52 | -0.11758<br>0.4112<br>51 |
| A_REBURI | -0.30244<br>0.0310<br>51 | -0.22437<br>0.1098<br>52 | -0.08793<br>0.5354<br>52 | 0.12558<br>0.3750<br>52 | -0.30416<br>0.0284<br>52 | -0.40409<br>0.0030<br>52 | -0.25547<br>0.0704<br>51 | -0.36545<br>0.0077<br>52 | -0.21539<br>0.1251<br>52 | 0.18458<br>0.1902<br>52 | -0.29067<br>0.0366<br>52 | 0.05516<br>0.7006<br>51 |
| A_SURVIV | -0.28125<br>0.0456<br>51 | -0.26918<br>0.0536<br>52 | -0.20604<br>0.1412<br>52 | 0.06525<br>0.6458<br>52 | -0.35857<br>0.0090<br>52 | -0.46634<br>0.0005<br>52 | -0.35123<br>0.0115<br>51 | -0.41046<br>0.0025<br>52 | -0.22597<br>0.1072<br>52 | 0.16932<br>0.2301<br>52 | -0.32511<br>0.0187<br>52 | 0.01258<br>0.9302<br>51 |
| BERYLLIU | 0.41963<br>0.0022<br>51 | 0.31285<br>0.0239<br>52 | 0.24165<br>0.0844<br>52 | -0.15212<br>0.2817<br>52 | 0.19352<br>0.1692<br>52 | 0.29302<br>0.0350<br>52 | 0.19827<br>0.1631<br>51 | 0.79186<br>0.0001<br>52 | 0.54613<br>0.0001<br>52 | -0.09074<br>0.5224<br>52 | 0.42914<br>0.0015<br>52 | 0.24747<br>0.0800<br>51 |
| BIOMASS | 0.11342<br>0.4281<br>51 | 0.11400<br>0.4210<br>52 | 0.14831<br>0.2941<br>52 | -0.09802<br>0.4894<br>52 | 0.20014<br>0.1549<br>52 | 0.03329<br>0.8148<br>52 | 0.14240<br>0.3188<br>51 | 0.25201<br>0.0715<br>52 | 0.09513<br>0.5023<br>52 | -0.10021<br>0.4797<br>52 | 0.16940<br>0.2299<br>52 | -0.25085<br>0.0758<br>51 |
| BZ_A_ANT | 0.60008<br>0.0001<br>51 | 0.83899<br>0.0001<br>51 | 0.18014<br>0.3059<br>51 | -0.11440<br>0.4241<br>51 | 0.18104<br>0.2036<br>51 | 0.72373<br>0.0001<br>51 | 0.96874<br>0.0001<br>50 | 0.34429<br>0.0134<br>51 | 0.48886<br>0.0003<br>51 | -0.13403<br>0.3484<br>51 | 0.62971<br>0.0001<br>51 | 0.34283<br>0.0148<br>50 |
| BZ_A_PYR | 0.93906<br>0.0001<br>51 | 0.98254<br>0.0001<br>52 | 0.28366<br>0.0416<br>52 | -0.10038<br>0.4789<br>52 | 0.21779<br>0.1209<br>52 | 0.71178<br>0.0001<br>52 | 0.94101<br>0.0001<br>51 | 0.43862<br>0.0015<br>52 | 0.60754<br>0.0001<br>52 | -0.07335<br>0.6098<br>52 | 0.80458<br>0.0001<br>52 | 0.32584<br>0.0196<br>51 |
| BZ_B_FLU | 0.81497<br>0.0001<br>51 | 0.97593<br>0.0001<br>52 | 0.29472<br>0.0339<br>52 | -0.10507<br>0.4585<br>52 | 0.22681<br>0.1059<br>52 | 0.68305<br>0.0001<br>52 | 0.94098<br>0.0001<br>51 | 0.41680<br>0.0021<br>52 | 0.68893<br>0.0001<br>52 | -0.05786<br>0.6853<br>52 | 0.80237<br>0.0001<br>52 | 0.31202<br>0.0258<br>51 |



R0063941

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | 1.00000<br>0.0<br>51 | 0.84856<br>0.0001<br>51 | 0.21917<br>0.1223<br>51 | -0.13427<br>0.3476<br>51 | 0.15506<br>0.2773<br>51 | 0.63648<br>0.0001<br>51 | 0.71085<br>0.0001<br>50 | 0.52367<br>0.0001<br>51 | 0.79762<br>0.0001<br>51 | -0.14187<br>0.3207<br>51 | 0.81784<br>0.0001<br>51 | 0.35533<br>0.0113<br>50 |
| BZ_K_FLU | 0.84856<br>0.0001<br>51 | 1.00000<br>0.0<br>52 | 0.31139<br>0.0246<br>52 | -0.08999<br>0.5258<br>52 | 0.19608<br>0.1636<br>52 | 0.63844<br>0.0001<br>52 | 0.92737<br>0.0001<br>51 | 0.44896<br>0.0008<br>52 | 0.69064<br>0.0001<br>52 | -0.06849<br>0.6295<br>52 | 0.80034<br>0.0001<br>52 | 0.28017<br>0.0465<br>51 |
| CADMIUM | 0.21917<br>0.1223<br>51 | 0.31139<br>0.0246<br>52 | 1.00000<br>0.0<br>52 | 0.65200<br>0.0001<br>52 | 0.81345<br>0.0001<br>52 | 0.20610<br>0.1427<br>52 | 0.27426<br>0.0515<br>51 | 0.38578<br>0.0047<br>52 | 0.42830<br>0.0015<br>52 | 0.14683<br>0.2989<br>52 | 0.33939<br>0.0138<br>52 | 0.17114<br>0.2298<br>51 |
| CAD_EX_A | -0.13427<br>0.3476<br>51 | -0.08999<br>0.5258<br>52 | 0.65200<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.52898<br>0.0001<br>52 | -0.00915<br>0.9487<br>52 | -0.11940<br>0.4040<br>51 | -0.14337<br>0.3106<br>52 | -0.00460<br>0.9742<br>52 | 0.50080<br>0.0002<br>52 | -0.09532<br>0.5015<br>52 | 0.06316<br>0.6597<br>51 |
| CAD_EXTR | 0.15506<br>0.2773<br>51 | 0.19608<br>0.1636<br>52 | 0.81345<br>0.0001<br>52 | 0.52898<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.24521<br>0.0788<br>52 | 0.20615<br>0.1467<br>51 | 0.35668<br>0.0095<br>52 | 0.35401<br>0.0100<br>52 | 0.03722<br>0.7933<br>52 | 0.31518<br>0.0229<br>52 | 0.25795<br>0.0676<br>51 |
| CHROMIUM | 0.63648<br>0.0001<br>51 | 0.63844<br>0.0001<br>52 | 0.20610<br>0.1427<br>52 | -0.00915<br>0.9487<br>52 | 0.24521<br>0.0788<br>52 | 1.00000<br>0.0<br>52 | 0.72508<br>0.0001<br>51 | 0.40233<br>0.0031<br>52 | 0.58702<br>0.0001<br>52 | -0.04738<br>0.7387<br>52 | 0.63618<br>0.0001<br>52 | 0.51228<br>0.0001<br>51 |
| CHRYSENE | 0.71085<br>0.0001<br>50 | 0.92737<br>0.0001<br>51 | 0.27426<br>0.0515<br>51 | -0.11940<br>0.4040<br>51 | 0.20615<br>0.1467<br>51 | 0.72508<br>0.0001<br>51 | 1.00000<br>0.0<br>51 | 0.39676<br>0.0039<br>51 | 0.58690<br>0.0001<br>51 | -0.15895<br>0.2653<br>51 | 0.71425<br>0.0001<br>51 | 0.31890<br>0.0240<br>50 |
| CLAY | 0.52367<br>0.0001<br>51 | 0.44896<br>0.0008<br>52 | 0.38578<br>0.0047<br>52 | -0.14337<br>0.3106<br>52 | 0.35668<br>0.0095<br>52 | 0.40233<br>0.0031<br>52 | 0.39676<br>0.0039<br>51 | 1.00000<br>0.0<br>52 | 0.65762<br>0.0001<br>52 | -0.13407<br>0.3436<br>52 | 0.59753<br>0.0001<br>52 | 0.31866<br>0.0227<br>51 |
| COPPER | 0.79762<br>0.0001<br>51 | 0.69064<br>0.0001<br>52 | 0.42830<br>0.0015<br>52 | -0.00460<br>0.9742<br>52 | 0.35401<br>0.0100<br>52 | 0.58702<br>0.0001<br>52 | 0.58690<br>0.0001<br>51 | 0.65762<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.03736<br>0.7926<br>52 | 0.92659<br>0.0001<br>52 | 0.48845<br>0.0003<br>51 |
| COP_EX_A | -0.14187<br>0.3207<br>51 | -0.06849<br>0.6295<br>52 | 0.14683<br>0.2989<br>52 | 0.50080<br>0.0002<br>52 | 0.03722<br>0.7933<br>52 | -0.04738<br>0.7387<br>52 | -0.15895<br>0.2653<br>51 | -0.13407<br>0.3436<br>52 | 0.03736<br>0.7926<br>52 | 1.00000<br>0.0<br>52 | -0.00242<br>0.9864<br>52 | 0.08023<br>0.5757<br>51 |
| COP_EXTR | 0.81784<br>0.0001<br>51 | 0.80034<br>0.0001<br>52 | 0.33939<br>0.0138<br>52 | -0.09532<br>0.5015<br>52 | 0.31518<br>0.0229<br>52 | 0.63618<br>0.0001<br>52 | 0.71425<br>0.0001<br>51 | 0.59753<br>0.0001<br>52 | 0.92659<br>0.0001<br>52 | -0.00242<br>0.9864<br>52 | 1.00000<br>0.0<br>52 | 0.47150<br>0.0005<br>51 |
| DDD | 0.35533<br>0.0113<br>50 | 0.28017<br>0.0465<br>51 | 0.17114<br>0.2298<br>51 | 0.06316<br>0.6597<br>51 | 0.25795<br>0.0676<br>51 | 0.51228<br>0.0001<br>51 | 0.31890<br>0.0240<br>50 | 0.31866<br>0.0227<br>51 | 0.48845<br>0.0003<br>51 | 0.08023<br>0.5757<br>51 | 0.47150<br>0.0005<br>51 | 1.00000<br>0.0<br>51 |



R0063942

NORMAL=none

## Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_ONI_P | BZ_R_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | 0.35792<br>0.0099<br>51 | 0.20023<br>0.1547<br>52 | 0.71373<br>0.0001<br>52 | 0.34320<br>0.0127<br>52 | 0.73764<br>0.0001<br>52 | 0.34272<br>0.0129<br>52 | 0.11734<br>0.4122<br>51 | 0.52524<br>0.0001<br>52 | 0.56884<br>0.0001<br>52 | 0.10552<br>0.4566<br>52 | 0.45021<br>0.0008<br>52 | 0.44604<br>0.0010<br>51 |
| DIBENZO_ | 0.72156<br>0.0001<br>44 | 0.64092<br>0.0001<br>44 | 0.01128<br>0.9421<br>44 | -0.13429<br>0.3848<br>44 | 0.14940<br>0.3331<br>44 | 0.74073<br>0.0001<br>44 | 0.61187<br>0.0001<br>44 | 0.32823<br>0.0296<br>44 | 0.41368<br>0.0052<br>44 | -0.15209<br>0.3244<br>44 | 0.56150<br>0.0001<br>44 | 0.29761<br>0.0526<br>43 |
| DINOCTYL | 0.59428<br>0.0001<br>50 | 0.57445<br>0.0001<br>50 | 0.58290<br>0.0001<br>50 | 0.27393<br>0.0542<br>50 | 0.43552<br>0.0016<br>50 | 0.41351<br>0.0028<br>50 | 0.46500<br>0.0008<br>49 | 0.40812<br>0.0033<br>50 | 0.53352<br>0.0001<br>50 | -0.04774<br>0.7420<br>50 | 0.56521<br>0.0001<br>50 | -0.03677<br>0.6019<br>49 |
| E_NORM_D | -0.07969<br>0.5783<br>51 | -0.20192<br>0.1511<br>52 | 0.19475<br>0.1665<br>52 | 0.19458<br>0.1669<br>52 | 0.10635<br>0.4530<br>52 | -0.04482<br>0.7524<br>52 | -0.23330<br>0.0994<br>51 | 0.16654<br>0.2380<br>52 | -0.10320<br>0.4666<br>52 | -0.08184<br>0.5641<br>52 | -0.24063<br>0.0857<br>52 | 0.17947<br>0.2076<br>51 |
| E_SURVIV | 0.15608<br>0.2741<br>51 | 0.17027<br>0.2275<br>52 | 0.18705<br>0.1842<br>52 | 0.08796<br>0.5352<br>52 | 0.07984<br>0.5737<br>52 | 0.14896<br>0.2311<br>52 | 0.15605<br>0.2742<br>51 | 0.19442<br>0.1672<br>52 | 0.03657<br>0.7969<br>52 | -0.11582<br>0.4136<br>52 | 0.02838<br>0.8417<br>52 | 0.23791<br>0.0927<br>51 |
| FINES | 0.30268<br>0.0309<br>51 | 0.26563<br>0.0570<br>52 | 0.51564<br>0.0001<br>52 | 0.15290<br>0.2792<br>52 | 0.43923<br>0.0011<br>52 | 0.29762<br>0.0321<br>52 | 0.18384<br>0.1966<br>51 | 0.78202<br>0.0001<br>52 | 0.50059<br>0.0002<br>52 | 0.04180<br>0.7686<br>52 | 0.39481<br>0.0038<br>52 | 0.41647<br>0.0024<br>51 |
| FLUORANT | 0.52662<br>0.0001<br>49 | 0.79398<br>0.0001<br>50 | 0.20303<br>0.1573<br>50 | -0.06794<br>0.6392<br>50 | 0.19520<br>0.1743<br>50 | 0.73463<br>0.0001<br>50 | 0.94933<br>0.0001<br>49 | 0.28968<br>0.0413<br>50 | 0.44183<br>0.0013<br>50 | -0.10912<br>0.4507<br>50 | 0.58421<br>0.0001<br>50 | 0.33199<br>0.0198<br>49 |
| GRAVEL | 0.20244<br>0.1562<br>51 | 0.20564<br>0.1432<br>52 | 0.15232<br>0.2810<br>52 | -0.09756<br>0.4914<br>52 | 0.21709<br>0.1221<br>52 | 0.12980<br>0.3591<br>52 | 0.24590<br>0.0820<br>51 | 0.12112<br>0.3924<br>52 | 0.12434<br>0.3798<br>52 | -0.13751<br>0.3310<br>52 | 0.18917<br>0.1792<br>52 | -0.27267<br>0.0529<br>51 |
| INDENO_1 | 0.98797<br>0.0001<br>51 | 0.87852<br>0.0001<br>51 | 0.22943<br>0.1053<br>51 | -0.13897<br>0.3308<br>51 | 0.16563<br>0.2454<br>51 | 0.69878<br>0.0001<br>51 | 0.77237<br>0.0001<br>50 | 0.53457<br>0.0001<br>51 | 0.78843<br>0.0001<br>51 | -0.16434<br>0.2492<br>51 | 0.82364<br>0.0001<br>51 | 0.36562<br>0.0090<br>50 |
| LEAD | 0.75492<br>0.0001<br>51 | 0.60828<br>0.0001<br>52 | 0.40062<br>0.0032<br>52 | -0.11235<br>0.4278<br>52 | 0.36267<br>0.0129<br>52 | 0.49361<br>0.0002<br>52 | 0.49297<br>0.0002<br>51 | 0.74768<br>0.0001<br>52 | 0.92250<br>0.0001<br>52 | -0.01944<br>0.8912<br>52 | 0.84704<br>0.0001<br>52 | 0.46074<br>0.0007<br>51 |
| LEAD_EX_ | -0.14651<br>0.3050<br>51 | -0.07809<br>0.5821<br>52 | 0.16351<br>0.2468<br>52 | 0.51402<br>0.0001<br>52 | 0.04881<br>0.7311<br>52 | -0.04796<br>0.7357<br>52 | -0.16638<br>0.2433<br>51 | -0.11326<br>0.4240<br>52 | 0.03253<br>0.8189<br>52 | 0.99261<br>0.0001<br>52 | -0.01878<br>0.8949<br>52 | 0.08345<br>0.5604<br>51 |
| LEAD_EXT | 0.74822<br>0.0001<br>51 | 0.62496<br>0.0001<br>52 | 0.35693<br>0.0096<br>52 | -0.13607<br>0.3361<br>52 | 0.38465<br>0.0079<br>52 | 0.55888<br>0.0001<br>52 | 0.55235<br>0.0001<br>51 | 0.67587<br>0.0001<br>52 | 0.87012<br>0.0001<br>52 | -0.06238<br>0.6604<br>52 | 0.85262<br>0.0001<br>52 | 0.51106<br>0.0001<br>51 |



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-J65-

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NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | 0.01869<br>0.8964<br>51 | 0.04517<br>0.7505<br>52 | -0.01334<br>0.9252<br>52 | -0.19257<br>0.1714<br>52 | 0.06114<br>0.6668<br>52 | 0.00806<br>0.9548<br>52 | 0.13235<br>0.3545<br>51 | -0.02226<br>0.8756<br>52 | 0.00766<br>0.9570<br>52 | -0.15445<br>0.2743<br>52 | 0.08036<br>0.5712<br>52 | -0.34578<br>0.0129<br>51 |
| MEAN_GRS | -0.16090<br>0.2643<br>50 | -0.13595<br>0.3415<br>51 | -0.19297<br>0.1749<br>51 | 0.02387<br>0.8679<br>51 | -0.17535<br>0.2184<br>51 | -0.15671<br>0.2721<br>51 | -0.07268<br>0.6160<br>50 | -0.41467<br>0.0025<br>51 | -0.23489<br>0.0971<br>51 | 0.00779<br>0.9567<br>51 | -0.21556<br>0.1287<br>51 | -0.20572<br>0.1518<br>50 |
| MEDIAN_G | -0.11807<br>0.4093<br>51 | -0.00508<br>0.9715<br>52 | -0.11933<br>0.3995<br>52 | -0.02449<br>0.8632<br>52 | -0.18024<br>0.2010<br>52 | -0.21497<br>0.1259<br>52 | 0.07702<br>0.5911<br>51 | -0.53347<br>0.0001<br>52 | -0.24833<br>0.0759<br>52 | -0.03233<br>0.8200<br>52 | -0.18459<br>0.1902<br>52 | -0.29817<br>0.0336<br>51 |
| MERCURY | 0.58073<br>0.0001<br>51 | 0.38265<br>0.0051<br>52 | 0.26946<br>0.0534<br>52 | 0.06219<br>0.6614<br>52 | 0.20384<br>0.1472<br>52 | 0.26523<br>0.0574<br>52 | 0.20789<br>0.1432<br>51 | 0.47409<br>0.0004<br>52 | 0.77955<br>0.0001<br>52 | 0.22365<br>0.1110<br>52 | 0.73488<br>0.0001<br>52 | 0.52238<br>0.0001<br>51 |
| MERC_EX_ | -0.15640<br>0.2731<br>51 | -0.04216<br>0.7666<br>52 | 0.00541<br>0.9697<br>52 | 0.31543<br>0.0227<br>52 | -0.08200<br>0.5633<br>52 | -0.05397<br>0.7039<br>52 | -0.12580<br>0.3791<br>51 | -0.10889<br>0.4422<br>52 | -0.03042<br>0.8305<br>52 | 0.96094<br>0.0001<br>52 | -0.03145<br>0.8248<br>52 | 0.01629<br>0.9097<br>51 |
| MERC_EXT | 0.25736<br>0.0683<br>51 | 0.27717<br>0.0467<br>52 | -0.03656<br>0.7970<br>52 | -0.01530<br>0.9143<br>52 | 0.13987<br>0.3227<br>52 | 0.31159<br>0.0245<br>52 | 0.20644<br>0.1461<br>51 | 0.13919<br>0.3250<br>52 | 0.19197<br>0.1728<br>52 | 0.29050<br>0.0367<br>52 | 0.35607<br>0.0096<br>52 | 0.08049<br>0.5745<br>51 |
| NICKEL | 0.46809<br>0.0006<br>51 | 0.39664<br>0.0036<br>52 | 0.64229<br>0.0001<br>52 | 0.24670<br>0.0779<br>52 | 0.53328<br>0.0001<br>52 | 0.36563<br>0.0077<br>52 | 0.31446<br>0.0246<br>51 | 0.73629<br>0.0001<br>52 | 0.65232<br>0.0001<br>52 | 0.08466<br>0.5507<br>52 | 0.49822<br>0.0002<br>52 | 0.28180<br>0.0451<br>51 |
| NSPECIES | 0.11611<br>0.4172<br>51 | 0.17743<br>0.2082<br>52 | 0.12536<br>0.3759<br>52 | -0.11495<br>0.4171<br>52 | 0.20303<br>0.1489<br>52 | 0.09705<br>0.4937<br>52 | 0.24434<br>0.0840<br>51 | 0.07894<br>0.5780<br>52 | 0.11779<br>0.4056<br>52 | -0.12871<br>0.3631<br>52 | 0.21395<br>0.1278<br>52 | -0.29474<br>0.0358<br>51 |
| PCB_1260 | 0.55582<br>0.0001<br>50 | 0.29485<br>0.0357<br>51 | -0.05474<br>0.7028<br>51 | -0.13520<br>0.3442<br>51 | -0.11780<br>0.4104<br>51 | 0.09824<br>0.4928<br>51 | 0.08708<br>0.5476<br>50 | 0.36171<br>0.0091<br>51 | 0.66379<br>0.0001<br>51 | 0.14852<br>0.2983<br>51 | 0.55821<br>0.0001<br>51 | 0.45493<br>0.0008<br>51 |
| PHENANTH | 0.56633<br>0.0001<br>50 | 0.70946<br>0.0001<br>51 | 0.14109<br>0.3234<br>51 | -0.07528<br>0.5996<br>51 | 0.15552<br>0.2758<br>51 | 0.91484<br>0.0001<br>51 | 0.84608<br>0.0001<br>50 | 0.21258<br>0.1342<br>51 | 0.41373<br>0.0029<br>51 | -0.10416<br>0.4670<br>51 | 0.99141<br>0.0001<br>51 | 0.34619<br>0.0138<br>50 |
| PYRENE | 0.62840<br>0.0001<br>49 | 0.90021<br>0.0001<br>50 | 0.25032<br>0.0796<br>50 | -0.09369<br>0.5175<br>50 | 0.21634<br>0.1313<br>50 | 0.68207<br>0.0001<br>50 | 0.97178<br>0.0001<br>49 | 0.33372<br>0.0179<br>50 | 0.51433<br>0.0001<br>50 | -0.14067<br>0.3399<br>50 | 0.87180<br>0.0001<br>50 | 0.27367<br>0.0571<br>49 |
| P_GROWTH | 0.33359<br>0.0167<br>51 | 0.51919<br>0.0001<br>52 | 0.11791<br>0.4051<br>52 | -0.06907<br>0.6468<br>52 | 0.19636<br>0.1630<br>52 | 0.39733<br>0.0035<br>52 | 0.57990<br>0.0001<br>51 | 0.11711<br>0.4084<br>52 | 0.21122<br>0.1328<br>52 | -0.21102<br>0.1332<br>52 | 0.34905<br>0.0112<br>52 | -0.13717<br>0.3371<br>51 |

/usr/cntl/bechtel/analysis/corr1.sas

R0063944

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | BZ_GHI_P | BZ_K_FLU | CADMIUM | CAD_EX_A | CAD_EXTR | CHROMIUM | CHRYSENE | CLAY | COPPER | COP_EX_A | COP_EXTR | DDD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F_SURVIV | -0.37669<br>0.0064<br>51 | -0.43465<br>0.0013<br>52 | 0.02058<br>0.8849<br>52 | 0.16574<br>0.2403<br>52 | -0.03716<br>0.7937<br>52 | -0.44118<br>0.0011<br>52 | -0.42400<br>0.0019<br>51 | -0.17019<br>0.2277<br>52 | -0.28301<br>0.0421<br>52 | 0.20479<br>0.1453<br>52 | -0.38344<br>0.0050<br>52 | -0.06691<br>0.6408<br>51 |
| SAND | -0.38428<br>0.0054<br>51 | -0.34767<br>0.0116<br>52 | -0.58363<br>0.0001<br>52 | -0.12038<br>0.3953<br>52 | -0.52939<br>0.0001<br>52 | -0.35232<br>0.0106<br>52 | -0.27894<br>0.0475<br>51 | -0.86458<br>0.0001<br>52 | -0.55792<br>0.0001<br>52 | 0.00801<br>0.9550<br>52 | -0.47365<br>0.0004<br>52 | -0.32277<br>0.0209<br>51 |
| SELENIUM | 0.13459<br>0.3464<br>51 | 0.17696<br>0.2095<br>52 | 0.75234<br>0.0001<br>52 | 0.48647<br>0.0003<br>52 | 0.72458<br>0.0001<br>52 | 0.11360<br>0.4226<br>52 | 0.16629<br>0.2435<br>51 | 0.33874<br>0.0140<br>52 | 0.25780<br>0.0680<br>52 | 0.09592<br>0.4988<br>52 | 0.19534<br>0.1652<br>52 | 0.11829<br>0.4084<br>51 |
| SHANNON | -0.13363<br>0.3498<br>51 | -0.22624<br>0.1068<br>52 | -0.25879<br>0.0640<br>52 | -0.22699<br>0.1056<br>52 | -0.24580<br>0.0790<br>52 | -0.20443<br>0.1460<br>52 | -0.19383<br>0.1729<br>51 | -0.18204<br>0.1985<br>52 | -0.19134<br>0.1742<br>52 | -0.04942<br>0.7279<br>52 | -0.19461<br>0.1668<br>52 | -0.27504<br>0.0508<br>51 |
| SILT | -0.00198<br>0.9890<br>51 | 0.00311<br>0.9825<br>52 | 0.44277<br>0.0010<br>52 | 0.36305<br>0.0082<br>52 | 0.35211<br>0.0105<br>52 | 0.09402<br>0.5074<br>52 | -0.07490<br>0.6016<br>51 | 0.29844<br>0.0316<br>52 | 0.17931<br>0.2130<br>52 | 0.18455<br>0.1903<br>52 | 0.06735<br>0.6352<br>52 | 0.35155<br>0.0114<br>51 |
| SILVER | 0.06348<br>0.5606<br>51 | 0.09886<br>0.4941<br>52 | 0.07893<br>0.6074<br>52 | -0.09138<br>0.7179<br>52 | -0.03316<br>0.8708<br>52 | 0.08188<br>0.5653<br>52 | 0.03977<br>0.8387<br>51 | 0.23884<br>0.0927<br>52 | 0.18888<br>0.1776<br>52 | -0.01788<br>0.8993<br>52 | 0.11148<br>0.4316<br>52 | 0.10024<br>0.4840<br>51 |
| SULFIDE | 0.39560<br>0.0041<br>51 | 0.60024<br>0.0001<br>52 | 0.34512<br>0.0122<br>52 | -0.17044<br>0.2270<br>52 | 0.31086<br>0.0249<br>52 | 0.36325<br>0.0081<br>52 | 0.61516<br>0.0001<br>51 | 0.48469<br>0.0003<br>52 | 0.40970<br>0.0026<br>52 | -0.22102<br>0.1153<br>52 | 0.93005<br>0.0001<br>52 | -0.17545<br>0.2181<br>51 |
| ZINC | 0.72195<br>0.0001<br>51 | 0.73368<br>0.0001<br>52 | 0.58664<br>0.0001<br>52 | 0.04403<br>0.7566<br>52 | 0.46949<br>0.0004<br>52 | 0.90855<br>0.0001<br>52 | 0.66506<br>0.0001<br>51 | 0.58138<br>0.0001<br>52 | 0.82528<br>0.0001<br>52 | -0.01798<br>0.8998<br>52 | 0.79701<br>0.0001<br>52 | 0.32506<br>0.0199<br>51 |
| ZINC_EX_ | -0.14592<br>0.3069<br>51 | -0.07852<br>0.5800<br>52 | 0.35694<br>0.0094<br>52 | 0.74416<br>0.0001<br>52 | 0.22453<br>0.1095<br>52 | -0.03395<br>0.8112<br>52 | -0.15997<br>0.2621<br>51 | -0.13395<br>0.3438<br>52 | 0.04045<br>0.7759<br>52 | 0.94729<br>0.0001<br>52 | -0.02925<br>0.8369<br>52 | 0.09878<br>0.5356<br>51 |
| ZINC_EXT | 0.76478<br>0.0001<br>51 | 0.72851<br>0.0001<br>52 | 0.53389<br>0.0001<br>52 | 0.03143<br>0.8249<br>52 | 0.51574<br>0.0001<br>52 | 0.58587<br>0.0001<br>52 | 0.66591<br>0.0001<br>51 | 0.59986<br>0.0001<br>52 | 0.91084<br>0.0001<br>52 | -0.01091<br>0.9410<br>52 | 0.91281<br>0.0001<br>52 | 0.47072<br>0.0005<br>51 |
| TOC | 0.54115<br>0.0001<br>51 | 0.60714<br>0.0001<br>52 | 0.69434<br>0.0001<br>52 | 0.23861<br>0.0885<br>52 | 0.69116<br>0.0001<br>52 | 0.81793<br>0.0001<br>52 | 0.84152<br>0.0001<br>51 | 0.68371<br>0.0001<br>52 | 0.71999<br>0.0001<br>52 | 0.07006<br>0.6218<br>52 | 0.72462<br>0.0001<br>52 | 0.28146<br>0.0454<br>51 |



R0063945

5965 -- NOV 78

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | K_NORM_D | K_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_ENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | 0.20679<br>0.1413<br>52 | 0.20405<br>0.1840<br>44 | 0.35957<br>0.0103<br>50 | -0.36397<br>0.0080<br>52 | -0.31311<br>0.0238<br>52 | -0.05089<br>0.7201<br>52 | 0.20544<br>0.1524<br>50 | 0.50716<br>0.0001<br>52 | 0.12797<br>0.3724<br>51 | 0.12588<br>0.3739<br>52 | -0.11213<br>0.4287<br>52 | 0.13795<br>0.3294<br>52 |
| ACNPHTHY | 0.21822<br>0.1279<br>50 | 0.85170<br>0.0001<br>44 | 0.50264<br>0.0003<br>49 | -0.18043<br>0.2099<br>50 | 0.06669<br>0.6484<br>50 | 0.10525<br>0.4670<br>50 | 0.71912<br>0.0001<br>48 | 0.24314<br>0.0902<br>50 | 0.70091<br>0.0001<br>50 | 0.36013<br>0.0102<br>50 | -0.14227<br>0.3244<br>50 | 0.45787<br>0.0008<br>50 |
| ANTHRACE | 0.09521<br>.5063<br>51 | 0.55392<br>0.0001<br>44 | 0.48432<br>0.0004<br>50 | -0.24319<br>0.0855<br>51 | 0.10110<br>0.4802<br>51 | 0.03363<br>0.8148<br>51 | 0.90682<br>0.0001<br>49 | 0.38439<br>0.0056<br>51 | 0.65613<br>0.0001<br>51 | 0.38837<br>0.0049<br>51 | -0.14805<br>0.2998<br>51 | 0.47082<br>0.0005<br>51 |
| ARSENIC | 0.59812<br>0.0001<br>52 | 0.36768<br>0.0141<br>44 | 0.50064<br>0.0002<br>50 | 0.28535<br>0.0403<br>52 | 0.32863<br>0.0174<br>52 | 0.70856<br>0.0001<br>52 | 0.28179<br>0.0474<br>50 | 0.02665<br>0.8523<br>52 | 0.65015<br>0.0001<br>51 | 0.78458<br>0.0001<br>52 | 0.17430<br>0.2163<br>52 | 0.68666<br>0.0001<br>52 |
| AVS | 0.16933<br>0.2301<br>52 | 0.44736<br>0.0023<br>44 | 0.67142<br>0.0001<br>50 | -0.41176<br>0.0026<br>52 | -0.08251<br>0.6597<br>52 | 0.16375<br>0.2461<br>52 | 0.61122<br>0.0001<br>50 | 0.60135<br>0.0001<br>52 | 0.50551<br>0.0002<br>51 | 0.44976<br>0.0008<br>52 | -0.24315<br>0.0824<br>52 | 0.43756<br>0.0012<br>52 |
| A_REBURI | -0.28126<br>0.0434<br>52 | -0.49757<br>0.0006<br>44 | -0.43209<br>0.0017<br>50 | 0.27257<br>0.0506<br>52 | 0.13054<br>0.3563<br>52 | -0.05442<br>0.7016<br>52 | -0.26365<br>0.0882<br>50 | -0.68894<br>0.0001<br>52 | -0.31933<br>0.0226<br>51 | -0.28428<br>0.0411<br>52 | 0.19078<br>0.1755<br>52 | -0.29460<br>0.0340<br>52 |
| A_SURVIV | -0.35111<br>0.0107<br>52 | -0.50933<br>0.0004<br>44 | -0.47506<br>0.0005<br>50 | 0.30020<br>0.0306<br>52 | 0.10750<br>0.4481<br>52 | -0.09447<br>0.5053<br>52 | -0.35602<br>0.0112<br>50 | -0.65193<br>0.0001<br>52 | -0.31967<br>0.0232<br>51 | -0.28660<br>0.0396<br>52 | 0.17207<br>0.2226<br>52 | -0.32166<br>0.0201<br>52 |
| BERYLLIU | 0.35188<br>0.0105<br>52 | 0.22830<br>0.1361<br>44 | 0.30304<br>0.0324<br>50 | 0.25447<br>0.0687<br>52 | 0.28637<br>0.0563<br>52 | 0.76727<br>0.0001<br>52 | 0.07331<br>0.6129<br>50 | 0.07221<br>0.6110<br>52 | 0.40365<br>0.0033<br>51 | 0.64919<br>0.0001<br>52 | -0.07885<br>0.5784<br>52 | 0.50839<br>0.0001<br>52 |
| BIOMASS | 0.22524<br>0.1084<br>52 | 0.15211<br>0.3243<br>44 | 0.41143<br>0.0030<br>50 | -0.31936<br>0.0210<br>52 | -0.25407<br>0.0691<br>52 | -0.06991<br>0.6244<br>52 | 0.10651<br>0.4616<br>50 | 0.66626<br>0.0001<br>52 | 0.11360<br>0.4273<br>51 | 0.16472<br>0.2432<br>52 | -0.10903<br>0.4417<br>52 | 0.18061<br>0.2001<br>52 |
| BZ_A_ANT | 0.04172<br>0.7713<br>51 | 0.58439<br>0.0001<br>44 | 0.33111<br>0.0188<br>50 | -0.20473<br>0.1495<br>51 | 0.13880<br>0.3314<br>51 | 0.13314<br>0.3517<br>51 | 0.98831<br>0.0001<br>49 | 0.22193<br>0.1175<br>51 | 0.66650<br>0.0001<br>51 | 0.39563<br>0.0041<br>51 | -0.16237<br>0.3189<br>51 | 0.47048<br>0.0005<br>51 |
| BZ_A_PYR | 0.21988<br>0.1173<br>52 | 0.72239<br>0.0001<br>44 | 0.57891<br>0.0001<br>50 | -0.22986<br>0.1012<br>52 | 0.13938<br>0.3244<br>52 | 0.23523<br>0.0932<br>52 | 0.81967<br>0.0001<br>50 | 0.22576<br>0.1076<br>52 | 0.87606<br>0.0001<br>51 | 0.60707<br>0.0001<br>52 | -0.08202<br>0.5632<br>52 | 0.63979<br>0.0001<br>52 |
| BZ_B_FLU | 0.21736<br>0.1217<br>52 | 0.68718<br>0.0001<br>44 | 0.56963<br>0.0001<br>50 | -0.25768<br>0.0651<br>52 | 0.11192<br>0.4296<br>52 | 0.22235<br>0.1131<br>52 | 0.82295<br>0.0001<br>50 | 0.24901<br>0.0751<br>52 | 0.85070<br>0.0001<br>51 | 0.61558<br>0.0001<br>52 | -0.06602<br>0.6419<br>52 | 0.64556<br>0.0001<br>52 |



R0063946

C3-15-- OCT 18

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | 0.35792<br>0.0099<br>51 | 0.72156<br>0.0001<br>44 | 0.59422<br>0.0001<br>50 | -0.07969<br>0.5783<br>51 | 0.15608<br>0.2741<br>51 | 0.30268<br>0.0309<br>51 | 0.52662<br>0.0001<br>49 | 0.20244<br>0.1542<br>51 | 0.98797<br>0.0001<br>51 | 0.75492<br>0.0001<br>51 | -0.14651<br>0.3050<br>51 | 0.74822<br>0.0001<br>51 |
| BZ_K_FLU | 0.20023<br>0.1547<br>52 | 0.64092<br>0.0001<br>44 | 0.57445<br>0.0001<br>50 | -0.20192<br>0.1511<br>52 | 0.17027<br>0.2275<br>52 | 0.26563<br>0.0570<br>52 | 0.79398<br>0.0001<br>50 | 0.20586<br>0.1432<br>52 | 0.87852<br>0.0001<br>51 | 0.60828<br>0.0001<br>52 | -0.07809<br>0.5821<br>52 | 0.62496<br>0.0001<br>52 |
| CADMIUM | 0.71373<br>0.0001<br>52 | 0.01128<br>0.9421<br>44 | 0.58290<br>0.0001<br>50 | 0.19475<br>0.1665<br>52 | 0.18705<br>0.1842<br>52 | 0.51566<br>0.0001<br>52 | 0.20303<br>0.1573<br>50 | 0.15232<br>0.2810<br>52 | 0.22963<br>0.1053<br>51 | 0.40062<br>0.0032<br>52 | 0.16351<br>0.2468<br>52 | 0.35693<br>0.0094<br>52 |
| CAD_EX_A | 0.34320<br>0.0127<br>52 | -0.13429<br>0.3848<br>44 | 0.27393<br>0.0542<br>50 | 0.19458<br>0.1669<br>52 | 0.08796<br>0.5352<br>52 | 0.15290<br>0.2792<br>52 | -0.06794<br>0.6392<br>50 | -0.09756<br>0.4914<br>52 | -0.13897<br>0.3308<br>51 | -0.11235<br>0.4278<br>52 | 0.51402<br>0.0001<br>52 | -0.13607<br>0.3361<br>52 |
| CAD_EXTR | 0.73764<br>0.0001<br>52 | 0.14940<br>0.3331<br>44 | 0.43552<br>0.0016<br>50 | 0.10635<br>0.4530<br>52 | 0.07984<br>0.5737<br>52 | 0.43923<br>0.0011<br>52 | 0.19520<br>0.1743<br>50 | 0.21709<br>0.1221<br>52 | 0.16563<br>0.2454<br>51 | 0.34267<br>0.0129<br>52 | 0.04881<br>0.7311<br>52 | 0.36465<br>0.0079<br>52 |
| CHROMIUM | 0.34272<br>0.0129<br>52 | 0.74073<br>0.0001<br>44 | 0.41351<br>0.0028<br>50 | -0.04482<br>0.7524<br>52 | 0.16896<br>0.2311<br>52 | 0.29762<br>0.0321<br>52 | 0.73463<br>0.0001<br>50 | 0.12980<br>0.3591<br>52 | 0.69878<br>0.0001<br>51 | 0.49361<br>0.0002<br>52 | -0.04796<br>0.7357<br>52 | 0.55888<br>0.0001<br>52 |
| CHRYSENE | 0.11734<br>0.4122<br>51 | 0.61187<br>0.0001<br>44 | 0.46500<br>0.0008<br>49 | -0.23330<br>0.0994<br>51 | 0.15605<br>0.2742<br>51 | 0.18384<br>0.1986<br>51 | 0.94933<br>0.0001<br>49 | 0.24590<br>0.0820<br>51 | 0.77237<br>0.0001<br>50 | 0.49297<br>0.0002<br>51 | -0.16638<br>0.2433<br>51 | 0.55235<br>0.0001<br>51 |
| CLAY | 0.52524<br>0.0001<br>52 | 0.32823<br>0.0296<br>44 | 0.40812<br>0.0033<br>50 | 0.16654<br>0.2380<br>52 | 0.19442<br>0.1672<br>52 | 0.78202<br>0.0001<br>52 | 0.28968<br>0.0413<br>50 | 0.12113<br>0.3924<br>52 | 0.53457<br>0.0001<br>51 | 0.74768<br>0.0001<br>52 | -0.11326<br>0.4240<br>52 | 0.67587<br>0.0001<br>52 |
| COPPER | 0.56884<br>0.0001<br>52 | 0.61368<br>0.0052<br>44 | 0.53352<br>0.0001<br>50 | -0.10320<br>0.4666<br>52 | 0.03657<br>0.7969<br>52 | 0.50059<br>0.0002<br>52 | 0.44183<br>0.0013<br>50 | 0.12434<br>0.3798<br>52 | 0.78843<br>0.0001<br>51 | 0.92250<br>0.0001<br>52 | 0.03253<br>0.8169<br>52 | 0.87012<br>0.0001<br>52 |
| COP_EX_A | 0.10552<br>0.4566<br>52 | -0.15209<br>0.3244<br>44 | -0.04774<br>0.7420<br>50 | -0.08184<br>0.5641<br>52 | -0.11582<br>0.4136<br>52 | 0.04180<br>0.7686<br>52 | -0.10912<br>0.4507<br>50 | -0.13751<br>0.3310<br>52 | -0.16436<br>0.2492<br>51 | -0.01944<br>0.8818<br>52 | 0.89361<br>0.0001<br>52 | -0.06238<br>0.6604<br>52 |
| COP_EXTR | 0.45021<br>0.0008<br>52 | 0.56150<br>0.0001<br>44 | 0.54521<br>0.0001<br>50 | -0.24063<br>0.0857<br>52 | 0.02838<br>0.8417<br>52 | 0.39481<br>0.0038<br>52 | 0.58421<br>0.0001<br>50 | 0.18917<br>0.1792<br>52 | 0.82364<br>0.0001<br>51 | 0.86704<br>0.0001<br>52 | -0.01878<br>0.8949<br>52 | 0.89242<br>0.0001<br>52 |
| DDD | 0.44604<br>0.0010<br>51 | 0.29761<br>0.0526<br>43 | -0.03677<br>0.8019<br>49 | 0.17947<br>0.2076<br>51 | 0.23791<br>0.0927<br>51 | 0.41647<br>0.0024<br>51 | 0.33199<br>0.0198<br>49 | -0.27267<br>0.0529<br>51 | 0.36562<br>0.0090<br>50 | 0.46074<br>0.0007<br>51 | 0.00345<br>0.9604<br>51 | 0.51106<br>0.0001<br>51 |



R0063947



AOI 178

NORMAL=none

## Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | 1.00000<br>0.0<br>52 | 0.21775<br>0.1556<br>44 | 0.43896<br>0.0014<br>50 | 0.21945<br>0.1180<br>52 | 0.12764<br>0.3672<br>52 | 0.53860<br>0.0001<br>52 | 0.02447<br>0.8661<br>50 | 0.12236<br>0.3875<br>52 | 0.34323<br>0.0137<br>51 | 0.57501<br>0.0001<br>52 | 0.12465<br>0.3786<br>52 | 0.55457<br>0.0001<br>52 |
| DIBENZO_ | 0.21775<br>0.1556<br>44 | 1.00000<br>0.0<br>44 | 0.52724<br>0.0002<br>44 | -0.15677<br>0.3095<br>44 | 0.08063<br>0.6029<br>44 | 0.17144<br>0.2658<br>44 | 0.53172<br>0.0002<br>44 | 0.12982<br>0.4010<br>44 | 0.75078<br>0.0001<br>44 | 0.35121<br>0.0194<br>44 | -0.15867<br>0.3036<br>44 | 0.42190<br>0.0043<br>44 |
| DINOCTYL | 0.43896<br>0.0014<br>50 | 0.52724<br>0.0002<br>44 | 1.00000<br>0.0<br>50 | -0.13977<br>0.3330<br>50 | 0.01707<br>0.9063<br>50 | 0.26695<br>0.0609<br>50 | 0.30586<br>0.0345<br>48 | 0.45962<br>0.0008<br>50 | 0.60291<br>0.0001<br>50 | 0.50072<br>0.0002<br>50 | -0.04595<br>0.7513<br>50 | 0.47046<br>0.0006<br>50 |
| E_NORM_D | 0.21945<br>0.1180<br>52 | -0.15677<br>0.3095<br>44 | -0.13977<br>0.3330<br>50 | 1.00000<br>0.0<br>52 | 0.65961<br>0.0001<br>52 | 0.50918<br>0.0001<br>52 | -0.21846<br>0.1275<br>50 | -0.35105<br>0.0107<br>52 | -0.09285<br>0.5170<br>51 | -0.04610<br>0.7455<br>52 | -0.06021<br>0.6716<br>52 | -0.11265<br>0.4265<br>52 |
| E_SURVIV | 0.12764<br>0.3672<br>52 | 0.08063<br>0.6029<br>44 | 0.01707<br>0.9063<br>50 | 0.65961<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.38183<br>0.0052<br>52 | 0.13292<br>0.3575<br>50 | -0.14532<br>0.3040<br>52 | 0.18244<br>0.2001<br>51 | 0.06936<br>0.6251<br>52 | -0.10184<br>0.4725<br>52 | 0.04702<br>0.7407<br>52 |
| FINES | 0.53860<br>0.0001<br>52 | 0.17144<br>0.2698<br>44 | 0.26695<br>0.0609<br>50 | 0.50918<br>0.0001<br>52 | 0.38183<br>0.0052<br>52 | 1.00000<br>0.0<br>52 | 0.10944<br>0.4493<br>50 | -0.24160<br>0.0844<br>52 | 0.29963<br>0.0327<br>51 | 0.54268<br>0.0001<br>52 | 0.06273<br>0.6586<br>52 | 0.44189<br>0.0010<br>52 |
| FLUORANT | 0.02447<br>0.8661<br>50 | 0.53172<br>0.0002<br>44 | 0.30586<br>0.0345<br>48 | -0.21846<br>0.1275<br>50 | 0.13292<br>0.3575<br>50 | 0.10944<br>0.4493<br>50 | 1.00000<br>0.0<br>50 | 0.22175<br>0.1217<br>50 | 0.60212<br>0.0001<br>49 | 0.34069<br>0.0155<br>50 | -0.11759<br>0.4160<br>50 | 0.42567<br>0.0021<br>50 |
| GRAVEL | 0.12236<br>0.3875<br>52 | 0.12982<br>0.4010<br>44 | 0.45962<br>0.0008<br>50 | -0.35105<br>0.0107<br>52 | -0.14532<br>0.3040<br>52 | -0.24160<br>0.0844<br>52 | 0.22175<br>0.1217<br>50 | 1.00000<br>0.0<br>52 | 0.20733<br>0.1443<br>51 | 0.20918<br>0.1367<br>52 | -0.16432<br>0.2444<br>52 | 0.20069<br>0.1537<br>52 |
| INDENO_1 | 0.34323<br>0.0137<br>51 | 0.75078<br>0.0001<br>44 | 0.60291<br>0.0001<br>50 | -0.09285<br>0.5170<br>51 | 0.18244<br>0.2001<br>51 | 0.29963<br>0.0327<br>51 | 0.60212<br>0.0001<br>49 | 0.20733<br>0.1443<br>51 | 1.00000<br>0.0<br>51 | 0.73534<br>0.0001<br>51 | -0.16292<br>0.2533<br>51 | 0.74881<br>0.0001<br>51 |
| LEAD | 0.57501<br>0.0001<br>52 | 0.35121<br>0.0194<br>44 | 0.50072<br>0.0002<br>50 | -0.04610<br>0.7455<br>52 | 0.06936<br>0.6251<br>52 | 0.54268<br>0.0001<br>52 | 0.34069<br>0.0155<br>50 | 0.20918<br>0.1367<br>52 | 0.73534<br>0.0001<br>51 | 1.00000<br>0.0<br>52 | -0.00821<br>0.9539<br>52 | 0.95622<br>0.0001<br>52 |
| LEAD_EX_ | 0.12465<br>0.3786<br>52 | -0.15867<br>0.3036<br>44 | -0.04595<br>0.7513<br>50 | -0.06021<br>0.6716<br>52 | -0.10184<br>0.4725<br>52 | 0.06273<br>0.6586<br>52 | -0.11759<br>0.4160<br>50 | -0.16432<br>0.2444<br>52 | -0.16292<br>0.2533<br>51 | -0.00821<br>0.9539<br>52 | 1.00000<br>0.0<br>52 | -0.04127<br>0.7714<br>52 |
| LEAD_EXT | 0.55457<br>0.0001<br>52 | 0.42190<br>0.0043<br>44 | 0.47046<br>0.0006<br>50 | -0.11265<br>0.4265<br>52 | 0.04702<br>0.7407<br>52 | 0.44189<br>0.0010<br>52 | 0.42567<br>0.0021<br>50 | 0.20069<br>0.1537<br>52 | 0.74881<br>0.0001<br>51 | 0.95622<br>0.0001<br>52 | -0.04127<br>0.7714<br>52 | 1.00000<br>0.0<br>52 |

/usr/cnt1/bechtel/analysis/corr1.sas

R0063948

2-35-- VOL 18

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | 0.05552<br>0.6959<br>52 | 0.10073<br>0.5153<br>44 | 0.22705<br>0.1128<br>50 | -0.47913<br>0.0003<br>52 | -0.50012<br>0.0002<br>52 | -0.40534<br>0.0029<br>52 | 0.11621<br>0.4216<br>50 | 0.61564<br>0.0001<br>52 | 0.02562<br>0.8584<br>51 | 0.02583<br>0.8558<br>52 | -0.15775<br>0.2640<br>52 | 0.06806<br>0.6317<br>52 |
| MEAN_GRS | -0.25977<br>0.0656<br>51 | -0.10665<br>0.4961<br>43 | -0.12868<br>0.3782<br>49 | -0.20856<br>0.1419<br>51 | -0.15675<br>0.2720<br>51 | -0.58594<br>0.0001<br>51 | -0.03249<br>0.8246<br>49 | 0.43295<br>0.0015<br>51 | -0.14988<br>0.2989<br>50 | -0.30036<br>0.0322<br>51 | -0.04409<br>0.7587<br>51 | -0.27067<br>0.0547<br>51 |
| MEDIAN_G | -0.32134<br>0.0202<br>52 | -0.19508<br>0.2045<br>44 | -0.02116<br>0.8840<br>50 | -0.31074<br>0.0250<br>52 | -0.20003<br>0.1551<br>52 | -0.73196<br>0.0001<br>52 | 0.10113<br>0.4847<br>50 | 0.44947<br>0.0008<br>52 | -0.11037<br>0.4407<br>51 | -0.26951<br>0.0533<br>52 | -0.06642<br>0.6399<br>52 | -0.21327<br>0.1290<br>52 |
| MERCURY | 0.48793<br>0.0002<br>52 | 0.21451<br>0.1620<br>44 | 0.23001<br>0.1081<br>50 | 0.01300<br>0.9271<br>52 | 0.10115<br>0.4755<br>52 | 0.46340<br>0.0005<br>52 | 0.09471<br>0.5130<br>50 | -0.10523<br>0.4578<br>52 | 0.53098<br>0.0001<br>51 | 0.76711<br>0.0001<br>52 | 0.21855<br>0.1196<br>52 | 0.71206<br>0.0001<br>52 |
| MERC_EX_ | -0.01527<br>0.9144<br>52 | -0.12115<br>0.4334<br>44 | -0.10529<br>0.4668<br>50 | -0.14624<br>0.3009<br>52 | -0.09132<br>0.5197<br>52 | -0.00303<br>0.9830<br>52 | -0.08178<br>0.5723<br>50 | -0.10022<br>0.4796<br>52 | -0.16264<br>0.2542<br>51 | -0.05278<br>0.7102<br>52 | 0.95792<br>0.0001<br>52 | -0.08250<br>0.5609<br>52 |
| MERC_EXT | 0.08776<br>0.5361<br>52 | 0.37170<br>0.0130<br>46 | 0.27383<br>0.0543<br>50 | -0.43103<br>0.0014<br>52 | -0.17471<br>0.2154<br>52 | -0.03827<br>0.7876<br>52 | 0.21114<br>0.1411<br>50 | 0.33854<br>0.0141<br>52 | 0.29088<br>0.0758<br>51 | 0.23297<br>0.0965<br>52 | 0.26798<br>0.0548<br>52 | 0.28910<br>0.0376<br>52 |
| NICKEL | 0.63643<br>0.0001<br>52 | 0.20041<br>0.1921<br>44 | 0.56873<br>0.0001<br>50 | 0.30288<br>0.0290<br>52 | 0.29748<br>0.0322<br>52 | 0.76947<br>0.0001<br>52 | 0.19974<br>0.1643<br>50 | 0.20863<br>0.1377<br>52 | 0.48149<br>0.0009<br>51 | 0.66521<br>0.0001<br>52 | 0.09521<br>0.5020<br>52 | 0.52810<br>0.0001<br>52 |
| NSPECIES | 0.16397<br>0.2454<br>52 | 0.19603<br>0.2022<br>44 | 0.37420<br>0.0074<br>50 | -0.52246<br>0.0001<br>52 | -0.47515<br>0.0004<br>52 | -0.30033<br>0.0305<br>52 | 0.21600<br>0.1319<br>50 | 0.69186<br>0.0001<br>52 | 0.12968<br>0.3652<br>51 | 0.10862<br>0.4634<br>52 | -0.14054<br>0.3204<br>52 | 0.14674<br>0.2992<br>52 |
| PCB_1260 | 0.27075<br>0.0546<br>51 | 0.11715<br>0.4544<br>43 | 0.00785<br>0.9573<br>49 | 0.07858<br>0.5636<br>51 | 0.02228<br>0.8767<br>51 | 0.30252<br>0.0309<br>51 | -0.09017<br>0.5378<br>49 | -0.27198<br>0.0535<br>51 | 0.48577<br>0.0003<br>50 | 0.64395<br>0.0001<br>51 | 0.14260<br>0.3182<br>51 | 0.57837<br>0.0001<br>51 |
| PHENANTH | 0.12678<br>0.3753<br>51 | 0.70191<br>0.0001<br>44 | 0.39297<br>0.0052<br>49 | -0.19606<br>0.1679<br>51 | 0.11059<br>0.4072<br>51 | 0.05135<br>0.7205<br>51 | 0.87690<br>0.0001<br>49 | 0.24006<br>0.0897<br>51 | 0.64618<br>0.0001<br>50 | 0.31939<br>0.0223<br>51 | -0.11137<br>0.4365<br>51 | 0.42914<br>0.0017<br>51 |
| PYRENE | 0.06868<br>0.6356<br>50 | 0.64614<br>0.0001<br>44 | 0.46790<br>0.0008<br>48 | -0.26140<br>0.0667<br>50 | 0.12889<br>0.3723<br>50 | 0.15440<br>0.2844<br>50 | 0.93241<br>0.0001<br>50 | 0.22709<br>0.1127<br>50 | 0.69413<br>0.0001<br>49 | 0.40953<br>0.0031<br>50 | -0.18131<br>0.2948<br>50 | 0.46960<br>0.0006<br>50 |
| P_GROWTH | -0.06901<br>0.6269<br>52 | 0.48790<br>0.0008<br>46 | 0.51154<br>0.0001<br>50 | -0.54497<br>0.0001<br>52 | -0.23371<br>0.0956<br>52 | -0.13533<br>0.3388<br>52 | 0.58177<br>0.0001<br>50 | 0.80351<br>0.0001<br>52 | 0.38717<br>0.0050<br>51 | 0.10603<br>0.4544<br>52 | -0.26995<br>0.0739<br>52 | 0.13261<br>0.3407<br>52 |



R0063949

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | DDE | DIBENZO_ | DINOCTYL | E_NORM_D | E_SURVIV | FINES | FLUORANT | GRAVEL | INDENO_1 | LEAD | LEAD_EX_ | LEAD_EXT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURVIV | -0.03445<br>0.8084<br>52 | -0.46810<br>0.0014<br>44 | -0.27104<br>0.0569<br>50 | 0.22991<br>0.1011<br>52 | 0.03410<br>0.8103<br>52 | 0.05005<br>0.7246<br>52 | -0.35422<br>0.0116<br>50 | -0.14677<br>0.3058<br>52 | -0.40058<br>0.0036<br>51 | -0.17302<br>0.2200<br>52 | 0.22656<br>0.1063<br>52 | -0.21007<br>0.1350<br>52 |
| SAND | -0.59606<br>0.0001<br>52 | -0.22598<br>0.1402<br>44 | -0.44788<br>0.0011<br>50 | -0.39123<br>0.0041<br>52 | -0.33691<br>0.0146<br>52 | -0.93365<br>0.0001<br>52 | -0.19511<br>0.1748<br>50 | -0.12200<br>0.3889<br>52 | -0.38299<br>0.0055<br>51 | -0.63229<br>0.0001<br>52 | -0.00350<br>0.9803<br>52 | -0.52606<br>0.0001<br>52 |
| SELENIUM | 0.60028<br>0.0001<br>52 | 0.02587<br>0.8676<br>44 | 0.35142<br>0.0123<br>50 | 0.22996<br>0.1010<br>52 | 0.14365<br>0.3096<br>52 | 0.48711<br>0.0003<br>52 | 0.12106<br>0.4023<br>50 | 0.00654<br>0.9633<br>52 | 0.13198<br>0.3559<br>51 | 0.15252<br>0.2804<br>52 | 0.09258<br>0.5139<br>52 | 0.10878<br>0.4427<br>52 |
| SHANNON | -0.13366<br>0.3448<br>52 | -0.16278<br>0.2911<br>44 | -0.16313<br>0.2577<br>50 | -0.08840<br>0.5332<br>52 | -0.20246<br>0.1500<br>52 | -0.35255<br>0.0104<br>52 | -0.22494<br>0.1163<br>50 | 0.15681<br>0.2669<br>52 | -0.15533<br>0.2764<br>51 | -0.09538<br>0.5012<br>52 | -0.03012<br>0.8321<br>52 | -0.06795<br>0.6322<br>52 |
| SILT | 0.35254<br>0.0104<br>52 | -0.02208<br>0.8869<br>44 | 0.04286<br>0.7676<br>50 | 0.63001<br>0.0001<br>52 | 0.40992<br>0.0025<br>52 | 0.82824<br>0.0001<br>52 | -0.08762<br>0.5451<br>50 | -0.47888<br>0.0003<br>52 | -0.01616<br>0.9104<br>51 | 0.15879<br>0.2608<br>52 | 0.19790<br>0.1596<br>52 | 0.06901<br>0.6269<br>52 |
| SILVER | 0.10437<br>0.4615<br>52 | -0.01414<br>0.9274<br>44 | 0.03320<br>0.8189<br>50 | 0.26188<br>0.0607<br>52 | 0.16664<br>0.2377<br>52 | 0.30146<br>0.0299<br>52 | 0.00632<br>0.9653<br>50 | -0.01488<br>0.9166<br>52 | 0.07773<br>0.5877<br>51 | 0.23068<br>0.0999<br>52 | -0.01034<br>0.9420<br>52 | 0.14938<br>0.2905<br>52 |
| SULFIDE | 0.19173<br>0.1733<br>52 | 0.39828<br>0.0074<br>44 | 0.68479<br>0.0001<br>50 | -0.42930<br>0.0015<br>52 | -0.12749<br>0.3677<br>52 | 0.13765<br>0.3305<br>52 | 0.53188<br>0.0001<br>50 | 0.65717<br>0.0001<br>52 | 0.43856<br>0.0013<br>51 | 0.42319<br>0.0018<br>52 | -0.23418<br>0.0947<br>52 | 0.40984<br>0.0026<br>52 |
| ZINC | 0.55064<br>0.0001<br>52 | 0.34729<br>0.0209<br>44 | 0.66013<br>0.0001<br>50 | -0.05804<br>0.6828<br>52 | 0.12395<br>0.3813<br>52 | 0.42967<br>0.0015<br>52 | 0.52415<br>0.0001<br>50 | 0.40115<br>0.0032<br>52 | 0.72064<br>0.0001<br>51 | 0.83255<br>0.0001<br>52 | -0.01841<br>0.8969<br>52 | 0.79005<br>0.0001<br>52 |
| ZINC_EX_ | 0.21677<br>0.1227<br>52 | -0.16123<br>0.2958<br>44 | 0.07024<br>0.6279<br>50 | 0.01484<br>0.9168<br>52 | -0.04658<br>0.7430<br>52 | 0.10120<br>0.4753<br>52 | -0.10741<br>0.4578<br>50 | -0.14699<br>0.2984<br>52 | -0.19985<br>0.2625<br>51 | -0.03891<br>0.8037<br>52 | 0.99341<br>0.0001<br>52 | -0.07346<br>0.6048<br>52 |
| ZINC_EXT | 0.61208<br>0.0001<br>52 | 0.44010<br>0.0028<br>44 | 0.61928<br>0.0001<br>50 | -0.15137<br>0.2841<br>52 | 0.04715<br>0.7400<br>52 | 0.41811<br>0.0020<br>52 | 0.53990<br>0.0001<br>50 | 0.29562<br>0.0334<br>52 | 0.77218<br>0.0001<br>51 | 0.89899<br>0.0001<br>52 | -0.00744<br>0.9582<br>52 | 0.91593<br>0.0001<br>52 |
| TOC | 0.68084<br>0.0001<br>52 | 0.35554<br>0.0179<br>44 | 0.67152<br>0.0001<br>50 | -0.03454<br>0.8080<br>52 | 0.13049<br>0.3565<br>52 | 0.57591<br>0.0001<br>52 | 0.44359<br>0.0007<br>50 | 0.29766<br>0.0321<br>52 | 0.56627<br>0.0001<br>51 | 0.66291<br>0.0001<br>52 | 0.06913<br>0.6283<br>52 | 0.61787<br>0.0001<br>52 |



R0063950

4-15-97 VOL 18

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_GRS | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | 0.49283<br>0.0002<br>52 | -0.01482<br>0.9178<br>51 | 0.02956<br>0.8352<br>52 | 0.02447<br>0.8633<br>52 | -0.07156<br>0.6142<br>52 | 0.35193<br>0.0105<br>52 | 0.12952<br>0.3601<br>52 | 0.69895<br>0.0001<br>52 | -0.16402<br>0.2478<br>51 | 0.19338<br>0.1739<br>51 | 0.22066<br>0.1236<br>50 | 0.52474<br>0.0001<br>52 |
| ACNPHTHY | 0.16605<br>0.2491<br>50 | -0.07115<br>0.6271<br>49 | -0.07627<br>0.5986<br>50 | 0.10583<br>0.4645<br>50 | -0.10259<br>0.4784<br>50 | 0.41502<br>0.0027<br>50 | 0.20377<br>0.1558<br>50 | 0.25673<br>0.0719<br>50 | -0.03391<br>0.8171<br>49 | 0.93387<br>0.0001<br>50 | 0.70476<br>0.0001<br>48 | 0.53787<br>0.0001<br>50 |
| ANTHRACE | 0.25550<br>0.0704<br>51 | -0.01278<br>0.9298<br>50 | 0.28399<br>0.0434<br>51 | 0.07734<br>0.5896<br>51 | -0.10004<br>0.4849<br>51 | 0.26731<br>0.0579<br>51 | 0.26952<br>0.0558<br>51 | 0.34687<br>0.0126<br>51 | -0.07358<br>0.6116<br>50 | 0.89754<br>0.0001<br>50 | 0.89743<br>0.0001<br>49 | 0.57420<br>0.0001<br>51 |
| ARSENIC | -0.21827<br>0.1201<br>52 | -0.29482<br>0.0357<br>51 | -0.35315<br>0.0102<br>52 | 0.70246<br>0.0001<br>52 | 0.09631<br>0.4970<br>52 | 0.15839<br>0.2621<br>52 | 0.80227<br>0.0001<br>52 | -0.11788<br>0.4052<br>52 | 0.54761<br>0.0001<br>51 | 0.29701<br>0.0343<br>51 | 0.34792<br>0.0133<br>50 | 0.00500<br>0.9719<br>52 |
| AVS | 0.43078<br>0.0014<br>52 | -0.06605<br>0.6452<br>51 | 0.05559<br>0.6955<br>52 | 0.02726<br>0.8479<br>52 | -0.15682<br>0.2669<br>52 | 0.32064<br>0.0205<br>52 | 0.38906<br>0.0044<br>52 | 0.56784<br>0.0001<br>52 | -0.19423<br>0.1720<br>51 | 0.51530<br>0.0001<br>51 | 0.73573<br>0.0001<br>50 | 0.74046<br>0.0001<br>52 |
| A_REBURI | -0.48503<br>0.0003<br>52 | 0.10682<br>0.4556<br>51 | 0.16988<br>0.2286<br>52 | -0.06233<br>0.6607<br>52 | 0.12869<br>0.3632<br>52 | -0.54217<br>0.0001<br>52 | -0.25061<br>0.0731<br>52 | -0.60457<br>0.0001<br>52 | 0.17498<br>0.2194<br>51 | -0.34552<br>0.0130<br>51 | -0.25532<br>0.0735<br>50 | -0.51219<br>0.0001<br>52 |
| A_SURVIV | -0.49297<br>0.0002<br>52 | 0.08494<br>0.5534<br>51 | 0.14095<br>0.3189<br>52 | -0.02280<br>0.8725<br>52 | 0.12430<br>0.3800<br>52 | -0.46623<br>0.0005<br>52 | -0.25262<br>0.0708<br>52 | -0.62398<br>0.0001<br>52 | 0.26914<br>0.0562<br>51 | -0.44552<br>0.0011<br>51 | -0.34745<br>0.0134<br>50 | -0.53357<br>0.0001<br>52 |
| BERYLLIU | -0.14153<br>0.3169<br>52 | -0.44388<br>0.0011<br>51 | -0.60110<br>0.0001<br>52 | 0.42717<br>0.0016<br>52 | -0.06503<br>0.6470<br>52 | 0.09263<br>0.5137<br>52 | 0.73657<br>0.0001<br>52 | -0.08354<br>0.5580<br>52 | 0.35096<br>0.0116<br>51 | 0.06113<br>0.7746<br>51 | 0.15439<br>0.2644<br>50 | 0.03287<br>0.8170<br>52 |
| BIOMASS | 0.73099<br>0.0001<br>52 | 0.00701<br>0.9611<br>51 | 0.17727<br>0.2087<br>52 | -0.06366<br>0.6539<br>52 | -0.05287<br>0.7097<br>52 | 0.34775<br>0.0115<br>52 | 0.25295<br>0.0704<br>52 | 0.79831<br>0.0001<br>52 | -0.18661<br>0.1898<br>51 | 0.11986<br>0.4021<br>51 | 0.11801<br>0.4144<br>50 | 0.34486<br>0.0118<br>52 |
| BZ_A_ANT | 0.12315<br>0.3893<br>51 | -0.06220<br>0.7711<br>50 | 0.10626<br>0.4580<br>51 | 0.14604<br>0.3065<br>51 | -0.09955<br>0.4870<br>51 | 0.20689<br>0.1452<br>51 | 0.24183<br>0.0873<br>51 | 0.21617<br>0.1276<br>51 | 0.01810<br>0.9007<br>50 | 0.86098<br>0.0001<br>50 | 0.95070<br>0.0001<br>49 | 0.58018<br>0.0001<br>51 |
| BZ_A_PYR | 0.09192<br>0.5149<br>52 | -0.11238<br>0.4326<br>51 | 0.01161<br>0.9349<br>52 | 0.38502<br>0.0098<br>52 | -0.06618<br>0.7453<br>52 | 0.29631<br>0.0329<br>52 | 0.38351<br>0.0050<br>52 | 0.21346<br>0.1305<br>52 | 0.26397<br>0.0612<br>51 | 0.77895<br>0.0001<br>51 | 0.93067<br>0.0001<br>50 | 0.84623<br>0.0001<br>52 |
| BZ_B_FLU | 0.11803<br>0.4047<br>52 | -0.10413<br>0.4671<br>51 | 0.04301<br>0.7621<br>52 | 0.36094<br>0.0086<br>52 | -0.03140<br>0.8281<br>52 | 0.28588<br>0.0401<br>52 | 0.38498<br>0.0048<br>52 | 0.22401<br>0.0980<br>52 | 0.38981<br>0.0088<br>51 | 0.78879<br>0.0001<br>51 | 0.93087<br>0.0001<br>50 | 0.84994<br>0.0001<br>52 |

/usr/cntl/bechtel/analysis/corr1.sas

R0063951

5-15-- 8 of 10

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_GRS | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | 0.01869<br>0.8964<br>51 | -0.16090<br>0.2643<br>50 | -0.11807<br>0.4093<br>51 | 0.58073<br>0.0001<br>51 | -0.15640<br>0.2731<br>51 | 0.25736<br>0.0683<br>51 | 0.46609<br>0.0006<br>51 | 0.11611<br>0.4172<br>51 | 0.55582<br>0.0001<br>50 | 0.56633<br>0.0001<br>50 | 0.62840<br>0.0001<br>49 | 0.33359<br>0.0167<br>51 |
| BZ_K_PLU | 0.04517<br>0.7505<br>52 | -0.13595<br>0.3415<br>51 | -0.00508<br>0.9715<br>52 | 0.38265<br>0.0051<br>52 | -0.04216<br>0.7666<br>52 | 0.27717<br>0.0467<br>52 | 0.39664<br>0.0036<br>52 | 0.17743<br>0.2082<br>52 | 0.29485<br>0.0357<br>51 | 0.70946<br>0.0001<br>51 | 0.90021<br>0.0001<br>50 | 0.51919<br>0.0001<br>52 |
| CADMIUM | -0.01334<br>0.9252<br>52 | -0.19297<br>0.1749<br>51 | -0.11933<br>0.3995<br>52 | 0.24946<br>0.0534<br>52 | 0.00541<br>0.9697<br>52 | -0.03656<br>0.7970<br>52 | 0.64229<br>0.0001<br>52 | 0.12536<br>0.3759<br>52 | -0.05474<br>0.7028<br>51 | 0.14109<br>0.3234<br>51 | 0.25032<br>0.0796<br>50 | 0.11791<br>0.4051<br>52 |
| CAD_EX_A | -0.19257<br>0.1714<br>52 | 0.02387<br>0.8679<br>51 | -0.02449<br>0.8632<br>52 | 0.06219<br>0.6614<br>52 | 0.31543<br>0.0227<br>52 | -0.01530<br>0.9143<br>52 | 0.24670<br>0.0779<br>52 | -0.11495<br>0.4171<br>52 | -0.13520<br>0.3442<br>51 | -0.07528<br>0.5996<br>51 | -0.09369<br>0.5175<br>50 | -0.06507<br>0.6468<br>52 |
| CAD_EXTR | 0.06114<br>0.6668<br>52 | -0.17535<br>0.2184<br>51 | -0.18024<br>0.2010<br>52 | 0.20384<br>0.1472<br>52 | -0.08200<br>0.5633<br>52 | 0.13987<br>0.3227<br>52 | 0.53328<br>0.0001<br>52 | 0.20303<br>0.1489<br>52 | -0.11780<br>0.4106<br>51 | 0.15552<br>0.2758<br>51 | 0.21834<br>0.1313<br>50 | 0.19636<br>0.1630<br>52 |
| CHROMIUM | 0.00006<br>0.9548<br>52 | -0.15671<br>0.2721<br>51 | -0.21497<br>0.1259<br>52 | 0.26523<br>0.0574<br>52 | -0.05397<br>0.7039<br>52 | 0.31159<br>0.0248<br>52 | 0.36563<br>0.0077<br>52 | 0.09705<br>0.4937<br>52 | 0.09824<br>0.4928<br>51 | 0.91464<br>0.0001<br>51 | 0.68207<br>0.0001<br>50 | 0.39733<br>0.0038<br>52 |
| CHRYSENE | 0.13235<br>0.3545<br>51 | -0.07268<br>0.6160<br>50 | 0.07702<br>0.5911<br>51 | 0.20789<br>0.1432<br>51 | -0.12580<br>0.3791<br>51 | 0.20644<br>0.1461<br>51 | 0.31446<br>0.0246<br>51 | 0.24634<br>0.0840<br>51 | 0.08708<br>0.5476<br>50 | 0.84608<br>0.0001<br>50 | 0.97178<br>0.0001<br>49 | 0.57990<br>0.0001<br>51 |
| CLAY | -0.02226<br>0.8756<br>52 | -0.41467<br>0.0025<br>51 | -0.53347<br>0.0001<br>52 | 0.47409<br>0.0004<br>52 | -0.10889<br>0.4422<br>52 | 0.13919<br>0.3250<br>52 | 0.73629<br>0.0001<br>52 | 0.07894<br>0.5780<br>52 | 0.36171<br>0.0091<br>51 | 0.21258<br>0.1342<br>51 | 0.33372<br>0.0179<br>50 | 0.11711<br>0.4084<br>52 |
| COPPER | 0.00766<br>0.9570<br>52 | -0.23489<br>0.0971<br>51 | -0.24833<br>0.0759<br>52 | 0.77955<br>0.0001<br>52 | -0.03042<br>0.8305<br>52 | 0.19197<br>0.1728<br>52 | 0.65232<br>0.0001<br>52 | 0.11779<br>0.4056<br>52 | 0.66379<br>0.0001<br>51 | 0.41373<br>0.0025<br>51 | 0.51433<br>0.0001<br>50 | 0.21122<br>0.1328<br>52 |
| COP_EX_A | -0.15465<br>0.2763<br>52 | 0.00779<br>0.9567<br>51 | -0.03233<br>0.8200<br>52 | 0.22365<br>0.1110<br>52 | 0.96094<br>0.0001<br>52 | 0.29050<br>0.0367<br>52 | 0.08466<br>0.5507<br>52 | -0.12871<br>0.3631<br>52 | 0.14852<br>0.2983<br>51 | -0.10416<br>0.4670<br>51 | -0.14067<br>0.3299<br>50 | -0.21102<br>0.1332<br>52 |
| COP_EXTR | 0.08036<br>0.5712<br>52 | -0.21556<br>0.1287<br>51 | -0.18459<br>0.1902<br>52 | 0.73488<br>0.0001<br>52 | -0.03165<br>0.8248<br>52 | 0.35607<br>0.0096<br>52 | 0.69822<br>0.0002<br>52 | 0.21395<br>0.1278<br>52 | 0.55821<br>0.0001<br>51 | 0.55141<br>0.0001<br>51 | 0.67180<br>0.0001<br>50 | 0.34905<br>0.0112<br>52 |
| DDD | -0.34578<br>0.0129<br>51 | -0.20572<br>0.1518<br>50 | -0.29817<br>0.0336<br>51 | 0.92238<br>0.0001<br>51 | 0.01629<br>0.9097<br>51 | 0.08069<br>0.5749<br>51 | 0.28180<br>0.0691<br>51 | -0.29474<br>0.0358<br>51 | 0.65493<br>0.0008<br>51 | 0.34619<br>0.0138<br>50 | 0.27367<br>0.0871<br>49 | -0.13717<br>0.3371<br>51 |

/usr/ent1/bechtel/analysis/corr1.sas

R0063952

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_GRS | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | 0.05552<br>0.6959<br>52 | -0.25977<br>0.0656<br>51 | -0.32134<br>0.0202<br>52 | 0.48793<br>0.0002<br>52 | -0.01527<br>0.9144<br>52 | 0.08776<br>0.5361<br>52 | 0.62843<br>0.0001<br>52 | 0.16397<br>0.2456<br>52 | 0.27075<br>0.0546<br>51 | 0.12678<br>0.3753<br>51 | 0.06868<br>0.6356<br>50 | -0.06901<br>0.6249<br>52 |
| DIBENZO_ | 0.10073<br>0.5153<br>44 | -0.10665<br>0.4961<br>43 | -0.19508<br>0.2045<br>44 | 0.21451<br>0.1620<br>44 | -0.12115<br>0.4334<br>44 | 0.37170<br>0.0130<br>44 | 0.20041<br>0.1921<br>44 | 0.19603<br>0.2022<br>44 | 0.11715<br>0.4566<br>43 | 0.70191<br>0.0001<br>44 | 0.64614<br>0.0001<br>44 | 0.48790<br>0.0008<br>44 |
| DINOCTYL | 0.22705<br>0.1128<br>50 | -0.12868<br>0.3782<br>49 | -0.02116<br>0.8840<br>50 | 0.23001<br>0.1081<br>50 | -0.10529<br>0.4668<br>50 | 0.27383<br>0.0543<br>50 | 0.56873<br>0.0001<br>50 | 0.37420<br>0.0074<br>50 | 0.00785<br>0.9573<br>49 | 0.39297<br>0.0052<br>49 | 0.46790<br>0.0008<br>48 | 0.51156<br>0.0001<br>50 |
| E_NORM_D | -0.47913<br>0.0003<br>52 | -0.20856<br>0.1419<br>51 | -0.31074<br>0.0250<br>52 | 0.01300<br>0.9271<br>52 | -0.14624<br>0.3009<br>52 | -0.43103<br>0.0014<br>52 | 0.30292<br>0.0290<br>52 | -0.52246<br>0.0001<br>52 | 0.07858<br>0.5836<br>51 | -0.19606<br>0.1679<br>51 | -0.26140<br>0.0667<br>50 | -0.54497<br>0.0001<br>52 |
| E_SURVIV | -0.50012<br>0.0002<br>52 | -0.15675<br>0.2720<br>51 | -0.20003<br>0.1551<br>52 | 0.10115<br>0.4755<br>52 | -0.09132<br>0.5197<br>52 | -0.17471<br>0.2154<br>52 | 0.29748<br>0.0322<br>52 | -0.47515<br>0.0006<br>52 | 0.02228<br>0.8767<br>51 | 0.11859<br>0.4072<br>51 | 0.12889<br>0.3723<br>50 | -0.23371<br>0.0954<br>52 |
| FINES | -0.40534<br>0.0029<br>52 | -0.58594<br>0.0001<br>51 | -0.73156<br>0.0001<br>52 | 0.46360<br>0.0005<br>52 | -0.00303<br>0.9830<br>52 | -0.03827<br>0.7876<br>52 | 0.76947<br>0.0001<br>52 | -0.30033<br>0.0305<br>52 | 0.30252<br>0.0309<br>51 | 0.05135<br>0.7205<br>51 | 0.15440<br>0.2844<br>50 | -0.13533<br>0.3388<br>52 |
| FLUORANT | 0.11621<br>0.4216<br>50 | -0.03249<br>0.8266<br>49 | 0.10113<br>0.4847<br>50 | 0.09471<br>0.5130<br>50 | -0.08178<br>0.5723<br>50 | 0.21114<br>0.1411<br>50 | 0.19974<br>0.1663<br>50 | 0.21600<br>0.1319<br>50 | -0.09017<br>0.5378<br>49 | 0.87490<br>0.0001<br>49 | 0.93241<br>0.0001<br>50 | 0.58177<br>0.0001<br>50 |
| GRAVEL | 0.61964<br>0.0001<br>52 | 0.43295<br>0.0015<br>51 | 0.44947<br>0.0008<br>52 | -0.10523<br>0.4578<br>52 | -0.10022<br>0.4796<br>52 | 0.33854<br>0.0161<br>52 | 0.20863<br>0.1377<br>52 | 0.49186<br>0.0001<br>52 | -0.27198<br>0.0535<br>51 | 0.34006<br>0.0897<br>51 | 0.22709<br>0.1127<br>50 | 0.50351<br>0.0001<br>52 |
| INDENO_1 | 0.02562<br>0.8584<br>91 | -0.14988<br>0.2989<br>50 | -0.11037<br>0.4407<br>51 | 0.53098<br>0.0001<br>51 | -0.16264<br>0.2542<br>51 | 0.25088<br>0.0758<br>51 | 0.45149<br>0.0009<br>51 | 0.12948<br>0.3692<br>51 | 0.48577<br>0.0003<br>50 | 0.66818<br>0.0001<br>50 | 0.69413<br>0.0001<br>49 | 0.38717<br>0.0050<br>51 |
| LEAD | 0.02583<br>0.8558<br>52 | -0.30036<br>0.0322<br>51 | -0.26951<br>0.0533<br>52 | 0.76711<br>0.0001<br>52 | -0.05278<br>0.7102<br>52 | 0.23297<br>0.0965<br>52 | 0.66521<br>0.0001<br>52 | 0.10862<br>0.4434<br>52 | 0.66395<br>0.0001<br>51 | 0.31939<br>0.0223<br>51 | 0.40953<br>0.0031<br>50 | 0.10603<br>0.4544<br>52 |
| LEAD_EX_ | -0.15775<br>0.2640<br>52 | -0.04409<br>0.7587<br>51 | -0.06642<br>0.6399<br>52 | 0.21855<br>0.1196<br>52 | 0.95792<br>0.0001<br>52 | 0.26798<br>0.0548<br>52 | 0.09521<br>0.5020<br>52 | -0.14054<br>0.3204<br>52 | 0.14260<br>0.3182<br>51 | -0.11137<br>0.4365<br>51 | -0.15121<br>0.2945<br>50 | -0.24995<br>0.0739<br>52 |
| LEAD_EXT | 0.06806<br>0.6317<br>52 | -0.27067<br>0.0547<br>51 | -0.21327<br>0.1290<br>52 | 0.71206<br>0.0001<br>52 | -0.08250<br>0.5609<br>52 | 0.28910<br>0.0376<br>52 | 0.52818<br>0.0001<br>52 | 0.14674<br>0.2992<br>52 | 0.57837<br>0.0001<br>51 | 0.62914<br>0.0017<br>51 | 0.46960<br>0.0006<br>50 | 0.13261<br>0.3487<br>52 |



R0063953

-J-J5--

VOL 78

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_ORG | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | 1.00000<br>0.0<br>52 | 0.16410<br>0.2499<br>51 | 0.37580<br>0.0060<br>52 | -0.21326<br>0.1290<br>52 | -0.11015<br>0.4369<br>52 | 0.17159<br>0.2239<br>52 | -0.06512<br>0.6465<br>52 | 0.94785<br>0.0001<br>52 | -0.25443<br>0.0716<br>51 | 0.14318<br>0.3162<br>51 | 0.13370<br>0.3546<br>50 | 0.33536<br>0.0151<br>52 |
| MEAN_ORG | 0.16410<br>0.2499<br>51 | 1.00000<br>0.0<br>51 | 0.75032<br>0.0001<br>51 | -0.28944<br>0.0394<br>51 | -0.02113<br>0.8830<br>51 | -0.16193<br>0.2563<br>51 | -0.39689<br>0.0039<br>51 | 0.11309<br>0.4294<br>51 | -0.17887<br>0.2139<br>50 | -0.02556<br>0.8602<br>50 | -0.05242<br>0.7206<br>49 | 0.17745<br>0.2129<br>51 |
| MEDIAN_G | 0.37580<br>0.0060<br>52 | 0.75032<br>0.0001<br>51 | 1.00000<br>0.0<br>52 | -0.33119<br>0.0169<br>52 | -0.03413<br>0.8102<br>52 | -0.10876<br>0.4428<br>52 | -0.35113<br>0.0107<br>52 | 0.30674<br>0.0270<br>52 | -0.22820<br>0.1073<br>51 | 0.07698<br>0.5933<br>51 | 0.08210<br>0.5708<br>50 | 0.19122<br>0.1745<br>52 |
| MERCURY | -0.21326<br>0.1290<br>52 | -0.28944<br>0.0394<br>51 | -0.33119<br>0.0169<br>52 | 1.00000<br>0.0<br>52 | 0.14357<br>0.3099<br>52 | 0.26282<br>0.0598<br>52 | 0.44484<br>0.0010<br>52 | -0.12440<br>0.3796<br>52 | 0.80470<br>0.0001<br>51 | 0.05902<br>0.7014<br>51 | 0.13768<br>0.3404<br>50 | -0.15575<br>0.2702<br>52 |
| MERC_EX_ | -0.11015<br>0.4369<br>52 | -0.02113<br>0.8830<br>51 | -0.03413<br>0.8102<br>52 | 0.14357<br>0.3099<br>52 | 1.00000<br>0.0<br>52 | 0.36386<br>0.0080<br>52 | 0.02117<br>0.8816<br>52 | -0.09008<br>0.5254<br>52 | 0.09542<br>0.5054<br>51 | -0.07425<br>0.6046<br>51 | -0.10504<br>0.4679<br>50 | -0.16383<br>0.2458<br>52 |
| MERC_EXT | 0.17159<br>0.2239<br>52 | -0.16193<br>0.2563<br>51 | -0.10876<br>0.4428<br>52 | 0.26282<br>0.0598<br>52 | 0.36386<br>0.0080<br>52 | 1.00000<br>0.0<br>52 | 0.05485<br>0.6993<br>52 | 0.30117<br>0.0300<br>52 | 0.06146<br>0.6684<br>51 | 0.32680<br>0.0193<br>51 | 0.19357<br>0.1780<br>50 | 0.38638<br>0.0047<br>52 |
| NICKEL | -0.06512<br>0.6465<br>52 | -0.39689<br>0.0039<br>51 | -0.35113<br>0.0107<br>52 | 0.44484<br>0.0010<br>52 | 0.02117<br>0.8816<br>52 | 0.05485<br>0.6993<br>52 | 1.00000<br>0.0<br>52 | 0.05214<br>0.7135<br>52 | 0.28641<br>0.0416<br>51 | 0.17536<br>0.2184<br>51 | 0.26948<br>0.0584<br>50 | 0.08603<br>0.5442<br>52 |
| NSPECIES | 0.94785<br>0.0001<br>52 | 0.11309<br>0.4294<br>51 | 0.30674<br>0.0270<br>52 | -0.12440<br>0.3796<br>52 | -0.09008<br>0.5254<br>52 | 0.30117<br>0.0300<br>52 | 0.05214<br>0.7135<br>52 | 1.00000<br>0.0<br>52 | -0.24767<br>0.0797<br>51 | 0.22610<br>0.1106<br>51 | 0.24867<br>0.0816<br>50 | 0.49715<br>0.0002<br>52 |
| PCB_1260 | -0.25443<br>0.0716<br>51 | -0.17887<br>0.2139<br>50 | -0.22820<br>0.1073<br>51 | 0.80470<br>0.0001<br>51 | 0.09542<br>0.5054<br>51 | 0.06146<br>0.6684<br>51 | 0.28641<br>0.0416<br>51 | -0.24767<br>0.0797<br>51 | 1.00000<br>0.0<br>51 | -0.09852<br>0.4961<br>50 | 0.00381<br>0.9793<br>49 | -0.30394<br>0.0301<br>51 |
| PHENANTH | 0.14318<br>0.3162<br>51 | -0.02556<br>0.8602<br>50 | 0.07698<br>0.5933<br>51 | 0.05902<br>0.7014<br>51 | -0.07425<br>0.6046<br>51 | 0.32680<br>0.0193<br>51 | 0.17536<br>0.2184<br>51 | 0.22610<br>0.1106<br>51 | -0.09852<br>0.4961<br>50 | 1.00000<br>0.0<br>51 | 0.82060<br>0.0001<br>49 | 0.53476<br>0.0001<br>51 |
| PYRENE | 0.13370<br>0.3546<br>50 | -0.05242<br>0.7206<br>49 | 0.08210<br>0.5708<br>50 | 0.13768<br>0.3404<br>50 | -0.10504<br>0.4679<br>50 | 0.19357<br>0.1780<br>50 | 0.26948<br>0.0584<br>50 | 0.24867<br>0.0816<br>50 | 0.00381<br>0.9793<br>49 | 0.82060<br>0.0001<br>49 | 1.00000<br>0.0<br>50 | 0.64795<br>0.0001<br>50 |
| P_GROWTH | 0.33536<br>0.0151<br>52 | 0.17745<br>0.2129<br>51 | 0.19122<br>0.1745<br>52 | -0.15575<br>0.2702<br>52 | -0.16383<br>0.2458<br>52 | 0.38638<br>0.0047<br>52 | 0.08603<br>0.5442<br>52 | 0.49715<br>0.0002<br>52 | -0.30394<br>0.0301<br>51 | 0.53476<br>0.0001<br>51 | 0.64795<br>0.0001<br>50 | 1.00000<br>0.0<br>52 |

/usr/cnt1/bechtel/analysis/corr1.sas

R0063954

8-J5-- VOL 18

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | MARGALEF | MEAN_GRS | MEDIAN_G | MERCURY | MERC_EX_ | MERC_EXT | NICKEL | NSPECIES | PCB_1260 | PHENANTH | PYRENE | P_GROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURVIV | -0.21156<br>0.1322<br>52 | -0.21245<br>0.1345<br>51 | -0.03833<br>0.7873<br>52 | -0.01561<br>0.9125<br>52 | 0.18870<br>0.1801<br>52 | -0.18521<br>0.1887<br>52 | 0.00110<br>0.9934<br>52 | -0.26281<br>0.0598<br>52 | 0.05388<br>0.7073<br>51 | -0.44706<br>0.0010<br>51 | -0.44027<br>0.0014<br>50 | -0.39741<br>0.0035<br>52 |
| SAND | 0.18735<br>0.1835<br>52 | 0.48175<br>0.0003<br>51 | 0.58235<br>0.0001<br>52 | -0.43514<br>0.0013<br>52 | 0.04010<br>0.7777<br>52 | -0.08581<br>0.5453<br>52 | -0.86405<br>0.0001<br>52 | 0.05181<br>0.7153<br>52 | -0.20676<br>0.1455<br>51 | -0.14104<br>0.3235<br>51 | -0.24324<br>0.0887<br>50 | -0.04743<br>0.7385<br>52 |
| SELENIUM | -0.04169<br>0.7692<br>52 | -0.15509<br>0.2772<br>51 | -0.22287<br>0.1123<br>52 | 0.13420<br>0.3629<br>52 | -0.02710<br>0.8488<br>52 | -0.04771<br>0.7369<br>52 | 0.52394<br>0.0001<br>52 | 0.07464<br>0.5990<br>52 | -0.13912<br>0.3302<br>51 | 0.03458<br>0.8096<br>51 | 0.13007<br>0.3680<br>50 | 0.09807<br>0.4891<br>52 |
| SHANNON | 0.58702<br>0.0001<br>52 | 0.14747<br>0.3018<br>51 | 0.29152<br>0.0360<br>52 | -0.19403<br>0.1681<br>52 | -0.00875<br>0.9509<br>52 | -0.12979<br>0.3591<br>52 | -0.21864<br>0.1194<br>52 | 0.32616<br>0.0183<br>52 | -0.06897<br>0.6306<br>51 | -0.19246<br>0.2858<br>51 | -0.23727<br>0.0971<br>50 | -0.26699<br>0.0557<br>52 |
| SILT | -0.60072<br>0.0001<br>52 | -0.53065<br>0.0001<br>51 | -0.64061<br>0.0001<br>52 | 0.28337<br>0.0418<br>52 | 0.09327<br>0.5108<br>52 | -0.18378<br>0.1922<br>52 | 0.51834<br>0.0001<br>52 | -0.53089<br>0.0001<br>52 | 0.14303<br>0.3187<br>51 | -0.11250<br>0.4319<br>51 | -0.05792<br>0.6895<br>50 | -0.31253<br>0.0241<br>52 |
| SILVER | -0.14096<br>0.3189<br>52 | -0.16199<br>0.2561<br>51 | -0.13066<br>0.3559<br>52 | 0.17090<br>0.2250<br>52 | -0.02599<br>0.8569<br>52 | -0.10278<br>0.4684<br>52 | 0.38297<br>0.0051<br>52 | -0.12358<br>0.3828<br>52 | 0.14831<br>0.2990<br>51 | -0.00278<br>0.9848<br>51 | 0.01512<br>0.9170<br>50 | -0.10420<br>0.4623<br>52 |
| SULFIDE | 0.49731<br>0.0002<br>52 | -0.05986<br>0.6970<br>51 | 0.05869<br>0.6794<br>52 | 0.00168<br>0.9906<br>52 | -0.14968<br>0.2896<br>52 | 0.37277<br>0.0065<br>52 | 0.37557<br>0.0061<br>52 | 0.63528<br>0.0001<br>52 | -0.23831<br>0.0922<br>51 | 0.46486<br>0.0006<br>51 | 0.63935<br>0.0001<br>50 | 0.73650<br>0.0001<br>52 |
| ZINC | 0.15247<br>0.2806<br>52 | -0.21375<br>0.1320<br>51 | 0.04922<br>0.7290<br>52 | 0.56716<br>0.0001<br>52 | -0.05916<br>0.6770<br>52 | 0.21534<br>0.1252<br>52 | 0.74014<br>0.0001<br>52 | 0.27448<br>0.0489<br>52 | 0.37795<br>0.0062<br>51 | 0.48506<br>0.0003<br>51 | 0.59988<br>0.0001<br>50 | 0.29141<br>0.0361<br>52 |
| ZINC_EX_ | -0.18972<br>0.1779<br>52 | -0.00659<br>0.9634<br>51 | -0.04829<br>0.7339<br>52 | 0.20522<br>0.1444<br>52 | 0.85669<br>0.0001<br>52 | 0.21101<br>0.1332<br>52 | 0.16518<br>0.2419<br>52 | -0.14190<br>0.3156<br>52 | 0.07500<br>0.6009<br>51 | -0.10628<br>0.4580<br>51 | -0.14049<br>0.3305<br>50 | -0.19835<br>0.1586<br>52 |
| ZINC_EXT | 0.12568<br>0.3747<br>52 | -0.21277<br>0.1339<br>51 | -0.08891<br>0.6274<br>52 | 0.69068<br>0.0001<br>52 | -0.08518<br>0.8462<br>52 | 0.29525<br>0.0338<br>52 | 0.81718<br>0.0001<br>52 | 0.25188<br>0.0719<br>52 | 0.48412<br>0.0003<br>51 | 0.51385<br>0.0001<br>51 | 0.59890<br>0.0001<br>50 | 0.28428<br>0.0411<br>52 |
| TOC | 0.06643<br>0.6398<br>52 | -0.31212<br>0.0258<br>51 | -0.30956<br>0.0255<br>52 | 0.46937<br>0.0006<br>52 | 0.02064<br>0.8845<br>52 | 0.29330<br>0.0348<br>52 | 0.70870<br>0.0001<br>52 | 0.26437<br>0.0582<br>52 | 0.15843<br>0.2688<br>51 | 0.41242<br>0.0026<br>51 | 0.53331<br>0.0001<br>50 | 0.40436<br>0.0029<br>52 |



R0063955

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ABUNDANC | -0.26249<br>0.0601<br>52 | -0.13515<br>0.3394<br>52 | 0.10115<br>0.4755<br>52 | -0.31162<br>0.0245<br>52 | -0.27269<br>0.0505<br>52 | -0.08229<br>0.5619<br>52 | 0.55069<br>0.0001<br>52 | 0.22466<br>0.1093<br>52 | -0.08377<br>0.5549<br>52 | 0.22694<br>0.1057<br>52 | 0.38108<br>0.0053<br>52 |
| ACNPHTHY | -0.47912<br>0.0004<br>50 | -0.19759<br>0.1690<br>50 | 0.04518<br>0.7554<br>50 | -0.13493<br>0.3502<br>50 | -0.10303<br>0.4764<br>50 | -0.01978<br>0.8915<br>50 | 0.47104<br>0.0006<br>50 | 0.42919<br>0.0019<br>50 | -0.14207<br>0.3250<br>50 | 0.50139<br>0.0002<br>50 | 0.43358<br>0.0017<br>50 |
| ANTHRACE | -0.34371<br>0.0135<br>51 | -0.17768<br>0.2123<br>51 | 0.08300<br>0.5626<br>51 | -0.09585<br>0.5035<br>51 | -0.17279<br>0.2253<br>51 | 0.02861<br>0.8421<br>51 | 0.61269<br>0.0001<br>51 | 0.67776<br>0.0001<br>51 | -0.14116<br>0.3231<br>51 | 0.61804<br>0.0001<br>51 | 0.47703<br>0.0004<br>51 |
| ARSENIC | -0.09268<br>0.5135<br>52 | -0.73451<br>0.0001<br>52 | 0.38170<br>0.0052<br>52 | -0.23603<br>0.0921<br>52 | 0.45842<br>0.0006<br>52 | 0.36983<br>0.0070<br>52 | 0.23101<br>0.0982<br>52 | 0.73004<br>0.0001<br>52 | 0.21032<br>0.1348<br>52 | 0.71106<br>0.0001<br>52 | 0.61934<br>0.0001<br>52 |
| AVS | -0.41571<br>0.0022<br>52 | -0.38945<br>0.0043<br>52 | 0.18098<br>0.1992<br>52 | -0.09687<br>0.4945<br>52 | -0.18971<br>0.1780<br>52 | 0.01697<br>0.9049<br>52 | 0.98183<br>0.0001<br>52 | 0.60762<br>0.0001<br>52 | -0.23957<br>0.0872<br>52 | 0.55196<br>0.0001<br>52 | 0.65478<br>0.0001<br>52 |
| A_REBURI | 0.21775<br>0.1210<br>52 | 0.30996<br>0.0253<br>52 | -0.06316<br>0.6564<br>52 | 0.01823<br>0.8979<br>52 | 0.24525<br>0.0797<br>52 | 0.00613<br>0.9656<br>52 | -0.61301<br>0.0001<br>52 | -0.24817<br>0.0761<br>52 | 0.18543<br>0.1881<br>52 | -0.28168<br>0.0431<br>52 | -0.41809<br>0.0020<br>52 |
| A_SURVIV | 0.24971<br>0.0742<br>52 | 0.33727<br>0.0145<br>52 | -0.16790<br>0.2341<br>52 | 0.05704<br>0.6879<br>52 | 0.22438<br>0.1098<br>52 | 0.06096<br>0.6677<br>52 | -0.68398<br>0.0001<br>52 | -0.28813<br>0.0383<br>52 | 0.15090<br>0.2856<br>52 | -0.33357<br>0.0157<br>52 | -0.50027<br>0.0002<br>52 |
| BERYLLIU | -0.08771<br>0.5364<br>52 | -0.81144<br>0.0001<br>52 | 0.17200<br>0.2227<br>52 | -0.11948<br>0.3989<br>52 | 0.46300<br>0.0005<br>52 | 0.36529<br>0.0077<br>52 | 0.31767<br>0.0217<br>52 | 0.63917<br>0.0011<br>52 | -0.11086<br>0.4341<br>52 | 0.60541<br>0.0029<br>52 | 0.66127<br>0.0006<br>52 |
| BIOMASS | -0.07691<br>0.5878<br>52 | -0.17483<br>0.2151<br>52 | 0.18685<br>0.1847<br>52 | 0.26376<br>0.0588<br>52 | -0.33303<br>0.0158<br>52 | 0.00622<br>0.9651<br>52 | 0.58723<br>0.0001<br>52 | 0.30992<br>0.0254<br>52 | -0.11131<br>0.4321<br>52 | 0.25394<br>0.0693<br>52 | 0.30207<br>0.0295<br>52 |
| BZ_A_ANT | -0.35450<br>0.0107<br>51 | -0.21859<br>0.1233<br>51 | 0.10842<br>0.4488<br>51 | -0.17459<br>0.2206<br>51 | -0.10086<br>0.4813<br>51 | 0.02618<br>0.8663<br>51 | 0.53049<br>0.0001<br>51 | 0.57297<br>0.0001<br>51 | -0.14182<br>0.3208<br>51 | 0.57870<br>0.0001<br>51 | 0.46586<br>0.0006<br>51 |
| BZ_A_PYR | -0.46474<br>0.0005<br>52 | -0.32393<br>0.0191<br>52 | 0.13391<br>0.3439<br>52 | -0.18652<br>0.1855<br>52 | -0.02515<br>0.8595<br>52 | 0.05457<br>0.7008<br>52 | 0.60575<br>0.0001<br>52 | 0.73244<br>0.0001<br>52 | -0.08618<br>0.5435<br>52 | 0.74007<br>0.0001<br>52 | 0.59239<br>0.0001<br>52 |
| BZ_B_FLU | -0.43903<br>0.0011<br>52 | -0.31936<br>0.0210<br>52 | 0.12848<br>0.3640<br>52 | -0.17007<br>0.2281<br>52 | -0.03425<br>0.8095<br>52 | 0.06284<br>0.6596<br>52 | 0.61850<br>0.0001<br>52 | 0.75152<br>0.0001<br>52 | -0.07550<br>0.5968<br>52 | 0.75272<br>0.0001<br>52 | 0.58589<br>0.0001<br>52 |

/usr/cntl/bechtel/analysis/corr1.sas

R0063956

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ_GHI_P | -0.37669<br>0.0066<br>51 | -0.38428<br>0.0054<br>51 | 0.13459<br>0.3464<br>51 | -0.13363<br>0.3498<br>51 | -0.00198<br>0.9890<br>51 | 0.08342<br>0.5604<br>51 | 0.39560<br>0.0041<br>51 | 0.72195<br>0.0001<br>51 | -0.14592<br>0.3069<br>51 | 0.76478<br>0.0001<br>51 | 0.94119<br>0.0001<br>51 |
| BZ_K_FLU | -0.43465<br>0.0013<br>52 | -0.34747<br>0.0116<br>52 | 0.17494<br>0.2095<br>52 | -0.22624<br>0.1060<br>52 | 0.00311<br>0.9825<br>52 | 0.05586<br>0.6961<br>52 | 0.60026<br>0.0001<br>52 | 0.73368<br>0.0001<br>52 | -0.07852<br>0.5800<br>52 | 0.72851<br>0.0001<br>52 | 0.60714<br>0.0001<br>52 |
| CADMIUM | 0.02098<br>0.8849<br>52 | -0.58343<br>0.0001<br>52 | 0.75334<br>0.0001<br>52 | -0.29879<br>0.0640<br>52 | 0.44277<br>0.0010<br>52 | 0.07393<br>0.6074<br>52 | 0.34512<br>0.0122<br>52 | 0.58664<br>0.0001<br>52 | 0.38694<br>0.0094<br>52 | 0.53389<br>0.0001<br>52 | 0.49434<br>0.0001<br>52 |
| CAD_EX_A | 0.16576<br>0.2403<br>52 | -0.12038<br>0.3953<br>52 | 0.48647<br>0.0001<br>52 | -0.22699<br>0.1056<br>52 | 0.36305<br>0.0082<br>52 | -0.05132<br>0.7179<br>52 | -0.17044<br>0.2270<br>52 | 0.04403<br>0.7546<br>52 | 0.74416<br>0.0001<br>52 | 0.03143<br>0.8249<br>52 | 0.23861<br>0.0885<br>52 |
| CAD_EXTR | -0.03716<br>0.7937<br>52 | -0.52939<br>0.0001<br>52 | 0.72458<br>0.0001<br>52 | -0.26580<br>0.0790<br>52 | 0.35211<br>0.0105<br>52 | -0.02316<br>0.8705<br>52 | 0.31086<br>0.0249<br>52 | 0.46949<br>0.0004<br>52 | 0.22453<br>0.1095<br>52 | 0.51574<br>0.0001<br>52 | 0.65116<br>0.0001<br>52 |
| CHROMIUM | -0.44118<br>0.0011<br>52 | -0.35232<br>0.0104<br>52 | 0.11340<br>0.4226<br>52 | -0.20443<br>0.1460<br>52 | 0.09402<br>0.5074<br>52 | 0.08159<br>0.5653<br>52 | 0.34325<br>0.0081<br>52 | 0.50855<br>0.0001<br>52 | -0.03395<br>0.8112<br>52 | 0.58587<br>0.0001<br>52 | 0.51793<br>0.0001<br>52 |
| CHRYSENE | -0.42400<br>0.0019<br>51 | -0.27894<br>0.0475<br>51 | 0.16629<br>0.2435<br>51 | -0.19383<br>0.1729<br>51 | -0.07490<br>0.6014<br>51 | 0.02977<br>0.8357<br>51 | 0.61516<br>0.0001<br>51 | 0.46506<br>0.0001<br>51 | -0.15997<br>0.2621<br>91 | 0.66591<br>0.0001<br>51 | 0.56152<br>0.0001<br>51 |
| CLAY | -0.17019<br>0.2277<br>52 | -0.86458<br>0.0001<br>52 | 0.33674<br>0.0140<br>52 | -0.16206<br>0.1965<br>52 | 0.29844<br>0.0316<br>52 | 0.23556<br>0.0927<br>52 | 0.48445<br>0.0003<br>52 | 0.58135<br>0.0001<br>52 | -0.13395<br>0.3438<br>52 | 0.59996<br>0.0001<br>52 | 0.68371<br>0.0001<br>52 |
| COPPER | -0.28301<br>0.0421<br>52 | -0.55792<br>0.0001<br>52 | 0.25780<br>0.0650<br>52 | -0.19134<br>0.1742<br>52 | 0.17531<br>0.2138<br>52 | 0.18986<br>0.1776<br>52 | 0.40970<br>0.0026<br>52 | 0.82525<br>0.0001<br>52 | 0.04065<br>0.7799<br>52 | 0.91086<br>0.0001<br>52 | 0.71999<br>0.0001<br>52 |
| COP_EX_A | 0.20479<br>0.1453<br>52 | 0.00801<br>0.9550<br>52 | 0.09592<br>0.4988<br>52 | -0.04942<br>0.7279<br>52 | 0.18455<br>0.1903<br>52 | -0.01799<br>0.8993<br>52 | -0.22102<br>0.1153<br>52 | -0.01795<br>0.8995<br>52 | 0.94729<br>0.0001<br>52 | -0.01051<br>0.9410<br>52 | 0.07006<br>0.6216<br>52 |
| COP_EXTR | -0.38366<br>0.0050<br>52 | -0.67365<br>0.0004<br>52 | 0.19534<br>0.1652<br>52 | -0.19461<br>0.1660<br>52 | 0.06735<br>0.6352<br>52 | 0.11142<br>0.4316<br>52 | 0.53005<br>0.0001<br>52 | 0.79701<br>0.0001<br>52 | -0.02925<br>0.8369<br>52 | 0.91281<br>0.0001<br>52 | 0.73662<br>0.0001<br>52 |
| DDD | -0.06691<br>0.6408<br>51 | -0.32277<br>0.0209<br>91 | 0.11829<br>0.4084<br>51 | -0.27504<br>0.0508<br>51 | 0.35155<br>0.0114<br>51 | 0.10024<br>0.4840<br>51 | -0.17545<br>0.2181<br>51 | 0.32506<br>0.0199<br>51 | 0.08878<br>0.5356<br>91 | 0.47072<br>0.0005<br>51 | 0.28166<br>0.0454<br>51 |



R0063957



VOL 78

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DDE | -0.03445<br>0.8084<br>52 | -0.59606<br>0.0001<br>52 | 0.60028<br>0.0001<br>52 | -0.13366<br>0.3448<br>52 | 0.35254<br>0.0104<br>52 | 0.10437<br>0.4615<br>52 | 0.19173<br>0.1733<br>52 | 0.55064<br>0.0001<br>52 | 0.21677<br>0.1227<br>52 | 0.61208<br>0.0001<br>52 | 0.68084<br>0.0001<br>52 |
| DIBENZO_ | -0.46810<br>0.0014<br>44 | -0.22598<br>0.1402<br>44 | 0.02587<br>0.8676<br>44 | -0.16278<br>0.2911<br>44 | -0.02208<br>0.8869<br>44 | -0.01414<br>0.9274<br>44 | 0.39828<br>0.0074<br>44 | 0.34729<br>0.0209<br>44 | -0.16123<br>0.2958<br>44 | 0.44010<br>0.0028<br>44 | 0.35554<br>0.0179<br>44 |
| DINOCTYL | -0.27104<br>0.0569<br>50 | -0.44788<br>0.0011<br>50 | 0.35142<br>0.0123<br>50 | -0.16313<br>0.2577<br>50 | 0.04286<br>0.7676<br>50 | 0.03320<br>0.8189<br>50 | 0.68479<br>0.0001<br>50 | 0.66013<br>0.0001<br>50 | 0.07024<br>0.6279<br>50 | 0.61528<br>0.0001<br>50 | 0.47152<br>0.0001<br>50 |
| E_NORM_D | 0.22991<br>0.1011<br>52 | -0.39123<br>0.0041<br>52 | 0.22996<br>0.1010<br>52 | -0.08840<br>0.5332<br>52 | 0.63001<br>0.0001<br>52 | 0.26188<br>0.0607<br>52 | -0.42930<br>0.0015<br>52 | -0.05804<br>0.6828<br>52 | 0.01484<br>0.9188<br>52 | -0.15137<br>0.2841<br>52 | -0.03454<br>0.8080<br>52 |
| E_SURVIV | 0.03410<br>0.8103<br>52 | -0.33691<br>0.0146<br>52 | 0.14365<br>0.3096<br>52 | -0.20246<br>0.1500<br>52 | 0.40992<br>0.0025<br>52 | 0.16664<br>0.2377<br>52 | -0.12749<br>0.3677<br>52 | 0.12395<br>0.3813<br>52 | -0.04650<br>0.7430<br>52 | 0.04715<br>0.7400<br>52 | 0.13049<br>0.3565<br>52 |
| FINES | 0.05005<br>0.7246<br>52 | -0.93365<br>0.0001<br>52 | 0.48711<br>0.0003<br>52 | -0.35255<br>0.0104<br>52 | 0.82824<br>0.0001<br>52 | 0.30146<br>0.0299<br>52 | 0.13765<br>0.3305<br>52 | 0.42967<br>0.0015<br>52 | 0.10120<br>0.4753<br>52 | 0.41811<br>0.0020<br>52 | 0.57551<br>0.0001<br>52 |
| FLUORANT | -0.35422<br>0.0116<br>50 | -0.19511<br>0.1745<br>50 | 0.12106<br>0.4023<br>50 | -0.22494<br>0.1163<br>50 | -0.08762<br>0.5451<br>50 | 0.00632<br>0.9653<br>50 | 0.53188<br>0.0001<br>50 | 0.52415<br>0.0001<br>50 | -0.10741<br>0.4578<br>50 | 0.53990<br>0.0001<br>50 | 0.46359<br>0.0007<br>50 |
| GRAVEL | -0.14477<br>0.3058<br>52 | -0.12200<br>0.3889<br>52 | 0.00654<br>0.9633<br>52 | 0.15681<br>0.2669<br>52 | -0.47888<br>0.0003<br>52 | -0.01488<br>0.9166<br>52 | 0.65717<br>0.0001<br>52 | 0.40115<br>0.0032<br>52 | -0.14699<br>0.2984<br>52 | 0.29562<br>0.0334<br>52 | 0.29766<br>0.0321<br>52 |
| INDENO_1 | -0.40058<br>0.0036<br>51 | -0.38299<br>0.0055<br>51 | 0.13198<br>0.3559<br>51 | -0.15533<br>0.2764<br>51 | -0.01618<br>0.9104<br>51 | 0.07773<br>0.5877<br>51 | 0.43856<br>0.0013<br>51 | 0.72084<br>0.0001<br>51 | -0.15985<br>0.2625<br>51 | 0.77218<br>0.0001<br>51 | 0.56627<br>0.0001<br>51 |
| LEAD | -0.17302<br>0.2200<br>52 | -0.63229<br>0.0001<br>52 | 0.15252<br>0.2804<br>52 | -0.09538<br>0.5012<br>52 | 0.15879<br>0.2608<br>52 | 0.23068<br>0.0999<br>52 | 0.42319<br>0.0018<br>52 | 0.83255<br>0.0001<br>52 | -0.03551<br>0.8027<br>52 | 0.89899<br>0.0001<br>52 | 0.66291<br>0.0001<br>52 |
| LEAD_EX_ | 0.22656<br>0.1063<br>52 | -0.00350<br>0.9803<br>52 | 0.09258<br>0.5139<br>52 | -0.03012<br>0.8321<br>52 | 0.19790<br>0.1596<br>52 | -0.01034<br>0.9420<br>52 | -0.23418<br>0.0947<br>52 | -0.01841<br>0.8969<br>52 | 0.95343<br>0.0001<br>52 | -0.00744<br>0.9582<br>52 | 0.06913<br>0.6263<br>52 |
| LEAD_EXT | -0.21007<br>0.1350<br>52 | -0.52606<br>0.0001<br>52 | 0.10878<br>0.4427<br>52 | -0.06798<br>0.6322<br>52 | 0.06901<br>0.6269<br>52 | 0.14938<br>0.2905<br>52 | 0.40984<br>0.0026<br>52 | 0.79005<br>0.0001<br>52 | -0.07348<br>0.6048<br>52 | 0.91593<br>0.0001<br>52 | 0.61787<br>0.0001<br>52 |

/usr/cnt1/bechtel/analysis/corr1.sas

R006395B

NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MARGALEF | -0.21156<br>0.1322<br>52 | 0.18735<br>0.1835<br>52 | -0.04169<br>0.7692<br>52 | 0.58702<br>0.0001<br>52 | -0.60072<br>0.0001<br>52 | -0.14096<br>0.3189<br>52 | 0.49731<br>0.0002<br>52 | 0.15247<br>0.2806<br>52 | -0.18972<br>0.1779<br>52 | 0.12568<br>0.3747<br>52 | 0.06643<br>0.6398<br>52 |
| MEAN_GRS | -0.21245<br>0.1345<br>51 | 0.48175<br>0.0003<br>51 | -0.15509<br>0.2772<br>51 | 0.14747<br>0.3018<br>51 | -0.53065<br>0.0001<br>51 | -0.16199<br>0.2561<br>51 | -0.05586<br>0.6970<br>51 | -0.21375<br>0.1320<br>51 | -0.00659<br>0.9634<br>51 | -0.21277<br>0.1339<br>51 | -0.31212<br>0.0258<br>51 |
| MEDIAN_G | -0.03833<br>0.7873<br>52 | 0.58235<br>0.0001<br>52 | -0.22287<br>0.1123<br>52 | 0.29152<br>0.0360<br>52 | -0.64063<br>0.0001<br>52 | -0.13066<br>0.3559<br>52 | 0.05869<br>0.6794<br>52 | 0.04922<br>0.7290<br>52 | -0.04829<br>0.7339<br>52 | -0.06891<br>0.6274<br>52 | -0.30956<br>0.0255<br>52 |
| MERCURY | -0.01561<br>0.9125<br>52 | -0.43514<br>0.0013<br>52 | 0.13420<br>0.3429<br>52 | -0.19403<br>0.1681<br>52 | 0.28337<br>0.0418<br>52 | 0.17090<br>0.2258<br>52 | 0.00168<br>0.9906<br>52 | 0.56716<br>0.0001<br>52 | 0.20522<br>0.1444<br>52 | 0.69066<br>0.0001<br>52 | 0.46937<br>0.0004<br>52 |
| MERC_EX_ | 0.18870<br>0.1801<br>52 | 0.04010<br>0.7777<br>52 | -0.02710<br>0.8488<br>52 | -0.00875<br>0.9509<br>52 | 0.09327<br>0.5108<br>52 | -0.02599<br>0.8549<br>52 | -0.14968<br>0.2898<br>52 | -0.05816<br>0.6770<br>52 | 0.05669<br>0.0001<br>52 | -0.06518<br>0.6462<br>52 | 0.02064<br>0.8845<br>52 |
| MERC_EXT | -0.18521<br>0.1887<br>52 | -0.08581<br>0.5453<br>52 | -0.04771<br>0.7369<br>52 | -0.12979<br>0.3591<br>52 | -0.18376<br>0.1922<br>52 | -0.10276<br>0.4684<br>52 | 0.37277<br>0.0065<br>52 | 0.21534<br>0.1252<br>52 | 0.21101<br>0.1332<br>52 | 0.29525<br>0.0336<br>52 | 0.29330<br>0.0348<br>52 |
| NICKEL | 0.00118<br>0.9934<br>52 | -0.86405<br>0.0001<br>52 | 0.52394<br>0.0001<br>52 | -0.21864<br>0.1194<br>52 | 0.51634<br>0.0001<br>52 | 0.36297<br>0.0051<br>52 | 0.37557<br>0.0061<br>52 | 0.74014<br>0.0001<br>52 | 0.16518<br>0.2419<br>52 | 0.61718<br>0.0001<br>52 | 0.70870<br>0.0001<br>52 |
| NSPECIES | -0.26281<br>0.0598<br>52 | 0.05181<br>0.7153<br>52 | 0.07464<br>0.5990<br>52 | 0.32616<br>0.0183<br>52 | -0.53089<br>0.0001<br>52 | -0.12358<br>0.3828<br>52 | 0.63528<br>0.0001<br>52 | 0.27448<br>0.0489<br>52 | -0.16190<br>0.3156<br>52 | 0.28168<br>0.0719<br>52 | 0.26637<br>0.0582<br>52 |
| PCB_1260 | 0.05388<br>0.7073<br>51 | -0.20676<br>0.1455<br>51 | -0.13912<br>0.3302<br>51 | -0.06897<br>0.6306<br>51 | 0.14303<br>0.3167<br>51 | 0.14831<br>0.2990<br>51 | -0.23831<br>0.0922<br>51 | 0.37795<br>0.0062<br>51 | 0.07500<br>0.6009<br>51 | 0.48412<br>0.0003<br>51 | 0.19843<br>0.2669<br>51 |
| PHENANTH | -0.44706<br>0.0010<br>51 | -0.14104<br>0.3235<br>51 | 0.03458<br>0.8096<br>51 | -0.15246<br>0.2855<br>51 | -0.11250<br>0.4319<br>51 | -0.00276<br>0.9846<br>51 | 0.46486<br>0.0006<br>51 | 0.48506<br>0.0003<br>51 | -0.10626<br>0.4580<br>51 | 0.51385<br>0.0001<br>51 | 0.41242<br>0.0026<br>51 |
| PYRENE | -0.44027<br>0.0014<br>50 | -0.24324<br>0.0887<br>50 | 0.13007<br>0.3680<br>50 | -0.23727<br>0.0971<br>50 | -0.05792<br>0.6895<br>50 | 0.01512<br>0.9170<br>50 | 0.63935<br>0.0001<br>50 | 0.59908<br>0.0001<br>50 | -0.16049<br>0.3308<br>50 | 0.59890<br>0.0001<br>50 | 0.53331<br>0.0001<br>50 |
| P_GROWTH | -0.39741<br>0.0035<br>52 | -0.04763<br>0.7385<br>52 | 0.09807<br>0.4891<br>52 | -0.26699<br>0.0557<br>52 | -0.31253<br>0.0241<br>52 | -0.10420<br>0.4623<br>52 | 0.73650<br>0.0001<br>52 | 0.29161<br>0.0361<br>52 | -0.18835<br>0.1586<br>52 | 0.28428<br>0.0411<br>52 | 0.40436<br>0.0029<br>52 |

/user/cntl/bechtel/analysis/corr1.sas

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NORMAL=none

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

| | P_SURVIV | SAND | SELENIUM | SHANNON | SILT | SILVER | SULFIDE | ZINC | ZINC_EX_ | ZINC_EXT | TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P_SURVIV | 1.00000<br>0.0<br>52 | 0.00225<br>0.9874<br>52 | -0.07209<br>0.6115<br>52 | 0.07394<br>0.6024<br>52 | 0.22966<br>0.1015<br>52 | 0.11318<br>0.4244<br>52 | -0.38105<br>0.0053<br>52 | -0.16083<br>0.2547<br>52 | 0.22911<br>0.1023<br>52 | -0.21389<br>0.1279<br>52 | -0.25693<br>0.0660<br>52 |
| SAND | 0.00225<br>0.9874<br>52 | 1.00000<br>0.0<br>52 | -0.50065<br>0.0002<br>52 | 0.30271<br>0.0292<br>52 | -0.67036<br>0.0001<br>52 | -0.30285<br>0.0291<br>52 | -0.38336<br>0.0050<br>52 | -0.58759<br>0.0001<br>52 | -0.06925<br>0.7288<br>52 | -0.53677<br>0.0001<br>52 | -0.69851<br>0.0001<br>52 |
| SELENIUM | -0.07209<br>0.6115<br>52 | -0.50065<br>0.0002<br>52 | 1.00000<br>0.0<br>52 | -0.23706<br>0.0906<br>52 | 0.44138<br>0.0011<br>52 | 0.01971<br>0.8897<br>52 | 0.19839<br>0.1586<br>52 | 0.31218<br>0.0243<br>52 | 0.24386<br>0.0815<br>52 | 0.28980<br>0.0372<br>52 | 0.57487<br>0.0001<br>52 |
| SHANNON | 0.07394<br>0.6024<br>52 | 0.30271<br>0.0292<br>52 | -0.23706<br>0.0906<br>52 | 1.00000<br>0.0<br>52 | -0.37621<br>0.0060<br>52 | -0.06210<br>0.6618<br>52 | -0.06957<br>0.6261<br>52 | -0.13341<br>0.3457<br>52 | -0.11875<br>0.4018<br>52 | -0.15265<br>0.2800<br>52 | -0.35118<br>0.0107<br>52 |
| SILT | 0.22966<br>0.1015<br>52 | -0.67036<br>0.0001<br>52 | 0.44138<br>0.0011<br>52 | -0.37621<br>0.0060<br>52 | 1.00000<br>0.0<br>52 | 0.24984<br>0.0741<br>52 | -0.22481<br>0.1091<br>52 | 0.13528<br>0.3390<br>52 | 0.27561<br>0.0481<br>52 | 0.10094<br>0.4765<br>52 | 0.26657<br>0.0561<br>52 |
| SILVER | 0.11318<br>0.4244<br>52 | -0.30285<br>0.0291<br>52 | 0.01971<br>0.8897<br>52 | -0.06210<br>0.6618<br>52 | 0.24986<br>0.0741<br>52 | 1.00000<br>0.0<br>52 | 0.01093<br>0.9387<br>52 | 0.22443<br>0.1097<br>52 | -0.02334<br>0.8696<br>52 | 0.14331<br>0.3108<br>52 | 0.18995<br>0.1774<br>52 |
| SULFIDE | -0.38105<br>0.0053<br>52 | -0.38336<br>0.0050<br>52 | 0.19839<br>0.1586<br>52 | -0.06957<br>0.6261<br>52 | -0.22481<br>0.1091<br>52 | 0.01093<br>0.9387<br>52 | 1.00000<br>0.0<br>52 | 0.56949<br>0.0001<br>52 | -0.23015<br>0.1007<br>52 | 0.51773<br>0.0001<br>52 | 0.63991<br>0.0001<br>52 |
| ZINC | -0.16083<br>0.2547<br>52 | -0.58759<br>0.0001<br>52 | 0.31218<br>0.0243<br>52 | -0.13341<br>0.3457<br>52 | 0.13528<br>0.3390<br>52 | 0.22443<br>0.1097<br>52 | 0.56949<br>0.0001<br>52 | 1.00000<br>0.0<br>52 | 0.01836<br>0.9139<br>52 | 0.92440<br>0.0001<br>52 | 0.72827<br>0.0001<br>52 |
| ZINC_EX_ | 0.22911<br>0.1023<br>52 | -0.06925<br>0.7288<br>52 | 0.24386<br>0.0815<br>52 | -0.11875<br>0.4018<br>52 | 0.27561<br>0.0481<br>52 | -0.02334<br>0.8696<br>52 | -0.23015<br>0.1007<br>52 | 0.01836<br>0.9139<br>52 | 1.00000<br>0.0<br>52 | 0.02111<br>0.8819<br>52 | 0.14751<br>0.2967<br>52 |
| ZINC_EXT | -0.21389<br>0.1279<br>52 | -0.53677<br>0.0001<br>52 | 0.28980<br>0.0372<br>52 | -0.15265<br>0.2800<br>52 | 0.10094<br>0.4765<br>52 | 0.14331<br>0.3108<br>52 | 0.51773<br>0.0001<br>52 | 0.92440<br>0.0001<br>52 | 0.02111<br>0.8819<br>52 | 1.00000<br>0.0<br>52 | 0.74653<br>0.0001<br>52 |
| TOC | -0.25693<br>0.0660<br>52 | -0.69851<br>0.0001<br>52 | 0.57487<br>0.0001<br>52 | -0.35118<br>0.0107<br>52 | 0.26657<br>0.0561<br>52 | 0.18995<br>0.1774<br>52 | 0.63991<br>0.0001<br>52 | 0.72827<br>0.0001<br>52 | 0.14751<br>0.2967<br>52 | 0.74653<br>0.0001<br>52 | 1.00000<br>0.0<br>52 |



R0063960

## Section 5-3. Principal Component Analysis of Sediment Physical and Chemistry Data

Data distribution patterns among the physical and chemical data were analyzed by principal component analysis (PCA). This section presents detailed results of the PCA for all the physical and chemical parameters for West Basin and reference stations. The data were evaluated as the statistical value: the result or one half of the PQL if the analyte was not detected. The results of PCA are shown as factors, representing similar analyte patterns, which were assigned scores for each station. The factor scores were further analyzed by multiple regression (see next section).

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis
Data Used in PCA



| STATION | DDD | DDE | PCBN1260 | BENZO_A_ | BENZO_B_ | BENZO_GH | BENZO_K_ | CHRYSENE | FLUORANT | INDENO_1 | PYRENE | TSULFIDE | ACID_VOL | ECADMIUM | ECOPPER_ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12.70 | 33.667 | 170 | 122.33 | 138.00 | 65.000 | 142.33 | 93 | 28.00 | 70.667 | 42.5 | 16.77 | 65.33 | 0.39000 | 76.333 |
| 10 | 20.00 | 88.000 | 540 | 540.00 | 500.00 | 340.000 | 660.00 | 390 | 160.00 | 360.000 | 340.0 | 270.00 | 590.00 | 0.35000 | 140.000 |
| 11 | 0.45 | 57.000 | 310 | 310.00 | 370.00 | 200.000 | 370.00 | 150 | 92.00 | 200.000 | 110.0 | 35.00 | 81.00 | 0.25000 | 99.000 |
| 12 | 7.10 | 36.000 | 110 | 110.00 | 150.00 | 91.000 | 180.00 | . | 55.00 | 91.000 | 55.0 | 400.00 | 360.00 | 0.25000 | 67.000 |
| 13 | 16.00 | 50.000 | 370 | 160.00 | 200.00 | 93.000 | 160.00 | 10 | 10.00 | 10.000 | 10.0 | 5.80 | 19.00 | 0.25000 | 120.000 |
| 14 | 0.40 | 17.000 | 63 | 95.00 | 130.00 | 63.000 | 140.00 | 63 | 10.00 | 63.000 | 10.0 | 24.00 | 33.00 | 0.25000 | 41.000 |
| 15 | 20.00 | 43.000 | 120 | 54.00 | 72.00 | 10.000 | 72.00 | 10 | 10.00 | 10.000 | 10.0 | 7.20 | 200.00 | 0.72000 | 81.000 |
| 16 | 42.00 | 60.000 | 150 | 10.00 | 10.00 | 10.000 | 10.00 | 10 | 10.00 | 10.000 | 10.0 | 190.00 | 180.00 | 0.60000 | 80.000 |
| 17 | 33.00 | 180.000 | 880 | 500.00 | 680.00 | 380.000 | 480.00 | 380 | 150.00 | 400.000 | 180.0 | 140.00 | 110.00 | 1.30000 | 330.000 |
| 18 | 7.90 | 57.000 | 200 | 240.00 | 260.00 | 220.000 | 320.00 | 220 | 120.00 | 220.000 | 120.0 | 110.00 | 110.00 | 0.30000 | 77.000 |
| 19 | 4.50 | 38.000 | 56 | 87.00 | 45.00 | 45.000 | 120.00 | 45 | 45.00 | 45.000 | 45.0 | 33.00 | 91.00 | 0.25000 | 56.000 |
| 2 | 6.90 | 46.000 | 290 | 64.00 | 96.00 | 48.000 | 80.00 | 32 | 16.00 | 32.000 | 32.0 | 18.00 | 51.00 | 0.48000 | 98.000 |
| 20 | 4.90 | 37.000 | 75 | 100.00 | 100.00 | 40.000 | 85.00 | 85 | 40.00 | 40.000 | 40.0 | 160.00 | 110.00 | 0.25000 | 49.000 |
| 21 | 11.00 | 92.000 | 230 | 440.00 | 510.00 | 300.000 | 550.00 | 550 | 320.00 | 300.000 | 350.0 | 60.00 | 150.00 | 0.92000 | 140.000 |
| 22 | 16.00 | 130.000 | 410 | 300.00 | 410.00 | 150.000 | 300.00 | 280 | 76.00 | 150.000 | 150.0 | 140.00 | 190.00 | 0.76000 | 43.000 |
| 23 | 7.00 | 61.000 | 160 | 180.00 | 220.00 | 140.000 | 290.00 | 230 | 130.00 | 140.000 | 140.0 | 87.00 | 150.00 | 0.25000 | 69.000 |
| 24 | 0.35 | 6.000 | 5 | 5.00 | 5.00 | 5.000 | 5.00 | 5 | 5.00 | 5.000 | 5.0 | 11.00 | 6.90 | 0.20000 | 14.000 |
| 25 | 0.35 | 18.000 | 5 | 35.00 | 35.00 | 35.000 | 35.00 | 35 | 35.00 | 35.000 | 35.0 | 54.00 | 65.00 | 0.20000 | 17.000 |
| 26 | 9.80 | 65.000 | 130 | 96.00 | 130.00 | 98.000 | 120.00 | 98 | 38.00 | 58.000 | 38.0 | 98.00 | 110.00 | 0.30000 | 69.000 |
| 27 | 12.00 | 100.000 | 430 | 48.00 | 48.00 | . | 72.00 | 48 | 24.00 | . | 48.0 | 240.00 | 180.00 | 0.35000 | 180.000 |
| 28 | 7.00 | 54.000 | 140 | 36.00 | 36.00 | 10.000 | 36.00 | 36 | 18.00 | 10.000 | 18.0 | 50.00 | 70.00 | 0.72000 | 59.000 |
| 29 | 0.45 | 43.000 | 10 | 19.00 | 19.00 | 10.000 | 37.00 | 10 | 10.00 | 10.000 | 10.0 | 150.00 | 170.00 | 0.93000 | 43.000 |
| 3 | 7.10 | 67.000 | 240 | 200.00 | 240.00 | 120.000 | 310.00 | 79 | . | 120.000 | . | 31.00 | 96.00 | 0.59000 | 110.000 |
| 30 | 5.90 | 33.000 | 51 | 33.00 | 33.00 | 10.000 | 33.00 | 33 | 16.00 | 10.000 | 33.0 | 44.00 | 51.00 | 0.25000 | 33.000 |
| 31 | 3.80 | 31.000 | 10 | 10.00 | 10.00 | 10.000 | 10.00 | 10 | 10.00 | 10.000 | 10.0 | 19.00 | 19.00 | 0.25000 | 24.000 |

| STATION | ELEAD_E | EMERCURY | EZINC_E | TTOTALC | TARSENIC | TBERYLLI | TCADMIUM | TCHROMIU | TCOPPER_ | TLEAD_T | TMERCURY | TNICKEL_ | TSILVER_ | TZINC_T | PINES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30.667 | 0.06633 | 110.667 | 0.79167 | 9.6667 | 0.44333 | 0.25000 | 33.333 | 113.333 | 39.333 | 0.62333 | 21.0 | 1.9667 | 153.333 | 53.4090 |
| 10 | 70.000 | 0.04500 | 200.000 | 1.75600 | 12.0000 | 0.68000 | 0.32000 | 54.000 | 210.000 | 77.000 | 0.57000 | 32.0 | 3.4000 | 250.000 | 82.4140 |
| 11 | 53.000 | 0.07300 | 140.000 | 1.30900 | 12.0000 | 0.55000 | 0.35000 | 42.000 | 120.000 | 62.000 | 0.70000 | 22.0 | 2.2000 | 200.000 | 69.6450 |
| 12 | 35.000 | 0.03600 | 110.000 | 0.63100 | 8.0000 | 0.55000 | 0.27000 | 33.000 | 69.000 | 38.000 | 0.38000 | 22.0 | 2.0000 | 130.000 | 61.8610 |
| 13 | 44.000 | 0.07800 | 120.000 | 0.99800 | 7.8000 | 0.47000 | 0.20000 | 39.000 | 150.000 | 58.000 | 0.68000 | 22.0 | 2.3000 | 160.000 | 98.7730 |
| 14 | 21.000 | 0.06300 | 65.000 | 0.45600 | 8.0000 | 0.32000 | 0.14000 | 25.000 | 47.000 | 21.000 | 0.21000 | 17.0 | 1.6000 | 85.000 | 41.5670 |
| 15 | 45.000 | 0.01600 | 130.000 | 0.92100 | 7.8000 | 0.54000 | 0.40000 | 42.000 | 88.000 | 45.000 | 0.51000 | 25.0 | 2.5000 | 160.000 | 83.8360 |
| 16 | 44.000 | 0.06000 | 130.000 | 0.88500 | 9.8000 | 0.60000 | 0.34000 | 42.000 | 92.000 | 46.000 | 0.54000 | 26.0 | 2.6000 | 160.000 | 77.8140 |
| 17 | 190.000 | 0.02500 | 580.000 | 1.82400 | 19.0000 | 0.75000 | 1.00000 | 88.000 | 930.000 | 180.000 | 1.80000 | 35.0 | 3.8000 | 480.000 | 86.7480 |
| 18 | 47.000 | 0.02000 | 120.000 | 0.41000 | 11.0000 | 0.61000 | 0.51000 | 43.000 | 110.000 | 49.000 | 0.57000 | 26.0 | 2.4000 | 170.000 | 83.2680 |
| 19 | 31.000 | 0.01000 | 86.000 | 0.60000 | 10.0000 | 0.52000 | 0.37000 | 37.000 | 68.000 | 37.000 | 0.31000 | 23.0 | 2.1000 | 130.000 | 67.5370 |
| 2 | 37.000 | 0.04800 | 130.000 | 1.08500 | 7.2000 | 0.32000 | 0.46000 | 32.000 | 130.000 | 45.000 | 0.99000 | 16.0 | 2.6000 | 160.000 | 91.8620 |
| 20 | 29.000 | 0.01000 | 78.000 | 0.69500 | 8.5000 | 0.68000 | 0.42000 | 42.000 | 76.000 | 41.000 | 0.31000 | 28.0 | 2.9000 | 150.000 | 79.5140 |
| 21 | 65.000 | 0.01000 | 200.000 | 1.47800 | 16.0000 | 0.69000 | 1.00000 | 67.000 | 220.000 | 78.000 | 0.74000 | 37.0 | 3.0000 | 300.000 | 92.4220 |
| 22 | 71.000 | 0.01500 | 180.000 | 0.71200 | 17.0000 | 1.00000 | 0.91000 | 71.000 | 210.000 | 89.000 | 0.48000 | 41.0 | 3.5000 | 300.000 | 93.1350 |
| 23 | 38.000 | 0.01000 | 110.000 | 0.72300 | 8.5000 | 0.54000 | 0.36000 | 40.000 | 81.000 | 38.000 | 0.31000 | 22.0 | 2.2000 | 140.000 | 70.3310 |
| 24 | 2.600 | 0.00500 | 20.000 | 0.06900 | 4.6000 | 0.13000 | 0.07800 | 9.800 | 13.000 | 5.200 | 0.01500 | 7.8 | 0.3500 | 33.000 | 3.8790 |
| 25 | 11.000 | 0.00500 | 31.000 | 0.56100 | 1.6000 | 0.28000 | 0.26000 | 21.000 | 30.000 | 16.000 | 0.11000 | 16.0 | 1.3000 | 73.000 | 38.1690 |
| 26 | 44.000 | 0.01000 | 120.000 | 1.31600 | 13.0000 | 0.77000 | 0.46000 | 48.000 | 120.000 | 56.000 | 0.48000 | 31.0 | 19.0000 | 190.000 | 84.2030 |
| 27 | 65.000 | 0.01000 | 190.000 | 1.69200 | 13.0000 | 0.72000 | 0.48000 | 65.000 | 220.000 | 75.000 | 0.87000 | 34.0 | 3.4000 | 240.000 | 90.8180 |
| 28 | 36.000 | 0.01000 | 100.000 | 0.71100 | 12.0000 | 0.84000 | 0.41000 | 39.000 | 110.000 | 43.000 | 0.34000 | 37.0 | 8.2000 | 160.000 | 67.8360 |
| 29 | 32.000 | 0.03700 | 100.000 | 0.63900 | 4.8000 | 0.56000 | 0.33000 | 33.000 | 92.000 | 30.000 | 0.13000 | 24.0 | 1.9000 | 110.000 | 70.4630 |
| 3 | 47.000 | 0.05900 | 150.000 | 1.17900 | 12.0000 | 0.59000 | 0.45000 | 39.000 | 130.000 | 51.000 | 0.85000 | 24.0 | 2.6000 | 170.000 | 71.1970 |
| 30 | 23.000 | 0.01000 | 67.000 | 0.52000 | 7.9000 | 0.49000 | 0.30000 | 33.000 | 92.000 | 31.000 | 0.23000 | 21.0 | 2.0000 | 120.000 | 73.2690 |
| 31 | 16.000 | 0.01000 | 41.000 | 0.48700 | 5.2000 | 0.31000 | 0.14000 | 22.000 | 30.000 | 19.000 | 0.13000 | 16.0 | 1.4000 | 68.000 | 46.9430 |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis
Data Used in PCA

| STATION | DDD | DDE | PCBN1260 | BENZO_A_ | BENZO_B_ | BENZO_GH | BENZO_K_ | CHRYSENE | FLUORANT | INDENO_1 | PYRENE | TSULFIDE | ACID_VOL | ECADMIUM | ECOPPER_ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 3.00 | 27.000 | 10 | 10.00 | 10.00 | 10.000 | 10.00 | 10 | 10.00 | 10.000 | 10.0 | 41.00 | 42.00 | 0.25000 | 17.000 |
| 33 | 4.80 | 41.000 | 31 | 10.00 | 10.00 | 10.000 | 10.00 | 10 | 10.00 | 10.000 | 10.0 | 31.00 | 31.00 | 0.25000 | 29.000 |
| 4 | 10.00 | 72.000 | 250 | 220.00 | 320.00 | 10.000 | 250.00 | 10 | 10.00 | 10.000 | 10.0 | 1.10 | 4.30 | 0.25000 | 95.000 |
| 40010.1 | 10.00 | 130.000 | 10 | 150.00 | 130.00 | 66.000 | 200.00 | 88 | 150.00 | 66.000 | 130.0 | 15.00 | 7.90 | 2.40000 | 70.000 |
| 40010.2 | 20.00 | 190.000 | 10 | 43.00 | 43.00 | 21.000 | 43.00 | 43 | 64.00 | 21.000 | 64.0 | 41.00 | 56.00 | 2.60000 | 82.000 |
| 40010.3 | 15.00 | 180.000 | 10 | 123.33 | 203.33 | 58.667 | 186.67 | 81 | 167.67 | 44.667 | 151.0 | 23.93 | 55.83 | 1.93333 | 74.000 |
| 40018.1 | 8.90 | 95.000 | 10 | 19.00 | 19.00 | 10.000 | 19.00 | 19 | 19.00 | 10.000 | 38.0 | 380.00 | 470.00 | 0.76000 | 30.000 |
| 40018.2 | 9.80 | 98.000 | 10 | 20.00 | 20.00 | 10.000 | 20.00 | 20 | 20.00 | 10.000 | 20.0 | 120.00 | 110.00 | 0.98000 | 29.000 |
| 40018.3 | 19.00 | 71.000 | 10 | 10.00 | 10.00 | 10.000 | 10.00 | 10 | 10.00 | 10.000 | 24.0 | 260.00 | 260.00 | 1.40000 | 38.000 |
| 40032.1 | 5.30 | 70.000 | 5 | 5.00 | 5.00 | 5.000 | 5.00 | 5 | 5.00 | 5.000 | 5.0 | 17.00 | 16.00 | 0.20000 | 11.000 |
| 41 | 20.00 | 110.000 | 220 | 340.00 | 440.00 | 160.000 | 400.00 | 220 | 140.00 | 160.000 | 140.0 | 120.00 | 220.00 | 0.80000 | 120.000 |
| 42 | 1.00 | 110.000 | 15 | 100.00 | 100.00 | 100.000 | 100.00 | 100 | 100.00 | 100.000 | 100.0 | 3600.00 | 2600.00 | 0.91000 | 91.000 |
| 43 | . | 13.000 | . | 980.00 | 1300.00 | 180.000 | 1100.00 | 1700 | 3600.00 | 220.000 | 2800.0 | 4600.00 | 4000.00 | 1.10000 | 220.000 |
| 44 | 0.50 | 99.000 | 15 | 230.00 | 320.00 | 200.000 | 260.00 | 200 | 150.00 | 200.000 | 180.0 | 3800.00 | 2600.00 | 1.20000 | 120.000 |
| 45 | 1.00 | 110.000 | 15 | 240.00 | 270.00 | 100.000 | 240.00 | 170 | 100.00 | 100.000 | 100.0 | 3800.00 | 2200.00 | 1.70000 | 130.000 |
| 46 | 0.50 | 92.000 | 15 | 50.00 | 50.00 | 50.000 | 50.00 | 50 | 50.00 | 50.000 | 50.0 | 4100.00 | 2400.00 | 1.10000 | 87.000 |
| 47 | 15.00 | 110.000 | 340 | 290.00 | 330.00 | 110.000 | 360.00 | 330 | 250.00 | 110.000 | 250.0 | 360.00 | 310.00 | 0.77000 | 180.000 |
| 48 | 36.00 | 110.000 | 15 | 1500.00 | 1800.00 | 440.000 | 1300.00 | 2100 | 4400.00 | 550.000 | 3300.0 | 3900.00 | 3300.00 | 1.10000 | 300.000 |
| 49 | 13.00 | 87.000 | 390 | 1100.00 | 1400.00 | 340.000 | 960.00 | 820 | 520.00 | 360.000 | 2000.0 | 3000.00 | 3000.00 | 1.10000 | 220.000 |
| 5 | 1.90 | 13.000 | 67 | 100.00 | 150.00 | 75.000 | 180.00 | 100 | . | 75.000 | . | 14.00 | 27.00 | 0.20000 | 43.000 |
| 50 | 0.50 | 70.000 | 15 | 870.00 | 1200.00 | 220.000 | 870.00 | 1300 | 2000.00 | 240.000 | 1800.0 | 4900.00 | 3800.00 | 1.10000 | 140.000 |
| 51 | 1.00 | 91.000 | 20 | 910.00 | 820.00 | 140.000 | 620.00 | 580 | 250.00 | 180.000 | 870.0 | 5400.00 | 3600.00 | 0.50000 | 170.000 |
| 52 | 0.50 | 94.000 | 15 | 430.00 | 540.00 | 140.000 | 510.00 | 260 | 86.00 | 140.000 | 490.0 | 4300.00 | 3700.00 | 1.10000 | 170.000 |
| 6 | 0.40 | 21.000 | 110 | 120.00 | 150.00 | 46.000 | 180.00 | 91 | 30.00 | 46.000 | 30.0 | 47.00 | 120.00 | 0.61000 | 50.000 |
| 7 | 9.20 | 31.000 | 150 | 180.00 | 180.00 | 130.000 | 260.00 | 150 | 81.00 | 130.000 | 65.0 | 18.00 | 44.00 | 0.25000 | 68.000 |

| STATION | ELEAD_E | EMERCURY | EZINC_E | TTOTALO | TARSENIC | TBERYLLI | TCADMIUM | TCHROMIU | TCOPPER_ | TLEAD_T | TMERCURY | TNICKEL_ | TSILVER_ | TZINC_T | FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | 11.000 | 0.01000 | 31.000 | 0.43400 | 5.0000 | 0.31000 | 0.13000 | 22.000 | 27.000 | 17.000 | 0.11000 | 16.0 | 1.4000 | 63.000 | 23.8680 |
| 33 | 21.000 | 0.01000 | 40.000 | 0.58500 | 8.8000 | 0.69000 | 0.24000 | 35.000 | 50.000 | 28.000 | 0.26000 | 26.0 | 2.2000 | 110.000 | 75.5080 |
| 4 | 45.000 | 0.11000 | 130.000 | 1.31400 | 12.0000 | 0.54000 | 0.41000 | 39.000 | 120.000 | 52.000 | 0.72000 | 27.0 | 2.7000 | 170.000 | 71.3580 |
| 40010.1 | 35.000 | 0.04400 | 190.000 | 1.91267 | 14.0000 | 0.44000 | 2.40000 | 53.000 | 130.000 | 42.000 | 0.99000 | 37.0 | 2.2000 | 240.000 | 87.2773 |
| 40010.2 | 34.000 | 0.01000 | 210.000 | 1.95500 | 9.0000 | 0.43000 | 1.50000 | 45.000 | 130.000 | 36.000 | 0.43000 | 32.0 | 2.6000 | 240.000 | 91.6200 |
| 40010.3 | 33.333 | 0.01667 | 176.667 | 1.97233 | 11.7000 | 0.42667 | 1.63333 | 50.333 | 143.333 | 41.000 | 0.48000 | 34.0 | 2.1333 | 226.667 | 84.3067 |
| 40018.1 | 53.000 | 0.01000 | 89.000 | 0.91500 | 7.0000 | 0.38000 | 0.46000 | 27.000 | 30.000 | 44.000 | 0.19000 | 17.0 | 1.5000 | 93.000 | 68.3580 |
| 40018.2 | 51.000 | 0.02000 | 88.000 | 0.99000 | 6.9000 | 0.39000 | 0.67000 | 28.000 | 33.000 | 43.000 | 0.20000 | 18.0 | 1.6000 | 100.000 | 72.6960 |
| 40018.3 | 69.000 | 0.01000 | 120.000 | 0.95867 | 6.9000 | 0.71000 | 0.78000 | 38.000 | 43.000 | 61.000 | 0.12000 | 24.0 | 2.1000 | 130.000 | 78.6563 |
| 40032.1 | 12.000 | 0.00500 | 29.000 | 0.43000 | 3.8000 | 0.05000 | 0.25000 | 15.000 | 13.000 | 11.000 | 0.06600 | 8.0 | 0.8000 | 43.000 | 18.2870 |
| 41 | 72.000 | 0.06000 | 200.000 | 1.07200 | 11.0000 | 0.60000 | 0.72000 | 44.000 | 120.000 | 74.000 | 1.10000 | 20.0 | 2.4000 | 220.000 | 76.6200 |
| 42 | 52.000 | 0.06100 | 160.000 | 1.62100 | 8.5000 | 0.61000 | 0.49000 | 49.000 | 120.000 | 58.000 | 0.27000 | 33.0 | 2.1000 | 190.000 | 71.9960 |
| 43 | 76.000 | 0.02000 | 280.000 | 2.15000 | 11.0000 | 0.73000 | 0.95000 | 58.000 | 260.000 | 80.000 | 0.62000 | 29.0 | 2.5000 | 300.000 | 93.9300 |
| 44 | 70.000 | 0.08800 | 200.000 | 1.73000 | 10.0000 | 0.88000 | 0.64000 | 56.000 | 160.000 | 79.000 | 0.50000 | 32.0 | 2.6000 | 250.000 | 54.3490 |
| 45 | 72.000 | 0.14000 | 230.000 | 1.44300 | 11.0000 | 0.68000 | 0.75000 | 44.000 | 130.000 | 65.000 | 0.38000 | 24.0 | 2.4000 | 210.000 | 70.5290 |
| 46 | 49.000 | 0.08200 | 150.000 | 1.87800 | 8.4000 | 0.54000 | 0.68000 | 46.000 | 120.000 | 60.000 | 0.46000 | 30.0 | 2.2000 | 200.000 | 71.7610 |
| 47 | 67.000 | 0.05700 | 220.000 | 1.27500 | 7.7000 | 0.38000 | 0.61000 | 34.000 | 180.000 | 54.000 | 0.88000 | 19.0 | 1.5000 | 210.000 | 50.1780 |
| 48 | 120.000 | 0.11000 | 410.000 | 2.32300 | 15.0000 | 0.55000 | 0.63000 | 330.000 | 330.000 | 94.000 | 0.52000 | 28.0 | 2.2000 | 390.000 | 70.9900 |
| 49 | 75.000 | 0.04600 | 270.000 | 1.60100 | 13.0000 | 0.68000 | 0.55000 | 59.000 | 230.000 | 77.000 | 0.71000 | 30.0 | 2.7000 | 300.000 | 75.9190 |
| 5 | 10.000 | 0.03000 | 66.000 | 0.41800 | 5.4000 | 0.30000 | 0.15000 | 22.000 | 54.000 | 21.000 | 0.22000 | 13.0 | 1.3000 | 94.000 | 45.1530 |
| 50 | 89.000 | 0.05400 | 410.000 | 1.56400 | 11.0000 | 0.27000 | 1.30000 | 43.000 | 170.000 | 84.000 | 0.33000 | 35.0 | 4.1000 | 620.000 | 38.4310 |
| 51 | 65.000 | 0.03500 | 220.000 | 2.07800 | 13.0000 | 0.72000 | 1.50000 | 51.000 | 210.000 | 72.000 | 0.40000 | 29.0 | 2.5000 | 260.000 | 85.0590 |
| 52 | 69.000 | 0.03000 | 240.000 | 2.13900 | 9.7000 | 0.86000 | 0.94000 | 63.000 | 260.000 | 89.000 | 0.49000 | 34.0 | 2.9000 | 340.000 | 81.7430 |
| 6 | 23.000 | 0.04600 | 90.000 | 0.61000 | 4.6000 | 0.30000 | 0.24000 | 27.000 | 67.000 | 26.000 | 0.23000 | 18.0 | 1.5000 | 110.000 | 51.0530 |
| 7 | 37.000 | 0.06500 | 100.000 | 0.67100 | 6.8000 | 0.49000 | 0.16000 | 29.000 | 73.000 | 37.000 | 0.41000 | 16.0 | 2.3000 | 110.000 | 42.0770 |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis
Data Used in PCA

| STATION | DDD | DDE | PCBN1260 | BENZO_A_ | BENZO_B_ | BENZO_GH | BENZO_K_ | CHRYSENE | FLUORANT | INDENO_1 | PYRENE | TSULFIDE | ACID_VOL | ECADMIUM | ECOPPER_ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 4.10 | 25.000 | 97 | 82.00 | 98.00 | 49.000 | 130.00 | 69 | 33.00 | 49.000 | 33.0 | 98.00 | 100.00 | 0.49000 | 47.000 |
| 9 | 8.40 | 46.000 | 150 | 53.00 | 53.00 | 36.000 | 71.00 | 53 | 18.00 | 36.000 | 18.0 | 29.00 | 87.00 | 0.71000 | 93.000 |

| STATION | ELEAD_E | ENERCURY | EZINC_E | TTOTALO | TARSENIC | TBERYLLI | TCADMIUM | TCHROMIU | TCOPPER_ | TLEAD_T | TMERCURY | TNICKEL_ | TSILVER_ | TZINC_T | PINES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 69.000 | 0.06500 | 100.000 | 0.65200 | 9.2000 | 0.33000 | 0.21000 | 26.000 | 84.000 | 43.000 | 0.34000 | 16.0 | 1.3000 | 110.000 | 46.2850 |
| 9 | 46.000 | 0.07100 | 140.000 | 0.91600 | 9.4000 | 0.93000 | 0.36000 | 39.000 | 96.000 | 48.000 | 0.59000 | 25.0 | 2.3000 | 160.000 | 65.4220 |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis

Means and Standard Deviations from 47 observations

| | ACID_VOL | BENZO_A_ | BENZO_B_ | BENZO_GH | BENZO_K_ | CHRYSENE | DDD | DDE | ECADMIUM | ECOPPER_ |
|---|---|---|---|---|---|---|---|---|---|---|
| Mean | 675.665248 | 215.780142 | 262.347518 | 100.29078 | 236.595745 | 200.085106 | 9.51702128 | 72.7588652 | 0.73687943 | 90.1985816 |
| Std Dev | 1186.38939 | 296.372719 | 370.643539 | 110.760756 | 278.651549 | 366.191375 | 9.64168529 | 43.4076677 | 0.57052963 | 68.3027029 |

| | ELEAD_E | EMERCURY | EZINC_E | FINES | FLUORANT | INDENO_1 | PCBN1260 | PYRENE | TARSENIC | TBERYLLI |
|---|---|---|---|---|---|---|---|---|---|---|
| Mean | 49.3957447 | 0.04068085 | 151.113475 | 65.5608582 | 213.248227 | 102.900709 | 134.319149 | 247.37234 | 9.35673759 | 0.52297872 |
| Std Dev | 31.16581 | 0.03278225 | 105.562978 | 20.5632987 | 690.926083 | 123.657465 | 173.731065 | 604.175107 | 3.64248226 | 0.19205252 |

| | TCADMIUM | TCHROMIU | TCOPPER_ | TLEAD_T | TMERCURY | TNICKEL_ | TSILVER_ | TSULFIDE | TTOTALO | TZINC_T |
|---|---|---|---|---|---|---|---|---|---|---|
| Mean | 0.58428369 | 46.7120567 | 121.099291 | 51.8624113 | 0.4500922 | 24.7404255 | 2.63510638 | 853.548936 | 1.09762411 | 188.234043 |
| Std Dev | 0.46186655 | 44.6829002 | 92.6274788 | 28.8989223 | 0.30404609 | 7.64379998 | 2.57455553 | 1621.24062 | 0.57368013 | 110.682793 |

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VOL 18

Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis



Initial Factor Method: Principal Components

Prior Communality Estimates: ONE

Eigenvalues of the Correlation Matrix: Total = 30 Average = 1

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Eigenvalue | 15.6061 | 4.2240 | 2.8674 | 1.6048 | 1.4690 | 0.9902 | 0.7529 | 0.5521 | 0.3645 | 0.3207 |
| Difference | 11.3822 | 1.3566 | 1.2626 | 0.1358 | 0.4788 | 0.2373 | 0.2008 | 0.1875 | 0.0438 | 0.0712 |
| Proportion | 0.5202 | 0.1408 | 0.0956 | 0.0535 | 0.0490 | 0.0330 | 0.0251 | 0.0184 | 0.0122 | 0.0107 |
| Cumulative | 0.5202 | 0.6610 | 0.7566 | 0.8101 | 0.8590 | 0.8920 | 0.9171 | 0.9355 | 0.9477 | 0.9584 |
| | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Eigenvalue | 0.2495 | 0.2020 | 0.1706 | 0.1616 | 0.1367 | 0.0915 | 0.0795 | 0.0517 | 0.0393 | 0.0262 |
| Difference | 0.0475 | 0.0316 | 0.0088 | 0.0069 | 0.0432 | 0.0120 | 0.0279 | 0.0124 | 0.0131 | 0.0023 |
| Proportion | 0.0083 | 0.0067 | 0.0057 | 0.0047 | 0.0065 | 0.0030 | 0.0027 | 0.0017 | 0.0013 | 0.0009 |
| Cumulative | 0.9667 | 0.9734 | 0.9791 | 0.9838 | 0.9883 | 0.9914 | 0.9940 | 0.9958 | 0.9971 | 0.9979 |
| | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| Eigenvalue | 0.0238 | 0.0118 | 0.0093 | 0.0071 | 0.0040 | 0.0021 | 0.0013 | 0.0013 | 0.0009 | 0.0004 |
| Difference | 0.0120 | 0.0025 | 0.0022 | 0.0031 | 0.0019 | 0.0008 | 0.0000 | 0.0003 | 0.0006 | |
| Proportion | 0.0008 | 0.0004 | 0.0003 | 0.0002 | 0.0001 | 0.0001 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Cumulative | 0.9987 | 0.9991 | 0.9994 | 0.9997 | 0.9998 | 0.9999 | 0.9999 | 1.0000 | 1.0000 | 1.0000 |

30 factors will be retained by the NFACTOR criterion.

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis



Initial Factor Method: Principal Components

Factor Pattern

| | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | 0.62332 | -0.41601 | 0.46374 | 0.35208 | -0.21005 | 0.00636 | -0.02342 | -0.16518 | 0.04226 | 0.13237 | ACID VOLATILE SULFIDE |
| BENZO_A_ | 0.87960 | -0.40953 | -0.10066 | 0.00269 | 0.08807 | -0.07301 | -0.05668 | 0.10348 | 0.02804 | 0.09182 | BENZO(A)PYRENE |
| BENZO_B_ | 0.88062 | -0.40118 | -0.08688 | 0.00735 | 0.06480 | -0.09789 | -0.01940 | 0.08547 | -0.01789 | 0.10474 | BENZO(B)FLUORANTHENE |
| BENZO_GH | 0.87015 | -0.12270 | -0.29714 | 0.07274 | -0.00004 | -0.14245 | -0.16886 | 0.10076 | 0.14218 | -0.13115 | BENZO(GHI)PERYLENE |
| BENZO_K_ | 0.88029 | -0.35966 | -0.10220 | 0.04985 | 0.05872 | -0.12520 | -0.08665 | 0.16751 | 0.04868 | 0.09166 | BENZO(K)FLUORANTHENE |
| CHRYSENE | 0.81441 | -0.52402 | -0.02256 | -0.09492 | 0.18947 | -0.04450 | 0.00296 | 0.01044 | -0.05903 | -0.01462 | CHRYSENE |
| DDD | 0.46631 | 0.27311 | -0.34660 | -0.49188 | 0.25622 | 0.32349 | 0.04333 | -0.21666 | -0.01462 | 0.28572 | 4,4'-DDD |
| DDE | 0.62399 | 0.48463 | 0.34360 | -0.33675 | -0.07920 | -0.03318 | -0.00861 | -0.04948 | 0.20287 | -0.06283 | 4,4'-DDE |
| ECADMIUM | 0.43274 | 0.33553 | 0.62514 | -0.43270 | -0.11120 | 0.03025 | 0.02851 | 0.02635 | 0.00711 | -0.07527 | CADMIUM, EXTRACTABLE |
| ECOPPER_ | 0.92386 | -0.01974 | -0.17962 | -0.01657 | -0.21017 | 0.03473 | 0.07338 | -0.05290 | 0.09828 | 0.07805 | COPPER, EXTRACTABLE |
| ELEAD_E | 0.88108 | 0.17812 | -0.19538 | -0.01199 | -0.18748 | 0.02831 | 0.05488 | -0.28474 | -0.08076 | -0.13262 | LEAD, EXTRACTABLE |
| EMERCURY | 0.35837 | -0.22579 | 0.00426 | 0.09498 | -0.46635 | 0.66402 | 0.12368 | 0.34226 | -0.08656 | -0.03955 | MERCURY, EXTRACTABLE |
| EZINC_E | 0.93357 | 0.10602 | -0.01794 | -0.10730 | -0.19607 | -0.08846 | 0.14405 | -0.10657 | -0.10718 | -0.02972 | ZINC, EXTRACTABLE |
| FINES | 0.48183 | 0.62222 | 0.20031 | 0.09575 | 0.34482 | 0.20701 | -0.25993 | 0.04225 | 0.01866 | 0.12347 | FINES |
| FLUORANT | 0.65895 | -0.60487 | 0.02765 | -0.24289 | 0.26391 | 0.12425 | 0.11371 | -0.03663 | -0.11659 | -0.11739 | FLUORANTHENE |
| INDENO_1 | 0.88268 | -0.18796 | -0.28834 | 0.04501 | 0.04656 | -0.11768 | -0.16141 | 0.06644 | 0.14543 | -0.13849 | INDENO(1,2,3-CD)PYRENE |
| PCBN1260 | 0.43319 | 0.43277 | -0.71288 | 0.04308 | -0.17702 | -0.13414 | -0.03276 | 0.08033 | 0.03244 | 0.07618 | PCB-1260 |
| PYRENE | 0.74967 | -0.59141 | 0.05479 | -0.08994 | 0.19727 | -0.03148 | 0.00891 | 0.00419 | -0.01335 | 0.12632 | PYRENE |
| TARSENIC | 0.79438 | 0.40870 | -0.05448 | 0.10585 | 0.21093 | 0.00298 | -0.03511 | 0.20152 | -0.12456 | -0.05536 | ARSENIC, TOTAL |
| TBERYLLI | 0.50907 | 0.46038 | 0.05699 | 0.52354 | 0.21681 | 0.24729 | -0.28362 | -0.12267 | -0.01848 | -0.02344 | BERYLLIUM, TOTAL |
| TCADMIUM | 0.48974 | 0.36233 | 0.61686 | -0.29990 | 0.00838 | -0.24868 | 0.00985 | 0.10817 | -0.07201 | 0.03010 | CADMIUM, TOTAL |
| TCHROMIU | 0.73462 | -0.33059 | -0.04062 | -0.21638 | 0.32981 | 0.32381 | -0.02946 | -0.09739 | 0.09469 | -0.21368 | CHROMIUM, TOTAL |
| TCOPPER_ | 0.90461 | 0.23338 | -0.18288 | 0.01266 | -0.12465 | -0.07500 | 0.02738 | -0.09248 | 0.04245 | -0.04931 | COPPER, TOTAL |
| TLEAD_T | 0.87041 | 0.30898 | -0.16618 | 0.13890 | -0.16864 | -0.02142 | 0.01635 | -0.20066 | -0.08223 | -0.08365 | LEAD, TOTAL |
| TMERCURY | 0.63376 | 0.48806 | -0.42814 | -0.07462 | -0.26803 | 0.04368 | 0.10329 | 0.12807 | 0.01290 | 0.06897 | MERCURY, TOTAL |
| TNICKEL_ | 0.67901 | 0.45639 | 0.33910 | 0.21266 | 0.32794 | -0.02933 | -0.06261 | 0.10416 | -0.16739 | -0.00861 | NICKEL, TOTAL |
| TSILVER_ | 0.17668 | 0.28708 | -0.01556 | 0.43306 | 0.47971 | -0.01456 | 0.65965 | 0.03613 | 0.14345 | -0.01768 | SILVER, TOTAL |
| TSULFIDE | 0.56529 | -0.37778 | 0.91666 | 0.37338 | -0.27249 | 0.05242 | 0.00152 | -0.16646 | 0.02765 | 0.07190 | SULFIDE, TOTAL |
| TTOTALO | 0.78772 | 0.16997 | 0.44033 | -0.03381 | -0.11069 | 0.07891 | 0.07866 | 0.07336 | 0.26806 | 0.04580 | TOTAL ORGANIC CARBON |
| TZINC_T | 0.89961 | 0.06657 | 0.11527 | 0.05002 | -0.06912 | -0.21665 | 0.13726 | 0.00334 | -0.26321 | 0.03346 | ZINC, TOTAL |

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Bechtel/Navy Clean II
Task 5.2: Principal Component Analysis

Initial Factor Method: Principal Components

Factor Pattern

| | FACTOR11 | FACTOR12 | FACTOR13 | FACTOR14 | FACTOR15 | FACTOR16 | FACTOR17 | FACTOR18 | FACTOR19 | FACTOR20 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | -0.00656 | -0.03586 | 0.03222 | 0.00639 | 0.01023 | -0.00764 | 0.03716 | -0.00416 | 0.03569 | 0.01835 | ACID VOLATILE SULFIDE |
| BENZO_A_ | 0.05680 | 0.03762 | 0.00863 | 0.06296 | -0.02611 | 0.01153 | -0.02878 | -0.01950 | 0.00393 | -0.00058 | BENZO(A)PYRENE |
| BENZO_B_ | 0.06013 | 0.04424 | 0.02200 | 0.09181 | -0.04045 | -0.01643 | -0.04594 | -0.03673 | 0.01664 | -0.00432 | BENZO(B)FLUORANTHENE |
| BENZO_GH | 0.11665 | -0.03808 | -0.00824 | -0.09446 | 0.08459 | -0.02828 | 0.04059 | 0.02441 | 0.03184 | 0.01422 | BENZO(GHI)PERYLENE |
| BENZO_K_ | 0.03870 | 0.05170 | 0.01266 | -0.02410 | 0.00250 | 0.01628 | -0.06396 | 0.02418 | -0.05107 | -0.01540 | BENZO(K)FLUORANTHENE |
| CHRYSENE | -0.00783 | 0.01715 | 0.01845 | -0.02699 | -0.01192 | -0.01513 | 0.00263 | 0.04073 | -0.02509 | -0.01546 | CHRYSENE |
| DDD | 0.08528 | -0.10545 | 0.07788 | -0.07928 | 0.11453 | 0.02485 | 0.01387 | 0.00261 | -0.00507 | 0.00141 | 4,4'-DDD |
| DDE | 0.06133 | -0.07376 | 0.19532 | 0.03426 | -0.15995 | -0.11192 | -0.03042 | 0.03493 | -0.01036 | -0.01852 | 4,4'-DDE |
| ECADMIUM | 0.23192 | 0.03386 | -0.13063 | 0.13758 | 0.06745 | 0.00656 | 0.05889 | -0.02500 | 0.00249 | 0.03387 | CADMIUM, EXTRACTABLE |
| ECOPPER_ | -0.10994 | 0.03862 | -0.10545 | 0.06750 | 0.04097 | -0.02138 | 0.04390 | 0.04200 | -0.05818 | -0.04593 | COPPER, EXTRACTABLE |
| ELEAD_E | 0.08267 | 0.16540 | 0.03237 | -0.06469 | -0.05009 | 0.06662 | -0.00594 | -0.04336 | 0.01454 | -0.06589 | LEAD, EXTRACTABLE |
| EMERCURY | 0.08400 | -0.00732 | 0.03361 | -0.02306 | -0.02086 | 0.02826 | -0.00899 | 0.03293 | -0.00268 | -0.00824 | MERCURY, EXTRACTABLE |
| EZINC_E | 0.02269 | 0.02539 | -0.05443 | -0.00843 | -0.00852 | -0.01972 | 0.03680 | 0.03029 | -0.05055 | -0.00975 | ZINC, EXTRACTABLE |
| FINES | -0.04128 | 0.18473 | -0.11431 | -0.08817 | -0.13812 | -0.02075 | 0.07638 | 0.04177 | 0.00720 | 0.02071 | FINES |
| FLUORANT | -0.05717 | -0.01547 | -0.01432 | -0.04835 | -0.04709 | -0.03570 | -0.02095 | 0.01521 | 0.00368 | 0.02075 | FLUORANTHENE |
| INDENO_1 | 0.08704 | -0.01358 | 0.00179 | -0.09940 | 0.08360 | -0.00985 | 0.05375 | -0.00194 | 0.00111 | -0.00097 | INDENO(1,2,3-CD)PYRENE |
| PCBN1260 | 0.05366 | -0.10309 | -0.01132 | 0.05461 | -0.12687 | 0.11419 | 0.00531 | 0.04538 | 0.04137 | 0.04234 | PCB-1260 |
| PYRENE | 0.02801 | 0.03560 | -0.01589 | 0.09507 | -0.03678 | 0.01469 | 0.01778 | -0.04520 | 0.04738 | -0.01479 | PYRENE |
| TARSENIC | -0.11724 | -0.00269 | 0.19214 | 0.06296 | 0.02438 | 0.02887 | 0.13046 | -0.00171 | -0.05251 | 0.01226 | ARSENIC, TOTAL |
| TBERYLLI | 0.07860 | 0.02008 | 0.02494 | 0.10333 | 0.09336 | -0.02384 | -0.12220 | 0.01930 | -0.04001 | 0.01078 | BERYLLIUM, TOTAL |
| TCADMIUM | -0.10151 | 0.10608 | 0.08921 | -0.03274 | 0.10877 | 0.10500 | -0.06436 | 0.08051 | 0.04541 | -0.00482 | CADMIUM, TOTAL |
| TCHROMIU | -0.15782 | -0.04080 | -0.03351 | 0.09927 | -0.00798 | 0.02319 | -0.02020 | 0.01383 | 0.04414 | 0.02704 | CHROMIUM, TOTAL |
| TCOPPER_ | -0.19069 | -0.10082 | -0.06533 | 0.10304 | 0.01931 | 0.06214 | 0.00717 | 0.04717 | -0.03369 | -0.00491 | COPPER, TOTAL |
| TLEAD_T | 0.00944 | 0.08589 | 0.03101 | -0.03994 | -0.01734 | 0.04236 | -0.04389 | -0.04887 | 0.03199 | 0.03408 | LEAD, TOTAL |
| TMERCURY | -0.14312 | 0.00282 | -0.01814 | 0.01587 | 0.00489 | -0.16491 | -0.03018 | -0.03582 | 0.07983 | 0.00313 | MERCURY, TOTAL |
| TNICKEL_ | 0.02265 | -0.23044 | -0.09806 | -0.02966 | -0.01707 | -0.01830 | -0.00022 | -0.01717 | 0.09291 | -0.08422 | NICKEL, TOTAL |
| TSILVER_ | 0.08708 | 0.04622 | 0.00969 | 0.00707 | 0.01463 | 0.00983 | 0.00898 | 0.02815 | 0.01194 | 0.00280 | SILVER, TOTAL |
| TSULFIDE | -0.04487 | -0.03326 | 0.08301 | -0.01771 | 0.02133 | -0.00364 | 0.07634 | 0.04100 | 0.03292 | 0.01605 | SULFIDE, TOTAL |
| TTOTALO | -0.10368 | -0.06241 | -0.07791 | -0.11334 | -0.02306 | 0.07080 | -0.07031 | -0.10648 | -0.03928 | 0.01998 | TOTAL ORGANIC CARBON |
| TZINC_T | 0.02557 | -0.07455 | -0.04469 | -0.07991 | -0.02693 | -0.07324 | -0.04213 | 0.00322 | -0.04283 | 0.06578 | ZINC, TOTAL |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis

Initial Factor Method: Principal Components

Factor Pattern

| | FACTOR21 | FACTOR22 | FACTOR23 | FACTOR24 | FACTOR25 | FACTOR26 | FACTOR27 | FACTOR28 | FACTOR29 | FACTOR30 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | -0.01949 | 0.00825 | 0.00422 | 0.03544 | 0.01725 | -0.01997 | 0.00473 | 0.00204 | 0.00791 | -0.00238 | ACID VOLATILE SULFIDE |
| BENZO_A_ | -0.02230 | -0.00264 | -0.00171 | 0.00808 | -0.01217 | 0.00224 | -0.02612 | -0.00524 | 0.00389 | -0.00716 | BENZO(A)PYRENE |
| BENZO_B_ | -0.03653 | -0.02148 | -0.01166 | -0.02043 | -0.01020 | 0.00752 | 0.01807 | -0.00768 | 0.01237 | 0.00134 | BENZO(B)FLUORANTHENE |
| BENZO_GH | -0.01002 | 0.02131 | -0.03865 | -0.00820 | 0.00938 | 0.00586 | 0.00643 | 0.00131 | -0.00469 | -0.00792 | BENZO(GHI)PERYLENE |
| BENZO_K_ | -0.04320 | 0.02859 | 0.02821 | 0.02854 | -0.00814 | 0.00538 | 0.00618 | 0.00906 | -0.01092 | 0.00381 | BENZO(K)FLUORANTHENE |
| CHRYSENE | 0.04964 | 0.02653 | 0.04042 | -0.03720 | -0.00324 | -0.01874 | 0.00354 | -0.00291 | 0.00100 | -0.00473 | CHRYSENE |
| DDD | -0.01454 | -0.00022 | 0.00001 | -0.00208 | -0.00093 | 0.00139 | 0.00015 | -0.00025 | 0.00064 | -0.00007 | 4,4'-DDD |
| DDE | -0.00302 | 0.00089 | -0.00649 | -0.00079 | 0.00353 | -0.00249 | -0.00198 | 0.00028 | -0.00120 | 0.00132 | 4,4'-DDE |
| ECADMIUM | 0.00428 | 0.02201 | 0.01804 | 0.00176 | -0.00392 | 0.00235 | 0.00106 | 0.00189 | 0.00119 | 0.00059 | CADMIUM, EXTRACTABLE |
| ECOPPER_ | 0.02921 | 0.03348 | -0.03906 | 0.00675 | -0.00466 | -0.00256 | -0.00167 | -0.00906 | 0.00270 | 0.00488 | COPPER, EXTRACTABLE |
| ELEAD_E | 0.00588 | 0.00932 | 0.01641 | 0.00966 | 0.01811 | 0.01189 | 0.00057 | -0.00548 | 0.00173 | -0.00170 | LEAD, EXTRACTABLE |
| EMERCURY | -0.01356 | -0.00656 | -0.00586 | -0.00848 | 0.00662 | -0.00407 | -0.00132 | 0.00058 | -0.00016 | 0.00076 | MERCURY, EXTRACTABLE |
| EZINC_E | 0.00514 | -0.06469 | -0.00771 | 0.01596 | -0.01883 | -0.00697 | 0.00547 | 0.00438 | -0.00652 | -0.00595 | ZINC, EXTRACTABLE |
| FINES | -0.01950 | -0.00427 | -0.00031 | -0.00679 | 0.00243 | 0.00029 | -0.00022 | 0.00141 | 0.00152 | 0.00000 | FINES |
| FLUORANT | 0.03914 | 0.01129 | -0.01532 | 0.01718 | -0.00349 | 0.01159 | -0.00108 | 0.01710 | 0.01203 | 0.00090 | FLUORANTHENE |
| INDENO_1 | 0.00934 | -0.04084 | 0.01957 | 0.00197 | 0.00082 | -0.00625 | -0.00686 | -0.00210 | 0.00687 | 0.00980 | INDENO(1,2,3-CD)PYRENE |
| PCBN1260 | 0.05697 | 0.00377 | 0.01007 | 0.01508 | -0.00327 | 0.00113 | 0.00332 | -0.00151 | 0.00142 | 0.00019 | PCB-1260 |
| PYRENE | 0.03793 | -0.02144 | -0.01944 | -0.01293 | 0.02328 | -0.00287 | -0.00258 | 0.00725 | -0.01416 | 0.00390 | PYRENE |
| TARSENIC | 0.00559 | 0.00847 | -0.00200 | 0.00766 | 0.00101 | 0.00081 | 0.00193 | 0.00037 | 0.00015 | -0.00093 | ARSENIC, TOTAL |
| TBERYLLI | 0.04573 | -0.01139 | -0.00282 | 0.00165 | 0.00445 | 0.00206 | 0.00038 | 0.00173 | 0.00047 | -0.00088 | BERYLLIUM, TOTAL |
| TCADMIUM | 0.01076 | -0.00902 | -0.01242 | 0.00263 | 0.00331 | -0.00205 | -0.00093 | -0.00213 | 0.00214 | 0.00052 | CADMIUM, TOTAL |
| TCHROMIU | -0.02641 | -0.00384 | 0.00802 | 0.01782 | -0.00427 | -0.00186 | 0.00350 | -0.01466 | -0.00763 | 0.00006 | CHROMIUM, TOTAL |
| TCOPPER_ | -0.05913 | -0.00915 | 0.01672 | -0.02682 | 0.02068 | 0.00548 | -0.00360 | 0.01166 | 0.00611 | -0.00105 | COPPER, TOTAL |
| TLEAD_T | -0.03062 | 0.03424 | -0.02226 | -0.02049 | -0.03358 | -0.01636 | -0.00374 | 0.00765 | -0.00298 | 0.00438 | LEAD, TOTAL |
| TMERCURY | 0.01582 | 0.00039 | 0.02417 | 0.00461 | -0.00097 | 0.00140 | 0.00007 | 0.00314 | -0.00071 | -0.00139 | MERCURY, TOTAL |
| TNICKEL_ | -0.00433 | 0.00889 | 0.00062 | 0.00428 | -0.01021 | -0.00109 | -0.00039 | 0.00002 | -0.00005 | 0.00061 | NICKEL, TOTAL |
| TSILVER_ | -0.00765 | 0.00102 | 0.00163 | -0.00026 | 0.00084 | -0.00059 | -0.00028 | -0.00031 | 0.00017 | 0.00026 | SILVER, TOTAL |
| TSULFIDE | 0.02001 | -0.00070 | 0.01460 | -0.01605 | -0.01972 | 0.02225 | -0.00182 | -0.00176 | -0.00494 | 0.00132 | SULFIDE, TOTAL |
| TTOTALO | 0.03140 | -0.00716 | 0.00161 | -0.00855 | -0.00067 | 0.00211 | 0.00224 | 0.00012 | 0.00020 | -0.00247 | TOTAL ORGANIC CARBON |
| TZINC_T | -0.00883 | 0.00456 | -0.00211 | -0.00221 | 0.02029 | 0.00473 | -0.00372 | -0.01248 | -0.00317 | 0.00279 | ZINC, TOTAL |

Variance explained by each factor

| FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 | FACTOR11 | FACTOR12 | FACTOR13 | FACTOR14 | FACTOR15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15.606137 | 4.223965 | 2.867397 | 1.604759 | 1.468975 | 0.990196 | 0.752902 | 0.552083 | 0.364538 | 0.320699 | 0.249504 | 0.202033 | 0.170417 | 0.141619 | 0.134701 |

| FACTOR16 | FACTOR17 | FACTOR18 | FACTOR19 | FACTOR20 | FACTOR21 | FACTOR22 | FACTOR23 | FACTOR24 | FACTOR25 | FACTOR26 | FACTOR27 | FACTOR28 | FACTOR29 | FACTOR30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.091486 | 0.079521 | 0.051654 | 0.039251 | 0.026156 | 0.023821 | 0.011810 | 0.009273 | 0.007088 | 0.004020 | 0.002116 | 0.001295 | 0.001258 | 0.000950 | 0.000375 |

Final Communality Estimates: Total = 30.000000

| ACID_VOL | BENZO_A_ | BENZO_B_ | BENZO_GH | BENZO_K_ | CHRYSENE | DDD | DDE | ECADMIUM | ECOPPER_ | ELEAD_E | EMERCURY | EZINC_E | FINES | FLUORANT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |

| INDENO_1 | PCBN1260 | PYRENE | TARSENIC | TBERYLLI | TCADMIUM | TCHROMIU | TCOPPER_ | TLEAD_T | TMERCURY | TNICKEL_ | TSILVER_ | TSULFIDE | TTOTALO | TZINC_T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis

Rotation Method: Varimax

Orthogonal Transformation Matrix

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.67159 | 0.53849 | 0.33209 | 0.26379 | 0.21885 | 0.06837 | 0.09517 | 0.08841 | 0.03897 | 0.05119 |
| 2 | -0.62550 | 0.41283 | 0.37515 | 0.42613 | -0.24137 | 0.15579 | -0.10936 | 0.11697 | -0.03641 | 0.03719 |
| 3 | -0.08238 | -0.53422 | 0.66244 | 0.11667 | 0.46049 | 0.01235 | 0.01496 | -0.16853 | 0.03486 | 0.06665 |
| 4 | -0.12056 | 0.05213 | -0.47923 | 0.44689 | 0.46604 | 0.35142 | 0.05802 | -0.41980 | -0.13062 | 0.05723 |
| 5 | 0.31399 | -0.42979 | -0.07381 | 0.41160 | -0.37496 | 0.41152 | -0.39060 | 0.22163 | 0.12439 | 0.05345 |
| 6 | -0.07898 | -0.17263 | -0.13421 | 0.29840 | 0.01337 | -0.02235 | 0.73361 | 0.42613 | 0.30631 | -0.13053 |
| 7 | -0.06080 | 0.09843 | 0.08894 | -0.49832 | 0.04731 | 0.78978 | 0.16916 | 0.08778 | 0.07003 | 0.08898 |
| 8 | 0.12669 | -0.09616 | 0.14802 | 0.01936 | -0.43982 | 0.06885 | 0.46297 | -0.40262 | -0.33132 | 0.09369 |
| 9 | -0.00927 | -0.00261 | 0.05079 | -0.08527 | 0.07357 | 0.17338 | -0.09982 | 0.00702 | 0.07297 | -0.53610 |
| 10 | -0.00318 | -0.02778 | -0.07592 | 0.01804 | 0.23927 | -0.02686 | -0.07841 | 0.47461 | -0.62022 | -0.02380 |
| 11 | 0.04468 | -0.10463 | 0.09504 | 0.02240 | -0.08841 | 0.11228 | 0.13450 | 0.10796 | -0.50576 | 0.01195 |
| 12 | 0.05856 | 0.01067 | 0.04599 | 0.08043 | -0.10958 | 0.04341 | 0.00849 | -0.20097 | -0.16028 | -0.65739 |
| 13 | -0.02116 | -0.04071 | -0.00363 | -0.05631 | 0.11646 | 0.02518 | 0.02742 | 0.15870 | -0.13548 | -0.22841 |
| 14 | 0.04132 | 0.04447 | 0.06020 | 0.03840 | -0.04975 | 0.00413 | -0.02575 | -0.15858 | 0.10579 | -0.29071 |
| 15 | -0.03962 | -0.01690 | 0.03719 | -0.02636 | 0.07782 | 0.02343 | -0.03008 | 0.19592 | 0.00539 | -0.11474 |
| 16 | -0.01500 | 0.00447 | 0.03705 | -0.03618 | -0.00459 | 0.01442 | 0.03132 | 0.03382 | 0.03645 | -0.12249 |
| 17 | -0.04370 | 0.01131 | -0.01578 | -0.06614 | 0.13203 | 0.01676 | -0.02946 | 0.07211 | 0.04484 | -0.02304 |
| 18 | -0.00365 | 0.00633 | 0.02501 | 0.01587 | 0.02237 | 0.03830 | 0.04362 | 0.00338 | 0.08250 | -0.07293 |
| 19 | -0.01058 | 0.03978 | 0.01438 | -0.03914 | 0.05794 | 0.02040 | -0.01488 | -0.00030 | 0.15338 | 0.09882 |
| 20 | -0.01058 | 0.01750 | 0.01280 | -0.00607 | 0.03887 | 0.00431 | -0.01800 | 0.00865 | 0.10340 | -0.20994 |
| 21 | 0.01152 | 0.00973 | 0.00759 | 0.02703 | -0.00950 | -0.01397 | -0.01717 | -0.02864 | -0.06621 | -0.07733 |
| 22 | -0.00041 | 0.00466 | 0.00536 | -0.01173 | 0.00646 | 0.00213 | -0.00935 | 0.00034 | -0.00290 | 0.01947 |
| 23 | 0.00155 | 0.00724 | 0.00079 | -0.00574 | 0.01538 | 0.00182 | -0.01133 | 0.00184 | 0.00772 | -0.00556 |
| 24 | -0.00726 | 0.00415 | 0.00048 | -0.00523 | 0.01705 | -0.00051 | -0.01308 | 0.00165 | 0.06055 | 0.00846 |
| 25 | -0.00070 | -0.00283 | -0.00029 | 0.00237 | -0.00600 | 0.00064 | 0.00914 | -0.00223 | -0.01263 | -0.00733 |
| 26 | -0.00153 | -0.00044 | -0.00120 | 0.00021 | 0.00550 | -0.00128 | -0.00568 | 0.00401 | -0.00001 | 0.00039 |
| 27 | -0.00121 | 0.00063 | -0.00003 | -0.00031 | 0.00294 | -0.00048 | -0.00225 | 0.00104 | 0.00896 | -0.00518 |
| 28 | 0.00249 | 0.00286 | 0.00005 | 0.00332 | -0.00135 | -0.00063 | 0.00056 | -0.00164 | -0.03096 | -0.01670 |
| 29 | 0.00030 | -0.00023 | 0.00097 | 0.00101 | 0.00110 | 0.00012 | -0.00019 | 0.00143 | -0.01390 | -0.00645 |
| 30 | -0.00005 | 0.00006 | 0.00067 | -0.00070 | -0.00076 | 0.00053 | 0.00118 | -0.00039 | 0.00155 | 0.00428 |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis



Rotation Method: Varimax

Orthogonal Transformation Matrix

| | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.03899 | 0.03058 | 0.03312 | 0.03427 | 0.01775 | 0.00337 | 0.00377 | 0.00455 | 0.01445 | 0.01035 |
| 2 | 0.00186 | -0.01126 | 0.04753 | 0.01616 | 0.03841 | 0.02685 | 0.01201 | 0.00251 | -0.00477 | -0.00844 |
| 3 | -0.07307 | 0.01956 | -0.00396 | 0.03620 | -0.01074 | 0.01957 | 0.01064 | 0.02591 | 0.01883 | 0.00875 |
| 4 | 0.06332 | -0.01657 | 0.02363 | 0.00724 | -0.03924 | -0.06404 | 0.01685 | -0.03076 | -0.00670 | -0.01521 |
| 5 | -0.01488 | -0.02636 | 0.08465 | -0.01580 | -0.00521 | 0.04116 | 0.02853 | -0.01582 | -0.01197 | -0.01674 |
| 6 | -0.07779 | 0.04122 | -0.05630 | 0.04441 | 0.02561 | 0.02704 | -0.08513 | 0.04361 | -0.03269 | 0.01632 |
| 7 | -0.19780 | 0.05740 | -0.00720 | -0.00719 | -0.04392 | -0.00154 | -0.00305 | 0.06099 | 0.06892 | 0.02929 |
| 8 | 0.10946 | -0.36921 | 0.23855 | 0.12392 | -0.05466 | 0.08705 | 0.13566 | 0.03828 | -0.06130 | -0.03625 |
| 9 | 0.40148 | -0.27347 | -0.20520 | 0.45684 | 0.30928 | 0.04370 | -0.10024 | -0.03685 | -0.22138 | 0.04502 |
| 10 | -0.33854 | -0.34701 | -0.03755 | 0.13419 | -0.10275 | 0.18905 | 0.08275 | 0.02643 | -0.06530 | 0.00109 |
| 11 | 0.34248 | 0.28981 | -0.33371 | -0.31547 | 0.08229 | -0.19341 | -0.37791 | -0.23278 | 0.00159 | -0.11547 |
| 12 | -0.20778 | 0.40473 | -0.07216 | -0.14031 | -0.23095 | 0.30088 | 0.12595 | 0.28299 | 0.03399 | 0.01550 |
| 13 | 0.07070 | 0.13359 | 0.58727 | -0.22615 | 0.49759 | -0.24516 | 0.35317 | -0.01947 | -0.01101 | -0.16482 |
| 14 | -0.45874 | -0.36587 | 0.05631 | -0.34305 | 0.00655 | -0.38974 | -0.38077 | -0.12354 | -0.23974 | 0.05600 |
| 15 | 0.41920 | -0.16221 | 0.10590 | -0.11441 | -0.58483 | -0.44024 | 0.12500 | 0.36757 | -0.00324 | 0.10748 |
| 16 | -0.02819 | 0.20649 | 0.13621 | 0.21868 | -0.42705 | -0.06983 | 0.22839 | -0.74710 | -0.22488 | -0.07229 |
| 17 | 0.27165 | -0.07182 | 0.47568 | -0.27412 | -0.13577 | 0.59002 | -0.40994 | -0.10708 | -0.13518 | 0.18390 |
| 18 | 0.10409 | -0.30092 | -0.34889 | -0.49505 | 0.09094 | 0.18497 | 0.47029 | -0.27274 | 0.13433 | 0.29814 |
| 19 | 0.07933 | -0.11001 | -0.19697 | -0.26124 | -0.07118 | 0.17709 | 0.18880 | 0.11289 | -0.50963 | -0.53757 |
| 20 | 0.04312 | -0.28274 | 0.04586 | -0.02432 | -0.13390 | 0.08713 | -0.12747 | -0.18247 | 0.70024 | -0.48238 |
| 21 | -0.07980 | -0.01155 | -0.00734 | 0.11176 | -0.03281 | -0.18437 | -0.00997 | -0.06523 | -0.00240 | 0.13008 |
| 22 | -0.02176 | 0.03949 | 0.03830 | -0.08288 | -0.00982 | 0.01436 | -0.09488 | -0.00712 | -0.02118 | 0.88594 |
| 23 | -0.05578 | 0.00807 | 0.00437 | 0.00367 | -0.03190 | 0.01020 | -0.10152 | 0.06012 | -0.10215 | -0.42431 |
| 24 | 0.00261 | -0.00163 | 0.02740 | -0.03149 | -0.01971 | -0.00439 | 0.00209 | -0.03474 | -0.01725 | 0.07719 |
| 25 | 0.02282 | 0.05135 | 0.00147 | 0.00415 | 0.01452 | 0.00271 | 0.02417 | 0.00777 | 0.14821 | 0.02103 |
| 26 | 0.00436 | 0.02983 | 0.00930 | 0.01044 | -0.01002 | -0.00082 | -0.01452 | 0.00614 | 0.03640 | -0.00970 |
| 27 | 0.00291 | -0.00319 | 0.00828 | 0.00516 | -0.01057 | -0.00073 | -0.00731 | -0.00907 | -0.01483 | -0.02575 |
| 28 | -0.01517 | -0.01462 | -0.00320 | 0.00356 | 0.00030 | -0.00619 | -0.01878 | 0.02203 | -0.07540 | -0.12913 |
| 29 | 0.00047 | 0.00569 | 0.00058 | 0.00033 | -0.00914 | 0.00065 | 0.00218 | -0.00386 | -0.00622 | 0.01791 |
| 30 | 0.00127 | -0.00617 | -0.00449 | -0.00986 | 0.00466 | 0.00344 | 0.00456 | -0.00665 | 0.01536 | 0.05125 |

R0063972

Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis

Rotation Method: Varimax

Orthogonal Transformation Matrix

| | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00872 | -0.00181 | 0.00414 | 0.00606 | 0.00302 | 0.00018 | -0.00087 | 0.00054 | 0.00045 | 0.00016 |
| 2 | 0.00074 | -0.00151 | 0.00288 | -0.00240 | 0.00059 | -0.00051 | -0.00234 | 0.00073 | 0.00078 | 0.00030 |
| 3 | 0.00432 | 0.00182 | -0.00579 | 0.00626 | 0.00432 | 0.00027 | 0.00228 | -0.00116 | -0.00145 | -0.00068 |
| 4 | 0.01125 | -0.01184 | 0.01334 | -0.01061 | 0.00969 | 0.00150 | -0.00697 | 0.00159 | 0.00149 | 0.00019 |
| 5 | -0.00908 | 0.00730 | -0.00866 | -0.00886 | -0.00284 | 0.00033 | 0.00465 | -0.00199 | -0.00135 | -0.00003 |
| 6 | -0.01834 | 0.01046 | -0.01688 | -0.00420 | -0.00354 | -0.00194 | 0.00799 | -0.00221 | -0.00098 | -0.00006 |
| 7 | -0.01138 | 0.01334 | -0.02040 | 0.02445 | -0.00327 | -0.00261 | 0.01027 | -0.00062 | -0.00274 | -0.00134 |
| 8 | -0.01585 | -0.01476 | 0.03237 | -0.03191 | -0.02352 | -0.00095 | -0.00826 | 0.00261 | 0.00349 | -0.00014 |
| 9 | 0.03813 | -0.02526 | 0.03317 | -0.03382 | -0.01883 | 0.00538 | -0.01734 | -0.00185 | 0.00425 | 0.00322 |
| 10 | 0.00356 | -0.06121 | 0.01845 | -0.02596 | -0.01458 | 0.01305 | -0.02793 | 0.00114 | -0.00147 | -0.00406 |
| 11 | -0.04227 | -0.04602 | 0.00489 | -0.00315 | 0.01793 | 0.00694 | -0.01731 | 0.00404 | 0.00307 | -0.00076 |
| 12 | -0.03777 | -0.01797 | 0.01029 | 0.01267 | 0.02136 | -0.00072 | -0.01083 | 0.00219 | 0.00080 | 0.00087 |
| 13 | -0.04382 | 0.00306 | 0.00902 | -0.04700 | 0.02712 | -0.01093 | -0.00481 | 0.00695 | 0.00345 | 0.00160 |
| 14 | 0.11816 | -0.11147 | -0.02674 | -0.01577 | -0.00157 | 0.01001 | -0.04105 | 0.00875 | -0.00126 | -0.00615 |
| 15 | 0.05756 | 0.01974 | 0.03286 | 0.01207 | -0.00140 | -0.00100 | -0.00626 | -0.00289 | 0.00207 | 0.00419 |
| 16 | 0.09816 | -0.03804 | 0.03420 | -0.03967 | 0.02800 | 0.00363 | -0.02201 | -0.00912 | 0.00368 | 0.00322 |
| 17 | -0.00775 | 0.07832 | -0.11282 | 0.09495 | -0.07391 | -0.01297 | 0.00970 | -0.01781 | -0.00806 | 0.00586 |
| 18 | 0.09377 | 0.19838 | 0.09020 | 0.08661 | -0.09680 | -0.03962 | 0.04071 | -0.00372 | 0.00310 | -0.00533 |
| 19 | -0.26386 | -0.14081 | -0.21829 | -0.24781 | 0.03972 | 0.01354 | -0.01589 | -0.00343 | -0.01821 | -0.01806 |
| 20 | -0.17395 | -0.05057 | -0.01966 | -0.11410 | 0.12669 | 0.00339 | 0.02733 | 0.00525 | 0.01085 | -0.00682 |
| 21 | -0.62830 | 0.45880 | -0.43622 | 0.06414 | -0.28725 | -0.06529 | 0.11690 | -0.06809 | -0.04144 | 0.01160 |
| 22 | -0.18377 | 0.24691 | 0.35490 | -0.79382 | 0.22940 | 0.01824 | 0.09437 | -0.02467 | -0.00701 | -0.10639 |
| 23 | 0.21307 | 0.59042 | 0.43998 | 0.06070 | -0.40935 | -0.02991 | -0.06720 | 0.00180 | 0.06836 | 0.14560 |
| 24 | -0.48283 | -0.42382 | 0.52852 | 0.15443 | -0.37478 | 0.31200 | 0.09643 | -0.13477 | 0.08844 | 0.04219 |
| 25 | 0.33831 | -0.12850 | -0.33180 | -0.40950 | -0.86660 | 0.40982 | -0.03933 | -0.10734 | -0.19237 | -0.06521 |
| 26 | 0.06175 | -0.27507 | 0.04196 | -0.16088 | -0.39895 | -0.77595 | 0.31721 | 0.11087 | -0.00997 | -0.12813 |
| 27 | -0.06828 | 0.04261 | 0.11384 | 0.09077 | -0.03387 | 0.12310 | -0.82099 | 0.48338 | -0.68774 | -0.30477 |
| 28 | 0.19147 | 0.10430 | 0.03803 | 0.15705 | 0.10105 | 0.14681 | 0.00090 | -0.36905 | -0.26363 | -0.12184 |
| 29 | 0.06893 | -0.01886 | -0.11564 | -0.09012 | -0.09581 | 0.26408 | 0.48787 | 0.63084 | 0.41397 | 0.39180 |
| 30 | -0.02837 | -0.07629 | 0.03008 | -0.06824 | 0.08571 | -0.13738 | -0.01769 | -0.00336 | -0.48930 | 0.84468 |

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VOL 18

Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis



Rotation Method: Varimax

Rotated Factor Pattern

| | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | 0.50567 | 0.03469 | 0.16770 | 0.11192 | 0.81671 | -0.00516 | 0.12070 | -0.12010 | -0.02355 | 0.02692 | ACID VOLATILE SULFIDE |
| BENZO_A_ | 0.91331 | 0.31199 | 0.08871 | 0.09826 | 0.17103 | 0.00586 | 0.07542 | 0.01501 | -0.08859 | -0.01323 | BENZO(A)PYRENE |
| BENZO_B_ | 0.90069 | 0.32865 | 0.10196 | 0.07676 | 0.19112 | 0.01972 | 0.06757 | 0.00427 | -0.10599 | 0.00961 | BENZO(B)FLUORANTHENE |
| BENZO_GH | 0.70404 | 0.56578 | 0.05380 | 0.19552 | 0.05411 | -0.01797 | 0.01952 | -0.04235 | -0.03101 | 0.01242 | BENZO(GHI)PERYLENE |
| BENZO_K_ | 0.87854 | 0.34397 | 0.09668 | 0.12763 | 0.16351 | 0.00298 | 0.07123 | -0.04212 | -0.14564 | -0.00296 | BENZO(K)FLUORANTHENE |
| CHRYSENE | 0.95370 | 0.15437 | 0.09467 | 0.01717 | 0.16844 | 0.01280 | 0.03620 | 0.06491 | 0.06199 | 0.09381 | CHRYSENE |
| DDD | 0.24131 | 0.35588 | 0.15350 | 0.14275 | -0.25223 | 0.01470 | 0.01620 | 0.83931 | 0.06531 | -0.00195 | 4,4'-DDD |
| DDE | 0.10374 | 0.36748 | 0.78992 | 0.20016 | 0.07844 | 0.00283 | -0.02462 | 0.16409 | 0.06329 | -0.03097 | 4,4'-DDE |
| ECADMIUM | 0.06111 | 0.04785 | 0.94192 | 0.09805 | 0.08238 | -0.05462 | 0.09507 | 0.09177 | 0.03336 | 0.00006 | CADMIUM, EXTRACTABLE |
| ECOPPER_ | 0.56881 | 0.49489 | 0.19282 | 0.09586 | 0.24264 | 0.02220 | 0.14471 | 0.11242 | 0.05898 | -0.06075 | COPPER, EXTRACTABLE |
| ELEAD_E | 0.39626 | 0.74494 | 0.22153 | 0.18237 | 0.18246 | 0.02906 | 0.07900 | 0.13831 | 0.08219 | -0.03130 | LEAD, EXTRACTABLE |
| EMERCURY | 0.21037 | 0.15764 | 0.00427 | -0.00178 | 0.19792 | -0.06571 | 0.94149 | 0.01408 | 0.02272 | -0.00163 | MERCURY, EXTRACTABLE |
| EZINC_E | 0.50217 | 0.67359 | 0.41054 | 0.07617 | 0.22219 | 0.05457 | 0.07356 | 0.09279 | 0.03698 | 0.10088 | ZINC, EXTRACTABLE |
| FINES | 0.02843 | 0.20805 | 0.39554 | 0.80929 | -0.05827 | 0.10061 | -0.03418 | 0.15782 | -0.00368 | -0.03299 | FINES |
| FLUORANT | 0.90903 | -0.03321 | 0.08746 | -0.09175 | 0.07967 | 0.03239 | 0.11963 | 0.15399 | 0.26300 | 0.09811 | FLUORANTHENE |
| INDENO_1 | 0.76106 | 0.50504 | 0.05906 | 0.18547 | 0.07472 | -0.01717 | 0.00833 | -0.01698 | 0.00883 | -0.01374 | INDENO(1,2,3-CD)PYRENE |
| PCBN1260 | 0.04042 | 0.88268 | -0.14628 | 0.13236 | -0.27146 | 0.03522 | 0.00008 | 0.09489 | -0.15116 | 0.03495 | PCB-1260 |
| PYRENE | 0.95226 | 0.04782 | 0.09578 | -0.01090 | 0.22996 | 0.01460 | 0.02435 | 0.08619 | -0.00902 | -0.00263 | PYRENE |
| TARSENIC | 0.35134 | 0.52510 | 0.32807 | 0.52257 | -0.04771 | 0.19805 | 0.04108 | 0.04268 | 0.01763 | 0.07985 | ARSENIC, TOTAL |
| TBERYLLI | 0.04767 | 0.30238 | 0.05622 | 0.88943 | 0.20165 | 0.14980 | 0.03481 | 0.03144 | 0.03210 | -0.03435 | BERYLLIUM, TOTAL |
| TCADMIUM | 0.12517 | 0.09834 | 0.90823 | 0.18407 | 0.09846 | 0.01079 | -0.10382 | -0.04773 | -0.04818 | 0.04292 | CADMIUM, TOTAL |
| TCHROMIU | 0.78425 | 0.11049 | 0.12342 | 0.18796 | 0.00837 | 0.01907 | 0.13889 | 0.24711 | 0.48536 | -0.03594 | CHROMIUM, TOTAL |
| TCOPPER_ | 0.41909 | 0.78174 | 0.26496 | 0.22239 | 0.15588 | 0.05568 | -0.00712 | 0.07482 | 0.16242 | 0.05849 | COPPER, TOTAL |
| TLEAD_T | 0.31461 | 0.79010 | 0.22029 | 0.32212 | 0.22296 | 0.07965 | 0.03149 | 0.07377 | 0.06811 | 0.04055 | LEAD, TOTAL |
| TMERCURY | 0.08826 | 0.66614 | 0.17600 | 0.19367 | -0.13220 | 0.08364 | 0.17287 | 0.13883 | -0.03968 | -0.03602 | MERCURY, TOTAL |
| TNICKEL_ | 0.19690 | 0.27660 | 0.49693 | 0.62846 | 0.18640 | 0.20914 | -0.03409 | -0.01448 | 0.00116 | 0.48770 | NICKEL, TOTAL |
| TSILVER_ | 0.00844 | 0.09439 | -0.00008 | 0.21727 | -0.00263 | 0.96985 | -0.05960 | 0.01864 | 0.00377 | 0.01950 | SILVER, TOTAL |
| TSULFIDE | 0.40638 | 0.01685 | 0.18822 | 0.09908 | 0.89468 | -0.00392 | 0.17897 | -0.14822 | 0.02876 | 0.01648 | SULFIDE, TOTAL |
| TTOTALO | 0.33451 | 0.28837 | 0.83178 | 0.22266 | 0.26493 | 0.11342 | 0.18777 | 0.03542 | 0.07243 | 0.01001 | TOTAL ORGANIC CARBON |
| TZINC_T | 0.93490 | 0.82879 | 0.29859 | 0.16454 | 0.27111 | 0.15476 | 0.00266 | -0.02294 | -0.08315 | 0.31536 | ZINC, TOTAL |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis

Rotation Method: Varimax

Rotated Factor Pattern



| | FACTOR11 | FACTOR12 | FACTOR13 | FACTOR14 | FACTOR15 | FACTOR16 | FACTOR17 | FACTOR18 | FACTOR19 | FACTOR20 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | -0.00286 | 0.00747 | -0.02532 | 0.02766 | -0.00204 | -0.01147 | -0.02050 | -0.00131 | -0.00182 | -0.00539 | ACID VOLATILE SULFIDE |
| BENZO_A_ | 0.01236 | -0.03293 | 0.01578 | 0.02616 | 0.00827 | -0.01063 | -0.00917 | -0.02059 | -0.02677 | -0.01713 | BENZO(A)PYRENE |
| BENZO_B_ | -0.03926 | -0.01910 | 0.01680 | -0.00507 | 0.01876 | -0.02594 | -0.01489 | 0.00527 | -0.02003 | -0.03615 | BENZO(B)FLUORANTHENE |
| BENZO_GH | 0.36329 | -0.00959 | -0.00061 | 0.02594 | 0.03708 | -0.02058 | -0.00937 | -0.01302 | -0.00478 | 0.00477 | BENZO(GHI)PERYLENE |
| BENZO_K_ | 0.07366 | -0.03658 | 0.01749 | 0.07270 | 0.00292 | 0.00075 | 0.07097 | -0.00676 | 0.00796 | 0.01362 | BENZO(K)FLUORANTHENE |
| CHRYSENE | 0.00704 | 0.05308 | 0.03186 | -0.01931 | 0.00124 | 0.01001 | 0.03581 | 0.00674 | 0.03936 | 0.03088 | CHRYSENE |
| DDD | -0.00584 | 0.01301 | 0.00463 | 0.00332 | 0.01581 | 0.00786 | -0.00488 | 0.00185 | 0.00019 | 0.00168 | 4,4'-DDD |
| DDE | 0.04649 | 0.01321 | 0.02241 | 0.04020 | 0.38284 | 0.00271 | -0.01794 | -0.01098 | -0.00575 | -0.00369 | 4,4'-DDE |
| ECADMIUM | 0.01056 | 0.04669 | -0.08820 | -0.06821 | -0.07169 | -0.02137 | -0.21979 | -0.00781 | -0.00024 | 0.00998 | CADMIUM, EXTRACTABLE |
| ECOPPER_ | -0.01624 | -0.06032 | -0.03231 | 0.08390 | -0.03457 | 0.03474 | -0.03737 | 0.04676 | -0.01594 | 0.16652 | COPPER, EXTRACTABLE |
| ELEAD_E | 0.01123 | 0.36570 | -0.03640 | -0.04969 | 0.01499 | 0.00316 | -0.01741 | -0.00973 | 0.00440 | -0.00114 | LEAD, EXTRACTABLE |
| EMERCURY | 0.00195 | 0.00684 | 0.00305 | 0.01235 | -0.00170 | -0.00212 | -0.00505 | 0.00349 | 0.00059 | 0.00126 | MERCURY, EXTRACTABLE |
| EZINC_E | -0.02304 | 0.12076 | -0.01241 | -0.04477 | -0.02170 | 0.02089 | -0.03226 | 0.01280 | 0.08510 | 0.05496 | ZINC, EXTRACTABLE |
| FINES | -0.03735 | 0.00447 | 0.00008 | 0.07935 | 0.00933 | 0.30871 | 0.01786 | 0.01707 | 0.00192 | 0.00603 | FINES |
| FLUORANT | -0.09960 | 0.10988 | 0.00610 | -0.03283 | 0.00653 | 0.03389 | 0.01780 | 0.03232 | 0.08726 | 0.01907 | FLUORANTHENE |
| INDENO_1 | 0.33986 | 0.02801 | 0.02484 | 0.05346 | 0.02693 | -0.01708 | -0.01308 | -0.00491 | -0.01057 | -0.00933 | INDENO(1,2,3-CD)PYRENE |
| PCBN1260 | 0.04509 | -0.10489 | 0.01146 | 0.01849 | 0.08432 | 0.00730 | -0.00762 | -0.81742 | -0.04933 | -0.09684 | PCB-1260 |
| PYRENE | -0.08771 | -0.00994 | 0.00867 | -0.00093 | -0.03168 | 0.01413 | -0.04789 | -0.01134 | -0.05395 | -0.01130 | PYRENE |
| TARSENIC | 0.01413 | -0.02443 | 0.40621 | -0.01558 | 0.02001 | 0.00221 | 0.04371 | 0.00724 | 0.00429 | -0.00346 | ARSENIC, TOTAL |
| TBERYLLI | 0.05364 | 0.03139 | -0.02489 | -0.03328 | 0.01666 | -0.19502 | -0.01925 | -0.00243 | 0.01918 | -0.00163 | BERYLLIUM, TOTAL |
| TCADMIUM | -0.04260 | -0.01328 | 0.13703 | 0.00834 | -0.09693 | 0.02116 | 0.38988 | 0.03151 | 0.01308 | -0.00482 | CADMIUM, TOTAL |
| TCHROMIU | -0.00001 | 0.02989 | 0.00809 | 0.04245 | 0.01408 | -0.00615 | -0.01588 | 0.00249 | -0.01814 | 0.00038 | CHROMIUM, TOTAL |
| TCOPPER_ | 0.00879 | -0.06982 | 0.03184 | 0.09198 | 0.00065 | -0.01893 | -0.00217 | -0.88183 | -0.01080 | 0.08310 | COPPER, TOTAL |
| TLEAD_T | 0.01883 | 0.30877 | 0.01130 | -0.01439 | 0.00983 | -0.01973 | 0.00976 | -0.01300 | 0.05087 | -0.04964 | LEAD, TOTAL |
| TMERCURY | -0.01534 | -0.11372 | 0.04482 | 0.04387 | 0.00005 | 0.03919 | 0.04462 | 0.24475 | -0.01098 | -0.01983 | MERCURY, TOTAL |
| TNICKEL_ | 0.02822 | -0.04749 | 0.06696 | 0.03814 | -0.01093 | -0.01130 | 0.00098 | -0.02841 | -0.04907 | 0.00082 | NICKEL, TOTAL |
| TSILVER_ | -0.00248 | 0.00330 | 0.01448 | 0.00859 | 0.00040 | 0.00279 | 0.00149 | 0.00110 | 0.00231 | 0.00027 | SILVER, TOTAL |
| TSULFIDE | 0.01571 | 0.02361 | 0.01672 | -0.00133 | 0.00991 | -0.00329 | 0.01843 | -0.00178 | 0.00753 | 0.00883 | SULFIDE, TOTAL |
| TTOTALO | 0.05357 | -0.04379 | -0.01710 | 0.38911 | 0.01886 | 0.04294 | 0.01486 | 0.00802 | -0.00778 | 0.00814 | TOTAL ORGANIC CARBON |
| TZINC_T | -0.05799 | 0.06764 | 0.03568 | -0.04193 | -0.03741 | -0.00171 | 0.02922 | 0.03264 | 0.19980 | -0.01278 | ZINC, TOTAL |

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VOL 18

Rotation Method: Varimax

Rotated Factor Pattern

| | FACTOR21 | FACTOR22 | FACTOR23 | FACTOR24 | FACTOR25 | FACTOR26 | FACTOR27 | FACTOR28 | FACTOR29 | FACTOR30 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | 0.00503 | -0.03102 | 0.01633 | -0.00939 | 0.00028 | 0.04116 | -0.00515 | -0.00209 | -0.00054 | 0.00039 | ACID VOLATILE SULFIDE |
| BENZO_A_ | 0.01595 | -0.04332 | 0.02263 | -0.00657 | 0.01313 | -0.00064 | -0.01246 | -0.00622 | 0.02898 | 0.00382 | BENZO(A)PYRENE |
| BENZO_B_ | 0.03155 | -0.05750 | 0.00012 | 0.00006 | 0.02654 | -0.00476 | -0.01655 | 0.03341 | -0.00410 | -0.00158 | BENZO(B)FLUORANTHENE |
| BENZO_GH | -0.00488 | -0.01264 | 0.00129 | -0.02959 | 0.01664 | -0.00153 | 0.00333 | 0.00107 | -0.00515 | -0.01850 | BENZO(GHI)PERYLENE |
| BENZO_K_ | 0.03530 | -0.01357 | 0.10051 | -0.01060 | -0.00077 | 0.00379 | -0.00481 | -0.00400 | -0.00338 | -0.00123 | BENZO(K)FLUORANTHENE |
| CHRYSENE | -0.00346 | 0.09436 | -0.00679 | 0.00305 | -0.00744 | -0.00418 | -0.00042 | 0.00364 | 0.00004 | 0.00062 | CHRYSENE |
| DDD | 0.00019 | 0.00033 | -0.00065 | 0.00066 | 0.00003 | -0.00004 | 0.00015 | -0.00005 | -0.00003 | 0.00000 | 4,4'-DDD |
| DDE | -0.00000 | -0.00008 | 0.00045 | -0.00079 | 0.00025 | -0.00008 | -0.00000 | 0.00013 | 0.00008 | 0.00002 | 4,4'-DDE |
| ECADMIUM | 0.00301 | -0.00210 | -0.00189 | 0.00153 | 0.00139 | 0.00035 | -0.00037 | 0.00004 | -0.00004 | -0.00000 | CADMIUM, EXTRACTABLE |
| ECOPPER_ | 0.01633 | 0.00761 | 0.00372 | 0.01211 | -0.00505 | -0.00033 | 0.00073 | -0.00023 | -0.00015 | -0.00012 | COPPER, EXTRACTABLE |
| ELEAD_E | -0.00403 | 0.00482 | -0.00160 | 0.00416 | -0.00982 | -0.00008 | 0.00019 | -0.00017 | -0.00018 | 0.00025 | LEAD, EXTRACTABLE |
| EMERCURY | -0.00008 | -0.00010 | 0.00023 | 0.00035 | 0.00011 | 0.00005 | 0.00008 | 0.00003 | 0.00004 | -0.00001 | MERCURY, EXTRACTABLE |
| EZINC_E | 0.01340 | 0.00203 | -0.00835 | 0.10797 | -0.00758 | -0.00121 | 0.00138 | 0.00009 | -0.00039 | -0.00022 | ZINC, EXTRACTABLE |
| FINES | -0.00228 | 0.00073 | 0.00028 | 0.00142 | -0.00132 | -0.00001 | -0.00001 | -0.00013 | -0.00001 | 0.00002 | FINES |
| FLUORANT | -0.05410 | 0.02979 | -0.02571 | 0.01085 | -0.00614 | -0.00503 | 0.04866 | -0.00405 | -0.00227 | -0.00089 | FLUORANTHENE |
| INDENO_1 | 0.00765 | 0.01671 | 0.00242 | 0.03631 | -0.02093 | 0.00187 | -0.00486 | -0.00160 | 0.00686 | 0.02385 | INDENO(1,2,3-CD)PYRENE |
| PCBN1260 | -0.03913 | 0.00201 | -0.00217 | -0.02095 | -0.02387 | 0.00057 | -0.00242 | 0.00024 | 0.00067 | 0.00086 | PCB-1260 |
| PYRENE | -0.01161 | -0.02847 | -0.06398 | -0.00166 | -0.00929 | 0.00745 | -0.00836 | -0.01837 | -0.01807 | -0.00538 | PYRENE |
| TARSENIC | 0.00097 | 0.00050 | 0.00030 | -0.00029 | 0.00010 | -0.00020 | -0.00003 | 0.00005 | 0.00005 | 0.00006 | ARSENIC, TOTAL |
| TBERYLLI | 0.00416 | -0.00139 | 0.00317 | 0.00062 | 0.00051 | 0.00019 | -0.00141 | 0.00035 | 0.00040 | 0.00018 | BERYLLIUM, TOTAL |
| TCADMIUM | 0.00050 | 0.00201 | 0.00321 | -0.00208 | 0.00116 | -0.00036 | 0.00030 | 0.00006 | 0.00004 | -0.00002 | CADMIUM, TOTAL |
| TCHROMIU | 0.00728 | -0.00217 | 0.00248 | -0.00076 | 0.00105 | 0.00048 | -0.00815 | 0.00048 | 0.00017 | 0.00021 | CHROMIUM, TOTAL |
| TCOPPER_ | 0.12038 | -0.00275 | 0.01948 | 0.01084 | -0.00106 | -0.00010 | -0.00017 | 0.00039 | 0.00044 | 0.00023 | COPPER, TOTAL |
| TLEAD_T | -0.00058 | -0.01861 | 0.00271 | -0.01995 | 0.00133 | 0.00007 | -0.00139 | 0.00128 | 0.00102 | -0.00053 | LEAD, TOTAL |
| TMERCURY | -0.03387 | 0.00256 | -0.00214 | -0.01253 | -0.01707 | 0.00031 | -0.00089 | 0.00030 | 0.00032 | 0.00061 | MERCURY, TOTAL |
| TNICKEL_ | 0.00265 | -0.00066 | -0.00203 | -0.00144 | -0.00077 | -0.00009 | 0.00097 | 0.00012 | -0.00004 | -0.00010 | NICKEL, TOTAL |
| TSILVER_ | 0.00024 | 0.00001 | -0.00000 | 0.00030 | 0.00019 | -0.00001 | 0.00003 | 0.00002 | -0.00001 | -0.00001 | SILVER, TOTAL |
| TSULFIDE | -0.00079 | 0.02662 | -0.01281 | 0.01015 | 0.00114 | -0.01556 | 0.00437 | 0.00198 | 0.00062 | -0.00029 | SULFIDE, TOTAL |
| TTOTALO | 0.00208 | -0.00073 | 0.00168 | -0.00139 | -0.00033 | 0.00019 | -0.00023 | -0.00005 | 0.00011 | 0.00006 | TOTAL ORGANIC CARBON |
| TZINC_T | -0.00148 | 0.00375 | 0.00436 | 0.00669 | 0.00192 | 0.00026 | -0.00161 | -0.00000 | -0.00010 | -0.00002 | ZINC, TOTAL |

Variance explained by each factor

| FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 | FACTOR11 | FACTOR12 | FACTOR13 | FACTOR14 | FACTOR15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.898933 | 6.384812 | 3.992676 | 2.742289 | 2.295081 | 1.110625 | 1.105557 | 0.988181 | 0.441099 | 0.314901 | 0.282689 | 0.254163 | 0.205648 | 0.198028 | 0.176018 |
| FACTOR16 | FACTOR17 | FACTOR18 | FACTOR19 | FACTOR20 | FACTOR21 | FACTOR22 | FACTOR23 | FACTOR24 | FACTOR25 | FACTOR26 | FACTOR27 | FACTOR28 | FACTOR29 | FACTOR30 |
| 0.145023 | 0.140309 | 0.117913 | 0.069225 | 0.043484 | 0.023397 | 0.018560 | 0.016392 | 0.015646 | 0.009451 | 0.003102 | 0.003006 | 0.001553 | 0.001277 | 0.000962 |

Final Communality Estimates: Total = 30.000000

| ACID_VOL | BENZO_A_ | BENZO_B_ | BENZO_GH | BENZO_K_ | CHRYSENE | DDD | DDE | ECADMIUM | ECOPPER_ | ELEAD_E | EMERCURY | EZINC_E | FINES | FLUORANT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |
| INDENO_1 | PCBN1260 | PYRENE | TARSENIC | TBERYLLI | TCADMIUM | TCHROMIU | TCOPPER_ | TLEAD_T | TMERCURY | TNICKEL_ | TSILVER_ | TSULFIDE | TTOTALO | TZINC_T |
| 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis



Rotation Method: Varimax

Scoring Coefficients Estimated by Regression

Squared Multiple Correlations of the Variables with each Factor

| FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 | FACTOR11 | FACTOR12 | FACTOR13 | FACTOR14 | FACTOR15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |

| FACTOR16 | FACTOR17 | FACTOR18 | FACTOR19 | FACTOR20 | FACTOR21 | FACTOR22 | FACTOR23 | FACTOR24 | FACTOR25 | FACTOR26 | FACTOR27 | FACTOR28 | FACTOR29 | FACTOR30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |

Standardized Scoring Coefficients

| | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | -0.11921 | 0.04296 | -0.06705 | -0.09135 | 0.73750 | 0.01347 | -0.13366 | 0.26600 | 0.22148 | -0.13559 | ACID VOLATILE SULFIDE |
| BENZO_A_ | 0.21064 | -0.06591 | 0.00183 | 0.03692 | -0.12537 | 0.00010 | -0.00165 | -0.06290 | -0.35544 | -0.06384 | BENZO(A)PYRENE |
| BENZO_B_ | 0.19883 | -0.06310 | 0.00029 | 0.03653 | -0.11829 | -0.00074 | -0.00137 | -0.05816 | -0.33751 | -0.07008 | BENZO(B)FLUORANTHENE |
| BENZO_GH | 0.01594 | -0.00129 | 0.00384 | -0.03571 | -0.00923 | 0.01325 | -0.00028 | 0.00970 | 0.05909 | -0.00235 | BENZO(GHI)PERYLENE |
| BENZO_K_ | 0.17878 | -0.05625 | 0.00086 | 0.02792 | -0.10600 | 0.00065 | -0.00270 | -0.04777 | -0.30748 | -0.02775 | BENZO(K)FLUORANTHENE |
| DDD | -0.09921 | -0.12866 | -0.07143 | -0.09790 | 0.31586 | 0.01384 | -0.03273 | 1.43651 | -0.43990 | -0.11523 | CHRYSENE |
| DDE | 0.00756 | -0.04769 | 0.21255 | -0.05426 | -0.06571 | 0.02569 | 0.03724 | -0.06698 | -0.13108 | 0.01443 | 4,4'-DDD |
| ECADMIUM | 0.00804 | -0.01620 | 0.52932 | -0.09165 | -0.08508 | 0.04563 | 0.01860 | -0.08264 | -0.00274 | -0.53096 | 4,4'-DDE |
| ECOPPER_ | -0.01115 | 0.12086 | -0.01901 | -0.02877 | 0.00092 | -0.00464 | -0.02059 | -0.04602 | 0.04674 | 0.01511 | CADMIUM, EXTRACTABLE |
| ELEAD_E | -0.04364 | 0.11725 | -0.04034 | -0.06224 | -0.01732 | -0.01308 | -0.02582 | -0.05786 | -0.12118 | 0.22160 | COPPER, EXTRACTABLE |
| EMERCURY | -0.02433 | -0.09916 | 0.03037 | 0.03400 | -0.21684 | 0.07509 | 1.15104 | -0.03842 | -0.24379 | 0.14785 | LEAD, EXTRACTABLE |
| EZINC_E | -0.02049 | 0.11725 | 0.00638 | -0.02783 | 0.00749 | -0.00356 | -0.01752 | -0.03923 | 0.06677 | -0.06697 | MERCURY, EXTRACTABLE |
| FINES | 0.02573 | -0.07871 | -0.05331 | 0.49283 | -0.04785 | -0.09056 | 0.02748 | -0.07174 | -0.10179 | -0.39649 | ZINC, EXTRACTABLE |
| FLUORANT | 0.19141 | -0.02987 | -0.00039 | 0.04368 | -0.11121 | -0.00461 | -0.01234 | -0.08308 | -0.04743 | -0.11367 | FINES |
| INDENO_1 | 0.05976 | -0.02816 | 0.00406 | -0.01837 | -0.03664 | 0.01109 | 0.00279 | -0.00284 | -0.04731 | -0.00007 | FLUORANTHENE |
| PCB1260 | -0.04830 | 0.37280 | 0.00991 | -0.07417 | 0.09313 | -0.00386 | -0.04700 | -0.10224 | 0.23464 | -0.29330 | INDENO(1,2,3-CD)PYRENE |
| PYRENE | 0.24798 | -0.05571 | 0.00080 | 0.05272 | -0.14293 | -0.00257 | -0.00247 | -0.08411 | -0.43215 | -0.11190 | PCB-1260 |
| TARSENIC | -0.03634 | -0.02128 | -0.03594 | 0.03756 | 0.03766 | -0.04368 | -0.02116 | 0.01100 | -0.06001 | -0.38222 | PYRENE |
| TBERYLLI | 0.05175 | -0.10322 | -0.07267 | 0.76910 | -0.12386 | -0.13364 | 0.02896 | -0.08960 | -0.29343 | -0.76679 | ARSENIC, TOTAL |
| TCADMIUM | -0.00695 | -0.02500 | 0.46857 | -0.07608 | -0.07546 | 0.06350 | 0.04492 | -0.04710 | 0.11732 | -0.42668 | BERYLLIUM, TOTAL |
| TCHROMIU | 0.02685 | 0.00528 | -0.00166 | -0.03346 | -0.00597 | 0.00289 | -0.04016 | -0.09468 | 2.09858 | 0.11723 | CADMIUM, TOTAL |
| TCOPPER_ | -0.04476 | 0.22463 | -0.01892 | -0.05012 | 0.02880 | -0.00573 | -0.02737 | -0.06331 | 0.13842 | -0.12811 | CHROMIUM, TOTAL |
| TLEAD_T | -0.04994 | 0.22809 | -0.02326 | -0.03940 | 0.02860 | -0.01111 | -0.03270 | -0.06490 | 0.10860 | -0.06716 | COPPER, TOTAL |
| TMERCURY | -0.05168 | 0.36281 | -0.02931 | -0.07701 | 0.06823 | -0.01078 | -0.08318 | -0.09722 | 0.16138 | -0.02402 | LEAD, TOTAL |
| TNICKEL_ | -0.01444 | -0.07352 | -0.02620 | 0.14901 | -0.06315 | -0.05461 | 0.02783 | -0.00676 | 0.02261 | 2.19647 | MERCURY, TOTAL |
| TSILVER_ | -0.00109 | -0.02574 | 0.05560 | -0.10967 | 0.02223 | 1.09430 | 0.08346 | 0.02440 | 0.01958 | -0.28783 | NICKEL, TOTAL |
| TSULFIDE | -0.15094 | 0.05590 | -0.07725 | -0.10488 | 0.06167 | 0.01529 | -0.15295 | 0.31083 | 0.26721 | -0.14915 | SILVER, TOTAL |
| TTOTALO | -0.01978 | -0.04528 | 0.07085 | -0.02855 | -0.04290 | -0.01779 | -0.02207 | 0.00488 | -0.22356 | -0.13347 | SULFIDE, TOTAL |
| TZINC_T | -0.01644 | 0.00908 | -0.01460 | -0.04250 | -0.00949 | -0.01155 | 0.00185 | 0.00372 | 0.12478 | 0.63248 | TOTAL ORGANIC CARBON |
| | | | | | | | | | | | ZINC, TOTAL |

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Rotation Method: Varimax

Standardized Scoring Coefficients

| | FACTOR11 | FACTOR12 | FACTOR13 | FACTOR14 | FACTOR15 | FACTOR16 | FACTOR17 | FACTOR18 | FACTOR19 | FACTOR20 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | 0.23803 | -0.46556 | 0.26009 | -0.56764 | -0.13265 | 0.48507 | -0.05170 | -0.11311 | -0.25761 | -0.83056 | ACID VOLATILE SULFIDE |
| BENZO_A_ | -0.38727 | 0.08668 | -0.10473 | 0.07429 | 0.12498 | -0.13726 | -0.06022 | 0.15178 | -0.35582 | -0.21759 | BENZO(A)PYRENE |
| BENZO_B_ | -0.34745 | 0.08232 | -0.09773 | 0.07766 | 0.11478 | -0.12344 | -0.04327 | 0.11496 | -0.27398 | -0.12087 | BENZO(B)FLUORANTHENE |
| BENZO_GH | 1.69099 | -0.08493 | -0.07473 | -0.27432 | -0.15137 | 0.33583 | 0.23115 | 0.10141 | 0.51037 | 0.22797 | BENZO(GH1)PERYLENE |
| BENZO_K_ | -0.37389 | 0.07558 | -0.07495 | 0.05863 | 0.09995 | -0.12189 | -0.17169 | 0.14490 | -0.66030 | -0.45739 | BENZO(K)FLUORANTHENE |
| CHRYSENE | -0.49970 | 0.00338 | -0.14464 | 0.11015 | 0.13230 | -0.19656 | -0.17026 | 0.19302 | -0.77753 | -0.92815 | CHRYSENE |
| DDD | 0.54806 | -0.07319 | 0.25926 | -0.01721 | -0.30999 | -0.14990 | 0.26032 | -0.02478 | 0.10344 | -0.06636 | 4,4'-DDD |
| DDE | -0.09461 | -0.07669 | -0.23065 | -0.48490 | 2.42075 | -0.07904 | 0.30195 | 0.16679 | 0.10446 | 0.88234 | 4,4'-DDE |
| ECADMIUM | 0.05705 | -0.36795 | 0.00218 | -0.55810 | -1.06585 | -0.13817 | -2.01727 | -0.20086 | 0.03495 | -0.97277 | CADMIUM, EXTRACTABLE |
| ECOPPER_ | -0.10627 | -0.13154 | -0.07145 | -0.12467 | 0.04517 | -0.09372 | 0.22458 | -0.43554 | 0.32604 | 6.62990 | COPPER, EXTRACTABLE |
| ELEAD_E | -0.16016 | 2.66228 | 0.14945 | 0.37112 | -0.04101 | 0.01391 | 0.12759 | 0.29069 | -1.08251 | 0.57414 | LEAD, EXTRACTABLE |
| EMERCURY | 0.20482 | 0.09663 | -0.20489 | -0.33021 | 0.25236 | 0.12561 | 0.64578 | -0.34180 | 0.18330 | 0.29690 | MERCURY, EXTRACTABLE |
| EZINC_E | -0.11093 | -0.29343 | -0.08575 | -0.02891 | -0.07850 | -0.01977 | 0.02412 | -0.10865 | -0.89427 | -1.22041 | ZINC, EXTRACTABLE |
| FINES | -0.02062 | -0.14173 | -0.42571 | -0.31864 | 0.00017 | 2.18477 | -0.01459 | -0.14248 | 0.64007 | -0.41835 | FINES |
| FLUORANT | -0.35925 | -0.08172 | -0.14023 | 0.01152 | 0.05802 | -0.13315 | -0.04506 | -0.00615 | -0.02401 | -0.41040 | FLUORANTHENE |
| INDENO_1 | 1.24645 | -0.04020 | -0.07841 | -0.19547 | -0.07896 | 0.23221 | 0.17592 | 0.11454 | 0.31851 | 0.23500 | INDENO(1,2,3-CD)PYRENE |
| PCBN1260 | -0.41137 | -0.91121 | -0.28771 | -0.22641 | -0.30605 | 0.09981 | 0.09559 | -2.21321 | 0.07007 | -1.04191 | PCB-1260 |
| PYRENE | -0.47907 | 0.03341 | -0.15451 | 0.08249 | 0.14638 | -0.19257 | -0.04039 | 0.19588 | -0.62754 | -0.36852 | PYRENE |
| TARSENIC | -0.05981 | 0.30729 | 2.78826 | 0.34281 | -0.20231 | -0.09602 | -1.21973 | -0.16879 | 0.39890 | 0.37333 | ARSENIC, TOTAL |
| TBERYLLI | -0.42483 | -0.15239 | -0.63695 | 0.18302 | 0.00978 | -2.01489 | 0.28135 | 0.02089 | 1.03874 | 0.13332 | BERYLLIUM, TOTAL |
| TCADMIUM | 0.25457 | -0.20515 | -0.44142 | -0.69614 | -0.69751 | -0.20635 | 2.53996 | -0.65327 | -0.17624 | 0.58824 | CADMIUM, TOTAL |
| TCHROMIU | 0.12612 | -0.55336 | -0.16184 | -0.45801 | -0.22271 | 0.28118 | 0.34923 | -0.48948 | 0.66285 | -0.12849 | CHROMIUM, TOTAL |
| TCOPPER_ | -0.18607 | -0.39977 | -0.18619 | -0.13664 | -0.11081 | 0.14752 | -0.01037 | -0.00649 | 0.00182 | -1.00027 | COPPER, TOTAL |
| TLEAD_T | -0.22654 | -0.13742 | -0.14771 | -0.05214 | -0.11646 | 0.06513 | -0.00764 | -0.12246 | -0.62997 | -0.60438 | LEAD, TOTAL |
| TMERCURY | -0.33262 | -0.70029 | -0.32580 | -0.23776 | -0.11222 | 0.01924 | -0.27492 | 2.44485 | -1.09182 | -2.54043 | MERCURY, TOTAL |
| TNICKEL_ | 0.00822 | 0.34256 | -0.44335 | -0.05957 | 0.24266 | -0.07035 | 0.14471 | 0.55424 | -3.24670 | 0.92439 | NICKEL, TOTAL |
| TSILVER_ | 0.25442 | -0.12584 | -0.30274 | -0.42866 | 0.00190 | 0.20095 | 0.15349 | -0.11912 | -0.05674 | -0.06761 | SILVER, TOTAL |
| TSULFIDE | 0.28392 | -0.84733 | 0.29437 | -0.48077 | -0.16667 | 0.86144 | -0.09472 | -0.12310 | -0.28728 | -0.97386 | SULFIDE, TOTAL |
| TTOTALO | -0.33162 | 0.82600 | 0.33162 | 2.90698 | -0.30797 | -0.73919 | -0.88366 | -0.13191 | 0.49331 | -1.00800 | TOTAL ORGANIC CARBON |
| TZINC_T | 0.13885 | -0.04029 | -0.10283 | 0.02800 | 0.13291 | 0.14519 | -0.04705 | -0.10551 | 4.65234 | 1.14301 | ZINC, TOTAL |

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Bechtel/Navy Clean II
Task 5-2: Principal Component Analysis

Rotation Method: Varimax

Standardized Scoring Coefficients

| | FACTOR21 | FACTOR22 | FACTOR23 | FACTOR24 | FACTOR25 | FACTOR26 | FACTOR27 | FACTOR28 | FACTOR29 | FACTOR30 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACID_VOL | -0.70213 | 0.54412 | 0.74733 | 0.08456 | -0.89241 | 14.46212 | 2.39099 | 4.96330 | 3.20774 | -2.63456 | ACID VOLATILE SULFIDE |
| BENZO_A_ | 0.62697 | -1.07290 | -1.40106 | 0.04626 | -0.13044 | -1.00345 | -0.31096 | -6.25042 | 26.66502 | -7.93455 | BENZO(A)PYRENE |
| BENZO_B_ | 0.53779 | -2.12736 | -1.25558 | -0.12521 | -0.34765 | -0.76844 | 1.33338 | 20.28413 | -4.08869 | 3.65023 | BENZO(B)FLUORANTHENE |
| BENZO_GH | 0.31543 | -0.71601 | -1.66968 | -0.51865 | -0.63604 | 0.97090 | 0.05317 | 1.34487 | 3.77181 | -22.57882 | BENZO(GHI)PERYLENE |
| BENZO_K_ | -0.92623 | -0.06230 | 8.69277 | 1.20990 | 0.68894 | -4.28418 | 1.24949 | -7.58132 | -13.99681 | 2.36567 | BENZO(K)FLUORANTHENE |
| CHRYSENE | 1.09987 | 9.98394 | -1.03212 | 0.76446 | 2.63142 | 6.63120 | -4.37023 | 3.96666 | 5.46533 | -9.42660 | CHRYSENE |
| DDD | 0.52183 | -0.25527 | 0.18769 | -0.12864 | 0.05167 | -0.46921 | 0.26442 | 0.77313 | 0.39867 | -0.01589 | 4,4'-DDD |
| DDE | 0.22268 | -0.31788 | -0.46357 | -0.46208 | 0.56061 | 0.25615 | -0.77293 | -2.37804 | -1.45450 | 2.93500 | 4,4'-DDE |
| ECADMIUM | -0.36601 | 1.21813 | 1.78484 | -1.14077 | 0.01166 | -0.74872 | 2.14911 | 0.81936 | -0.89200 | 1.35922 | CADMIUM, EXTRACTABLE |
| ECOPPER_ | -3.42738 | -2.51709 | -0.65568 | -3.54797 | 1.66637 | -1.44797 | -4.13966 | 2.34329 | -2.47325 | 12.66211 | COPPER, EXTRACTABLE |
| ELEAD_E | 1.04332 | -1.53062 | -0.10575 | -3.30539 | -7.23489 | -1.59495 | -0.99823 | 2.95727 | 3.04936 | -3.56266 | LEAD, EXTRACTABLE |
| EMERCURY | 1.49261 | 0.04730 | -1.41698 | -0.29042 | 0.73047 | 1.42708 | -0.55860 | -1.39379 | -0.85667 | 1.95252 | MERCURY, EXTRACTABLE |
| EZINC_E | -1.51515 | 1.01151 | 1.54944 | 10.54289 | 1.97656 | 2.58994 | -1.17060 | -1.34080 | 2.14481 | -16.19488 | ZINC, EXTRACTABLE |
| FINES | 1.26502 | 0.08727 | -0.74802 | -0.11781 | 0.19333 | 0.42200 | 1.91085 | 0.84080 | 0.33986 | 0.40192 | FINES |
| FLUORANT | -0.03546 | -1.28404 | -0.32184 | -0.26859 | -0.17488 | 1.00687 | 19.17292 | 2.56072 | 1.11894 | 4.21424 | FLUORANTHENE |
| INDENO_1 | 0.36980 | -1.09878 | -1.52809 | -0.30240 | 0.08089 | -0.28104 | 0.26709 | -0.65840 | -9.55552 | 27.49641 | INDENO(1,2,3-CD)PYRENE |
| PCBN1260 | -3.21816 | 0.61919 | 0.86667 | -0.04630 | -1.79151 | 0.19550 | 0.29468 | 2.69630 | -0.82485 | 0.90851 | PCB-1260 |
| PYRENE | 1.12970 | -1.08191 | -3.63537 | -0.15618 | 0.49108 | -1.92111 | -3.09259 | -14.68808 | -12.83209 | 3.05045 | PYRENE |
| TARSENIC | -0.55974 | -0.19623 | 0.63634 | 0.05224 | -0.69270 | 0.74594 | 0.61586 | 0.93040 | 0.17780 | -2.82203 | ARSENIC, TOTAL |
| TBERYLLI | -0.16186 | 0.29858 | -1.12186 | 0.79867 | -1.86392 | 0.33751 | 1.00187 | -0.80708 | 0.83807 | -3.17433 | BERYLLIUM, TOTAL |
| TCADMIUM | -0.55611 | -1.05901 | -1.48827 | -0.45735 | -0.29998 | 1.26512 | -0.82983 | 1.34681 | 0.73877 | 2.21800 | CADMIUM, TOTAL |
| TCHROMIU | -3.51160 | -1.94578 | 3.94689 | -0.06045 | -1.88078 | -8.42698 | -12.87072 | 0.78748 | -1.76388 | -1.71972 | CHROMIUM, TOTAL |
| TCOPPER_ | 8.25858 | 1.20543 | -2.33369 | -1.21361 | -1.91984 | 1.52001 | 9.26818 | -2.18912 | 1.42874 | -1.42707 | COPPER, TOTAL |
| TLEAD_T | -1.11269 | 1.07520 | 0.64969 | 0.81299 | 11.74287 | 0.97238 | 1.06889 | -6.37415 | -8.89042 | 9.97223 | LEAD, TOTAL |
| TMERCURY | -0.47918 | 1.87249 | 0.92367 | 0.48452 | -1.85714 | 0.30898 | 1.81747 | -1.07958 | 0.84224 | -3.17818 | MERCURY, TOTAL |
| TNICKEL_ | -1.00787 | 0.13439 | 1.17868 | 0.80278 | 1.22945 | -0.68042 | -0.10258 | -0.05720 | -0.13824 | 1.63818 | NICKEL, TOTAL |
| TSILVER_ | 0.19524 | 0.02139 | 0.10495 | -0.24770 | 0.06080 | 0.18247 | -0.18512 | -0.09270 | -0.06728 | 0.79944 | SILVER, TOTAL |
| TSULFIDE | -0.91314 | -0.32012 | 1.40482 | -0.18021 | -1.20188 | -13.24500 | -0.22428 | -1.81280 | -1.78337 | 0.89018 | SULFIDE, TOTAL |
| TTOTALO | -0.10922 | 0.96334 | -0.88438 | 0.96206 | -0.68378 | 0.03888 | 0.52298 | 1.92395 | 2.04677 | -0.03798 | TOTAL ORGANIC CARBON |
| TZINC_T | 0.06082 | -2.93427 | -1.50840 | -4.96650 | -4.16925 | -3.44521 | -0.91735 | -1.48268 | -1.39287 | 0.47738 | ZINC, TOTAL |

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Bechtel/Navy Ocean II
Task 5-2: Principal Component Analysis
Factor Scores



| STATION | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -0.34393 | 0.19054 | -0.72085 | -0.38014 | -0.29870 | -0.17031 | 0.92123 | 0.52727 | -0.20138 | 0.32849 |
| 10 | 0.62129 | 0.89103 | -0.60704 | 0.77150 | -0.98836 | 0.01335 | -0.02474 | 0.69853 | -1.44363 | 0.88196 |
| 11 | 0.31180 | 0.69271 | -0.63141 | 0.38661 | -1.15328 | -0.26201 | 1.11230 | -1.79098 | -0.27019 | -0.72502 |
| 12 | | | | | | | | | | |
| 13 | -0.51431 | 0.96938 | -0.89490 | -0.44148 | -0.21783 | -0.03815 | 1.24069 | 0.71282 | 0.27469 | 0.69930 |
| 14 | -0.07547 | -0.57174 | -0.78320 | -0.76392 | -0.61911 | -0.12034 | 0.98119 | -0.77862 | -0.07944 | 0.30836 |
| 15 | -0.55990 | -0.14973 | -0.61303 | 0.54217 | 0.03479 | -0.18027 | -0.04192 | 1.53037 | -0.00858 | 0.48867 |
| 16 | -0.94988 | -0.40592 | -0.68190 | 0.43177 | 0.79517 | -0.10197 | 0.69908 | 4.80660 | -1.06078 | 1.11707 |
| 17 | -0.50012 | 5.49833 | 0.46848 | -0.57931 | -0.20485 | -0.03089 | -1.33400 | 0.55152 | 1.57303 | 0.03605 |
| 18 | 0.26280 | 0.11989 | -0.67133 | 0.97594 | -0.61158 | -0.33362 | -0.58964 | -0.51492 | -0.06342 | -0.04340 |
| 19 | -0.19434 | -0.40631 | -0.76510 | 0.49082 | -0.29592 | -0.36157 | -0.85677 | -0.44440 | 0.43266 | 0.12443 |
| 2 | -0.51726 | 0.84168 | -0.21864 | -1.22123 | -0.21788 | 0.21655 | 0.26771 | -0.36262 | 0.72966 | -1.02763 |
| 20 | -0.13529 | -0.49217 | -0.78678 | 1.28084 | -0.37910 | -0.33483 | -0.81938 | -0.50146 | 0.39956 | -0.02130 |
| 21 | 0.81951 | 0.52417 | 0.42136 | 1.22205 | -1.26935 | -0.28580 | -1.02350 | -0.89365 | -0.35199 | 1.04217 |
| 22 | 0.10302 | 0.43634 | 0.13836 | 2.46382 | -0.81306 | -0.30913 | -0.72992 | -0.09907 | 0.31391 | 1.29291 |
| 23 | 0.25964 | -0.28837 | -0.66644 | 0.48646 | -0.49020 | -0.29721 | -0.90061 | -0.34666 | -0.24204 | -0.37159 |
| 24 | -0.24777 | -0.63761 | -0.78987 | -2.34397 | 0.16795 | -0.38966 | -1.06851 | -0.15978 | 0.38276 | -0.74878 |
| 25 | -0.12699 | -0.68898 | -0.63687 | -1.22366 | -0.14765 | -0.22809 | -0.99134 | -0.47953 | 0.44769 | 0.59534 |
| 26 | -0.32042 | -0.31495 | -0.35333 | 0.51901 | -0.25351 | 6.46607 | -0.37205 | 0.03688 | 0.28823 | -0.59411 |
| 27 | | | | | | | | | | |
| 28 | -0.45346 | -0.12375 | -0.21526 | 0.20667 | -0.19572 | 0.92078 | [illegible]19490 | -0.23546 | 0.72169 | 0.19144 |
| 29 | -0.23779 | -0.82007 | -0.05211 | 0.72565 | -0.64956 | -0.31582 | [illegible]135 | -1.02044 | 0.26070 | 0.23139 |
| 3 | | | | | | | | | | |
| 30 | -0.27054 | -0.62476 | -0.82502 | 0.53770 | -0.18412 | -0.36911 | [illegible]046 | -0.10776 | 0.33875 | -0.11523 |
| 31 | -0.27527 | -0.72980 | -0.77061 | -0.72582 | -0.07455 | -0.31441 | -0.82259 | -0.07785 | 0.19826 | -0.03084 |
| 32 | -0.28090 | -0.70106 | -0.73109 | -1.24398 | -0.01543 | -0.20850 | -0.84356 | -0.07347 | 0.36278 | 0.39891 |
| 33 | -0.27035 | -0.85386 | -0.92777 | 1.49998 | -0.37295 | -0.48027 | -0.74305 | -0.34188 | 0.16791 | 0.37476 |
| 4 | -0.31056 | 0.27682 | -0.53405 | 0.44154 | -0.97004 | -0.00082 | 2.47981 | -0.29796 | -0.75718 | 0.97502 |
| 40010.1 | -0.22303 | -0.63167 | 3.64364 | -0.08328 | -1.44204 | -0.06472 | 0.55971 | -0.64166 | 0.39800 | 0.31225 |
| 40010.2 | -0.52289 | -0.72223 | 3.22289 | -0.27152 | -0.67644 | 0.00444 | -0.64065 | 1.01282 | -0.13019 | 0.05274 |
| 40010.3 | -0.19757 | -0.67963 | 2.70696 | -0.18673 | -0.95625 | -0.15592 | -0.45422 | 0.26020 | -0.12409 | 0.74463 |
| 40018.1 | -0.46605 | -0.59166 | 0.31631 | -0.42599 | 0.18919 | -0.34510 | -0.86967 | 0.34159 | -0.14399 | -1.34256 |
| 40018.2 | -0.41759 | -0.70149 | 0.57524 | -0.27245 | -0.27405 | -0.29869 | -0.43441 | 0.27797 | -0.36212 | -1.25790 |
| 40018.3 | -0.53123 | -0.82547 | 0.65978 | 0.97203 | -0.03323 | -0.37166 | -0.78812 | 1.43418 | -0.49653 | -1.12147 |
| 40032.1 | -0.32446 | -0.45978 | -0.29857 | -2.66456 | 0.20615 | -0.13099 | -1.03027 | 0.40510 | 0.23744 | -0.46018 |
| 41 | 0.07338 | 0.89699 | 0.19922 | 0.13607 | -0.55285 | -0.13716 | 0.58771 | 0.70853 | -1.12337 | -1.75419 |
| 42 | -0.72332 | -0.31469 | 0.07975 | 0.38778 | 2.15741 | -0.26476 | 0.37985 | -0.24370 | 1.11454 | 1.65646 |
| 43 | | | | | | | | | | |
| 44 | -0.37669 | 0.10229 | 0.33960 | 0.79451 | 1.68589 | -0.09910 | 1.21716 | -0.76291 | 0.58350 | 0.27333 |
| 45 | -0.50617 | -0.19038 | 1.06609 | 0.33705 | 1.24157 | 0.10212 | 3.13392 | -0.77772 | -0.22274 | -1.91776 |
| 46 | -1.01682 | -0.01599 | 0.41189 | -0.06002 | 2.32386 | -0.10326 | 1.04003 | -0.27755 | 1.37700 | 0.79856 |
| 47 | 0.03236 | 1.33733 | 0.29864 | -1.30248 | -0.33856 | -0.23915 | 0.37198 | 0.19283 | -0.78378 | -0.63624 |
| 48 | 5.24290 | -0.64501 | -0.01102 | -0.05726 | -0.30402 | -0.09877 | 1.12346 | 1.73838 | 3.45422 | -0.64616 |
| 49 | 2.31142 | 0.73887 | -0.05281 | 0.54820 | 0.78053 | -0.15240 | -0.54930 | -0.18151 | -3.41192 | -1.63072 |
| 5 | | | | | | | | | | |
| 50 | 2.28720 | 0.06610 | 0.81533 | -1.91371 | 1.69740 | 0.91773 | -0.30563 | -1.00610 | -2.38118 | 3.51006 |
| 51 | 0.47832 | 0.01408 | 0.30661 | 0.82638 | 2.88169 | -0.27905 | -0.89235 | -0.46265 | -0.61662 | -2.00388 |
| 52 | -0.03928 | 0.47205 | 0.31503 | 1.15550 | 2.61402 | -0.23623 | -1.00258 | -0.76198 | 0.79835 | -0.16697 |
| 6 | -0.02589 | -0.32925 | -0.35850 | -0.76175 | -0.57750 | -0.19658 | 0.36964 | -0.94078 | 0.14016 | 0.09491 |
| 7 | 0.04048 | -0.15165 | -0.84253 | -0.42330 | -0.56700 | 0.05985 | 0.96380 | 0.12378 | -0.79831 | -0.77805 |
| 8 | -0.30201 | 0.00850 | -0.56376 | -0.97626 | -0.46229 | -0.25600 | 0.92326 | -0.48901 | -0.16890 | 0.13179 |
| 9 | -0.49658 | 0.19086 | -0.30343 | 0.20256 | -0.56065 | -0.13850 | 1.16045 | -0.25730 | 0.24280 | 0.61953 |

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---------- Type of Result=Clam Bioaccumulation Analyte name=ZINC, TOTAL TRANS=notrans DUMMY=' ' ----------

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: VALUE

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 11 MSE= 2.25
Critical Value of Studentized Range= 3.820
Minimum Significant Difference= 2.6668
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 4.615385

Means with the same letter are not significantly different.

| Tukey Grouping | Mean | N | STATYPE |
|---|---|---|---|
| A | 13.7500 | 4 | Pier |
| A | | | |
| A | 12.6000 | 5 | Basin |
| A | | | |
| A | 12.2000 | 5 | Reference |

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## Section 5-4. Stepwise Multiple Regression

Relationships between the physical and chemical data and the toxicity and benthic infauna data were evaluated with stepwise multiple regression. This section presents detailed results of the multiple regression analysis of all physical and chemical data represented by PCA factors with the biological response data represented by the toxicity and benthic infauna parameters.

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Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Data Used in Multiple Regression



MATRIX CHEM

BIOASSAY AMPHIPOD REBURIAL

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.920 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 0.977 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.698 | -1.44 | 0.882 |
| 11 | 0.980 | 0.212 | 0.693 | -.631 | 0.387 | -1.15 | -.262 | 1.112 | -1.79 | -.370 | -.725 |
| 12 | 0.988 | | | | | | | | | | |
| 13 | 0.989 | -.514 | 0.969 | -.895 | -.441 | -.218 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 0.974 | -.075 | -.572 | -.783 | -.764 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 0.969 | -.560 | -.150 | -.413 | 0.562 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 16 | 0.967 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| 17 | 0.979 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 18 | 0.978 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 1.000 | -.194 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.887 | -.444 | 0.433 | 0.124 |
| 3 | 0.926 | -.517 | 0.862 | -.219 | -1.32 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 0.976 | -.125 | -.493 | -.787 | 1.281 | -.379 | -.338 | -.819 | -.901 | 0.400 | -.021 |
| 21 | 0.941 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.894 | -.352 | 1.042 |
| 22 | 0.898 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.293 |
| 23 | 0.966 | 0.260 | -.288 | -.666 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 1.000 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 0.967 | -.127 | -.889 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.448 | 0.895 |
| 26 | 0.945 | -.320 | -.315 | -.353 | 0.519 | -.254 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 27 | 0.951 | | | | | | | | | | |
| 28 | 0.904 | -.493 | -.124 | -.215 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| 29 | 0.928 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 0.882 | | | | | | | | | | |
| 30 | 0.958 | -.271 | -.625 | -.828 | 0.938 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 0.951 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 0.979 | -.201 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.864 | -.073 | 0.363 | 0.399 |
| 33 | 0.952 | -.270 | -.884 | -.938 | 1.900 | -.273 | -.480 | -.743 | -.342 | 0.168 | 0.378 |
| 4 | 0.989 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 0.952 | -.221 | -.632 | 3.644 | -.083 | -1.46 | -.065 | 0.560 | -.642 | 0.398 | 0.212 |
| 40010.2 | 0.972 | -.523 | -.722 | 3.223 | -.272 | -.676 | 0.004 | -.661 | 1.013 | -.130 | 0.053 |
| 40010.3 | 0.975 | -.198 | -.680 | 2.707 | -.187 | -.954 | -.156 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 0.931 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 0.965 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 0.964 | -.531 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.434 | -.695 | -1.12 |
| 40032.1 | 0.989 | -.324 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| 41 | 0.779 | 0.073 | 0.897 | 0.199 | 0.136 | -.553 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| 42 | 0.610 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| 43 | 0.962 | | | | | | | | | | |
| 44 | 0.246 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.763 | 0.584 | 0.273 |
| 45 | 0.630 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.92 |
| 46 | 0.452 | -1.02 | -.016 | 0.412 | -.060 | 2.326 | -.103 | 1.060 | -.278 | 1.377 | 0.799 |
| 47 | 0.915 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| 48 | 0.538 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.454 | -.646 |
| 49 | 0.779 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.549 | -.182 | -3.41 | -1.43 |
| 5 | 0.966 | | | | | | | | | | |
| 50 | 0.930 | 2.287 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 0.926 | 0.478 | 0.014 | 0.307 | 0.826 | 2.882 | -.279 | -.892 | -.663 | -.615 | -2.00 |
| 52 | 0.919 | -.039 | 0.472 | 0.315 | 1.155 | 2.614 | -.236 | -1.00 | -.762 | 0.798 | -.147 |
| 6 | 0.933 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.941 | 0.140 | 0.095 |
| 7 | 0.985 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.944 | 0.126 | -.798 | -.778 |
| 8 | 0.920 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.489 | -.169 | 0.132 |
| 9 | 1.000 | -.497 | 0.191 | -.303 | 0.203 | -.961 | -.139 | 1.160 | -.257 | 0.243 | 0.620 |

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Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Data Used in Multiple Regression

MATRIX CHEM

BIOASSAY AMPHIPOD SURVIVAL

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.850 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 0.910 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| 11 | 0.988 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 0.880 | . | . | . | . | . | . | . | . | . | . |
| 13 | 0.925 | -.514 | 0.969 | -.895 | -.441 | -.218 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 0.963 | -.079 | -.572 | -.783 | -.766 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 0.930 | -.980 | -.150 | -.413 | 0.942 | 0.039 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 16 | 0.910 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 6.807 | -1.06 | 1.117 |
| 17 | 0.880 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.973 | 0.036 |
| 18 | 0.920 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 0.890 | -.196 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| 2 | 0.910 | -.517 | 0.842 | -.219 | -1.22 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 0.870 | -.125 | -.492 | -.787 | 1.281 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 21 | 0.850 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.894 | -.352 | 1.042 |
| 22 | 0.900 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.316 | 1.293 |
| 23 | 0.950 | 0.260 | -.288 | -.668 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 0.920 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 0.930 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.468 | 0.595 |
| 26 | 0.900 | -.320 | -.315 | -.353 | 0.519 | -.254 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 27 | 0.810 | . | . | . | . | . | . | . | . | . | . |
| 28 | 0.900 | -.453 | -.124 | -.215 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| 29 | 0.830 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 0.930 | . | . | . | . | . | . | . | . | . | . |
| 30 | 0.835 | -.271 | -.629 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 0.860 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 0.910 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.846 | -.073 | 0.363 | 0.399 |
| 33 | 0.830 | -.270 | -.854 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.168 | 0.375 |
| 4 | 0.900 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 0.797 | -.223 | -.832 | 3.644 | -.083 | -1.44 | -.065 | 0.560 | -.642 | 0.398 | 0.212 |
| 40010.2 | 0.819 | -.523 | -.722 | 3.223 | -.272 | -.674 | 0.006 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 0.850 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.454 | 0.240 | -.124 | 0.745 |
| 40018.1 | 0.640 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 0.830 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.436 | 0.278 | -.362 | -1.26 |
| 40018.3 | 0.883 | -.831 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.708 | 1.436 | -.495 | -1.13 |
| 40032.1 | 0.810 | -.326 | -.680 | -.297 | -3.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| 41 | 0.570 | 0.073 | 0.897 | 0.199 | 0.136 | -.583 | -.137 | 0.588 | 0.709 | -1.12 | -1.79 |
| 42 | 0.290 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.246 | 1.115 | 1.658 |
| 43 | 0.780 | . | . | . | . | . | . | . | . | . | . |
| 44 | 0.163 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.783 | 0.584 | 0.273 |
| 45 | 0.530 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.136 | -.778 | -.223 | -1.92 |
| 46 | 0.210 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | -.103 | 1.040 | -.278 | 1.377 | 0.799 |
| 47 | 0.830 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| 48 | 0.230 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.454 | -.444 |
| 49 | 0.730 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.569 | -.182 | -3.41 | -1.43 |
| 5 | 0.870 | . | . | . | . | . | . | . | . | . | . |
| 50 | 0.750 | 2.287 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 0.690 | 0.478 | 0.014 | 0.307 | 0.826 | 2.882 | -.279 | -.892 | -.463 | -.615 | -2.00 |
| 52 | 0.830 | -.039 | 0.472 | 0.315 | 1.155 | 2.816 | -.236 | -1.00 | -.762 | 0.798 | -.167 |
| 6 | 0.870 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.941 | 0.160 | 0.095 |
| 7 | 0.870 | 0.060 | -.152 | -.863 | -.623 | -.567 | 0.060 | 0.944 | 0.126 | -.798 | -.778 |
| 8 | 0.870 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.469 | -.169 | 0.132 |
| 9 | 0.880 | -.497 | 0.191 | -.303 | 0.203 | -.561 | -.139 | 1.160 | -.257 | 0.243 | 0.620 |

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Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Data Used in Multiple Regression

MATRIX CHEM

BIOASSAY ECHINODERM NORMAL DEVELOPMENT

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.010 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 0.897 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| 11 | 0.873 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 0.003 | . | . | . | . | . | . | . | . | . | . |
| 13 | 0.003 | -.514 | 0.969 | -.895 | -.441 | -.218 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 0.000 | -.075 | -.572 | -.703 | -.764 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 0.570 | -.560 | -.150 | -.413 | 0.542 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 16 | 0.677 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| 17 | 0.000 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 18 | 0.867 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 0.867 | -.194 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.057 | -.444 | 0.433 | 0.126 |
| 2 | 0.000 | -.517 | 0.842 | -.219 | -1.22 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 0.923 | -.125 | -.492 | -.787 | 1.281 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 21 | 0.923 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.896 | -.352 | 1.042 |
| 22 | 0.893 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.293 |
| 23 | 0.933 | 0.260 | -.388 | -.666 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 0.000 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 0.000 | -.127 | -.689 | -.637 | -1.22 | -.140 | -.228 | -.991 | -.480 | 0.448 | 0.595 |
| 26 | 0.913 | -.320 | -.315 | -.353 | 0.519 | -.294 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 27 | 0.937 | . | . | . | . | . | . | . | . | . | . |
| 28 | 0.963 | -.493 | -.124 | -.218 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| 29 | 0.963 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 0.840 | . | . | . | . | . | . | . | . | . | . |
| 30 | 0.933 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 0.000 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 0.403 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| 33 | 0.005 | -.270 | -.856 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.168 | 0.375 |
| 4 | 0.000 | -.311 | 0.277 | -.536 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 0.859 | -.223 | -.632 | 3.644 | -.083 | -1.44 | -.065 | 0.569 | -.642 | 0.398 | 0.212 |
| 40010.2 | 0.831 | -.523 | -.722 | 3.223 | -.272 | -.674 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 0.862 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 0.680 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 0.803 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 0.566 | -.531 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.436 | -.495 | -1.12 |
| 40032.1 | 0.000 | -.324 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| 41 | 0.513 | 0.073 | 0.897 | 0.199 | 0.136 | -.553 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| 42 | 0.000 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| 43 | 0.000 | . | . | . | . | . | . | . | . | . | . |
| 44 | 0.003 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.317 | -.763 | 0.984 | 0.273 |
| 45 | 0.000 | -.506 | -.190 | 1.066 | 0.337 | 1.262 | 0.102 | 2.134 | -.770 | -.223 | -1.92 |
| 46 | 0.000 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | -.103 | 1.040 | -.278 | 1.377 | 0.799 |
| 47 | 0.000 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| 48 | 0.000 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.454 | -.646 |
| 49 | 0.000 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.549 | -.102 | -3.41 | -1.43 |
| 5 | 0.070 | . | . | . | . | . | . | . | . | . | . |
| 50 | 0.000 | 2.387 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 0.000 | 0.478 | 0.014 | 0.307 | 0.826 | 2.883 | -.279 | -.893 | -.483 | -.618 | -2.00 |
| 52 | 0.000 | -.039 | 0.472 | 0.315 | 1.155 | 2.614 | -.236 | -1.00 | -.762 | 0.798 | -.147 |
| 6 | 0.000 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.941 | 0.140 | 0.095 |
| 7 | 0.000 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.944 | 0.124 | -.798 | -.778 |
| 8 | 0.007 | -.302 | 0.008 | -.566 | -.976 | -.462 | -.256 | 0.923 | -.489 | -.169 | 0.132 |
| 9 | 0.110 | -.497 | 0.191 | -.303 | 0.203 | -.561 | -.139 | 1.160 | -.257 | 0.243 | 0.620 |



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Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Data Used in Multiple Regression

MATRIX CHEM

BIOASSAY ECHINODERM SURVIVAL

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.960 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 1.000 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| 11 | 0.977 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 0.970 | . | . | . | . | . | . | . | . | . | . |
| 13 | 0.423 | -.514 | 0.969 | -.895 | -.441 | -.218 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 0.640 | -.075 | -.572 | -.783 | -.764 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 0.917 | -.560 | -.150 | -.413 | 0.542 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 16 | 0.900 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| 17 | 0.463 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 18 | 0.970 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 0.973 | -.194 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| 2 | 0.337 | -.517 | 0.842 | -.219 | -1.22 | -.210 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 0.870 | -.125 | -.492 | -.707 | 1.201 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 21 | 0.993 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.894 | -.352 | 1.042 |
| 22 | 0.890 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.293 |
| 23 | 0.873 | 0.260 | -.288 | -.666 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 0.603 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 0.907 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.448 | 0.595 |
| 26 | 0.913 | -.320 | -.315 | -.353 | 0.519 | -.254 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 27 | 0.877 | . | . | . | . | . | . | . | . | . | . |
| 28 | 0.843 | -.453 | -.124 | -.215 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| 29 | 0.977 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 1.000 | . | . | . | . | . | . | . | . | . | . |
| 30 | 0.923 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 0.250 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 0.827 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| 33 | 0.460 | -.270 | -.854 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.168 | 0.375 |
| 4 | 0.650 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 0.951 | -.223 | -.632 | 3.644 | -.083 | -1.44 | -.065 | 0.560 | -.642 | 0.398 | 0.212 |
| 40010.2 | 0.887 | -.523 | -.722 | 3.223 | -.272 | -.674 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 0.780 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 0.977 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 0.863 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 0.705 | -.531 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.434 | -.495 | -1.12 |
| 40032.1 | 0.770 | -.324 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| 41 | 0.867 | 0.073 | 0.897 | 0.199 | 0.136 | -.553 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| 42 | 0.517 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| 43 | 0.863 | . | . | . | . | . | . | . | . | . | . |
| 44 | 0.817 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.763 | 0.584 | 0.273 |
| 45 | 0.363 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.92 |
| 46 | 0.507 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | -.103 | 1.040 | -.278 | 1.377 | 0.799 |
| 47 | 0.727 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| 48 | 0.910 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.454 | -.646 |
| 49 | 0.777 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.549 | -.182 | -3.41 | -1.43 |
| 5 | 0.320 | . | . | . | . | . | . | . | . | . | . |
| 50 | 0.753 | 2.287 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 0.727 | 0.478 | 0.014 | 0.307 | 0.826 | 2.882 | -.279 | -.892 | -.463 | -.615 | -2.00 |
| 52 | 0.717 | -.039 | 0.472 | 0.315 | 1.155 | 2.614 | -.236 | -1.00 | -.762 | 0.798 | -.147 |
| 6 | 0.520 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.941 | 0.160 | 0.095 |
| 7 | 0.663 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.944 | 0.126 | -.798 | -.778 |
| 8 | 0.643 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.489 | -.169 | 0.132 |
| 9 | 0.960 | -.497 | 0.191 | -.303 | 0.203 | -.561 | -.139 | 1.160 | -.257 | 0.243 | 0.620 |

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BIOASSAY POLYCHAETE GROWTH

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.134 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 0.101 | 0.621 | 0.091 | -.687 | 0.772 | -.958 | 0.013 | -.025 | 0.488 | -1.44 | 0.882 |
| 11 | 0.106 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 0.095 | . | . | . | . | . | . | . | . | . | . |
| 13 | 0.087 | -.514 | 0.969 | -.895 | -.441 | -.216 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 0.123 | -.075 | -.572 | -.783 | -.766 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 0.089 | -.560 | -.150 | -.413 | 0.542 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 16 | 0.093 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| 17 | 0.067 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 18 | 0.097 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 0.088 | -.196 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| 2 | 0.116 | -.517 | 0.842 | -.219 | -1.22 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 0.077 | -.125 | -.492 | -.787 | 1.281 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 21 | 0.066 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.894 | -.352 | 1.062 |
| 22 | 0.085 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.293 |
| 23 | 0.093 | 0.260 | -.288 | -.666 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 0.134 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 0.101 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.448 | 0.595 |
| 26 | 0.089 | -.320 | -.315 | -.353 | 0.519 | -.254 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 27 | 0.076 | . | . | . | . | . | . | . | . | . | . |
| 28 | 0.066 | -.453 | -.124 | -.215 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| 29 | 0.092 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 0.075 | . | . | . | . | . | . | . | . | . | . |
| 30 | 0.067 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 0.094 | -.275 | -.730 | -.771 | -.726 | -.075 | -.316 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 0.110 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| 33 | 0.104 | -.270 | -.856 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.168 | 0.375 |
| 4 | 0.068 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.460 | -.298 | -.757 | 0.975 |
| 40010.1 | 0.098 | -.223 | -.632 | 3.844 | -.083 | -1.44 | -.069 | 0.560 | -.642 | 0.398 | 0.212 |
| 40010.2 | 0.103 | -.523 | -.722 | 3.223 | -.272 | -.674 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 0.108 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 0.073 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 0.056 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 0.099 | -.531 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.434 | -.495 | -1.12 |
| 40032.1 | 0.076 | -.324 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| 41 | 0.077 | 0.073 | 0.897 | 0.199 | 0.136 | -.553 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| 42 | 0.133 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| 43 | 0.164 | . | . | . | . | . | . | . | . | . | . |
| 44 | 0.138 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.763 | 0.584 | 0.273 |
| 45 | 0.132 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.92 |
| 46 | 0.158 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | -.103 | 1.040 | -.278 | 1.377 | 0.799 |
| 47 | 0.083 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| 48 | 0.167 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.456 | -.646 |
| 49 | 0.150 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.549 | -.182 | -3.41 | -1.43 |
| 5 | 0.132 | . | . | . | . | . | . | . | . | . | . |
| 50 | 0.138 | 2.287 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 0.145 | 0.478 | 0.014 | 0.307 | 0.826 | 2.882 | -.279 | -.892 | -.463 | -.615 | -2.00 |
| 52 | 0.129 | -.039 | 0.472 | 0.315 | 1.155 | 2.614 | -.236 | -1.00 | -.762 | 0.796 | -.147 |
| 6 | 0.098 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.961 | 0.160 | 0.095 |
| 7 | 0.103 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.944 | 0.124 | -.798 | -.778 |
| 8 | 0.104 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.489 | -.169 | 0.132 |
| 9 | 0.095 | -.497 | 0.191 | -.303 | 0.203 | -.561 | -.139 | 1.160 | -.257 | 0.243 | 0.420 |

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VOL 18

Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Data Used in Multiple Regression



MATRIX CHEM

BIOASSAY POLYCHAETE SURVIVAL

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.000 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 0.960 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| 11 | 0.880 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 1.000 | . | . | . | . | . | . | . | . | . | . |
| 13 | 0.920 | -.514 | 0.969 | -.895 | -.441 | -.218 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 1.000 | -.075 | -.572 | -.783 | -.764 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 0.960 | -.560 | -.150 | -.413 | 0.542 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 16 | 0.920 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| 17 | 0.960 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 18 | 0.960 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 1.000 | -.194 | -.406 | -.745 | 0.491 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| 2 | 1.000 | -.517 | 0.842 | -.219 | -1.22 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 0.920 | -.125 | -.492 | -.787 | 1.281 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 21 | 0.840 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.894 | -.352 | 1.062 |
| 22 | 0.960 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.293 |
| 23 | 1.000 | 0.260 | -.288 | -.666 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 0.840 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 1.000 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.448 | 0.595 |
| 26 | 0.960 | -.320 | -.315 | -.353 | 0.519 | -.254 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 27 | 1.000 | . | . | . | . | . | . | . | . | . | . |
| 28 | 1.000 | -.453 | -.124 | -.215 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| 29 | 0.920 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 0.950 | . | . | . | . | . | . | . | . | . | . |
| 30 | 0.960 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 0.920 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 0.880 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| 33 | 0.960 | -.270 | -.854 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.188 | 0.375 |
| 4 | 1.000 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 0.987 | -.223 | -.632 | 3.644 | -.083 | -1.44 | -.065 | 0.560 | -.642 | 0.398 | 0.212 |
| 40010.2 | 0.987 | -.523 | -.722 | 3.223 | -.272 | -.674 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 0.960 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.158 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 0.960 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 0.920 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 1.000 | -.531 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.434 | -.495 | -1.12 |
| 40032.1 | 0.960 | -.324 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.460 |
| 41 | 1.000 | 0.073 | 0.897 | 0.199 | 0.136 | -.553 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| 42 | 0.920 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| 43 | 0.920 | . | . | . | . | . | . | . | . | . | . |
| 44 | 0.960 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.783 | 0.584 | 0.273 |
| 45 | 0.920 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.92 |
| 46 | 0.920 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | -.103 | 1.060 | -.278 | 1.377 | 0.799 |
| 47 | 0.840 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| 48 | 0.760 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.454 | -.646 |
| 49 | 0.840 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.549 | -.182 | -3.41 | -1.43 |
| 5 | 0.920 | . | . | . | . | . | . | . | . | . | . |
| 50 | 1.000 | 2.287 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 0.880 | 0.478 | 0.014 | 0.307 | 0.826 | 2.882 | -.279 | -.892 | -.482 | -.615 | -2.00 |
| 52 | 0.800 | -.039 | 0.472 | 0.315 | 1.155 | 2.614 | -.236 | -1.00 | -.762 | 0.798 | -.147 |
| 6 | 0.960 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.961 | 0.140 | 0.095 |
| 7 | 0.920 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.944 | 0.124 | -.798 | -.778 |
| 8 | 0.920 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.489 | -.149 | 0.132 |
| 9 | 0.920 | -.497 | 0.191 | -.303 | 0.303 | -.561 | -.139 | 1.160 | -.297 | 0.243 | 0.620 |

R0063988

Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

---------- Type of result:sed, fish, clam=BIOASSAY Analyte name=AMPHIPOD REBURIAL ----------

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR5 Entered R-square = 0.26639129 C(p) = 3.66612394

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 0.29506712 | 0.29506712 | 16.34 | 0.0002 |
| Error | 45 | 0.81257840 | 0.01805730 | | |
| Total | 46 | 1.10764552 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.90048936 | 0.01960096 | 38.11141126 | 2110.58 | 0.0001 |
| FACTOR5 | -0.08009059 | 0.01981287 | 0.29506712 | 16.34 | 0.0002 |

Bounds on condition number: 1, 1

---

Step 2 Variable FACTOR1 Entered R-square = 0.31266229 C(p) = 2.72274560

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 0.34631898 | 0.17315949 | 10.01 | 0.0003 |
| Error | 44 | 0.76132654 | 0.01730288 | | |
| Total | 46 | 1.10764552 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.90048936 | 0.01918714 | 38.11141126 | 2202.61 | 0.0001 |
| FACTOR1 | -0.03337920 | 0.01939457 | 0.05125186 | 2.96 | 0.0923 |
| FACTOR5 | -0.08009059 | 0.01939457 | 0.29506712 | 17.05 | 0.0002 |

Bounds on condition number: 1, 4

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All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

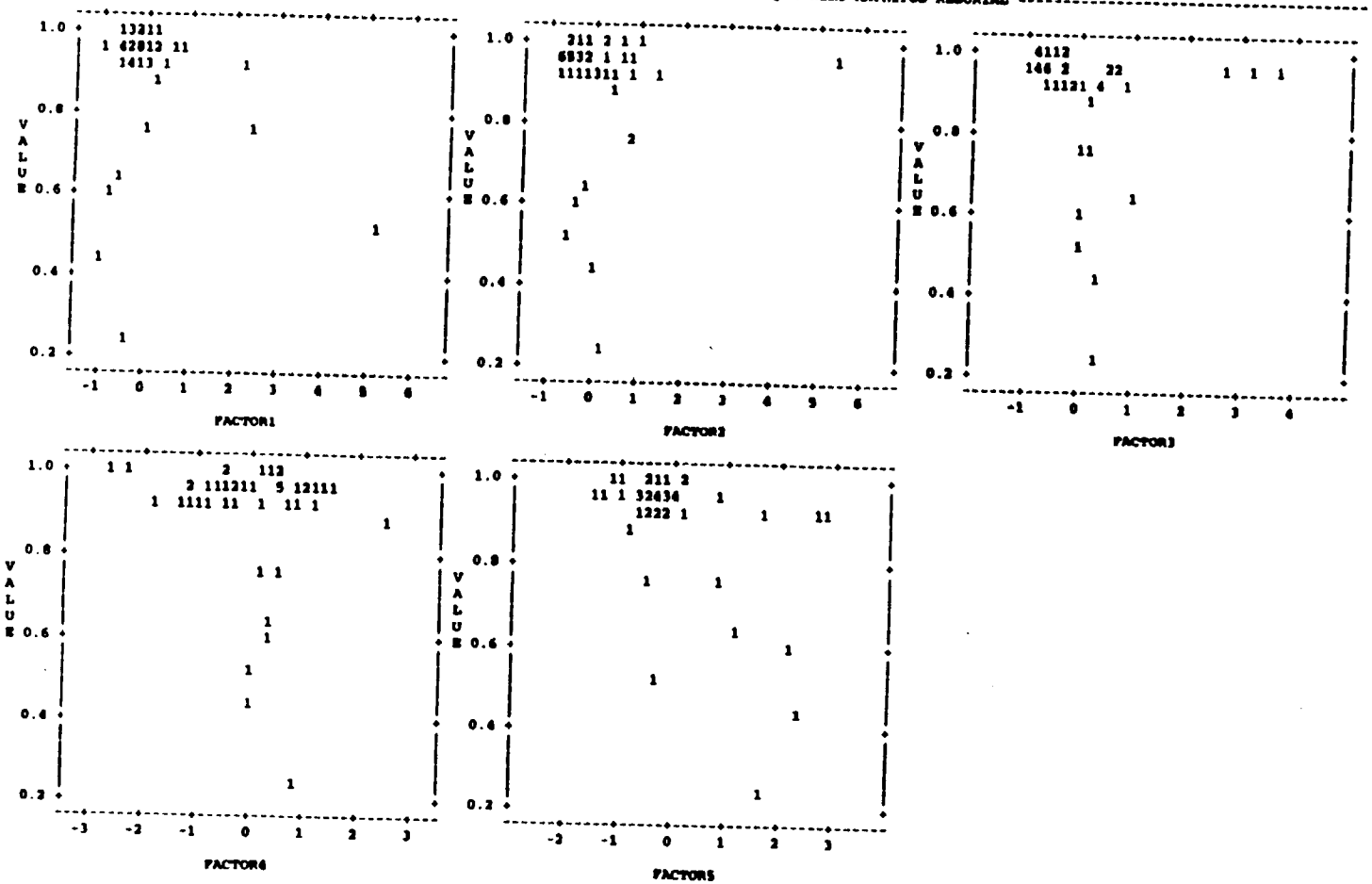
Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|
| 1 | FACTOR5 | 1 | 0.2664 | 0.2664 | 3.6661 | 16.3406 | 0.0002 |
| 2 | FACTOR1 | 2 | 0.0463 | 0.3127 | 2.7227 | 2.9630 | 0.0923 |

R0063989

Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

Type of result:sed, fish, clam=BIOASSAY Analyte name=AMPHIPOD REBURIAL




R0063990

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Type of result:sed, fish, clam=BIOASSAY Analyte name=AMPHIPOD SURVIVAL

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR5 Entered R-square = 0.31213407 C(p) = 8.20976640

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 0.56986231 | 0.56986231 | 20.42 | 0.0001 |
| Error | 45 | 1.25583496 | 0.02790744 | | |
| Total | 46 | 1.82569727 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.79624113 | 0.02436751 | 29.79799740 | 1067.74 | 0.0001 |
| FACTOR5 | -0.11130279 | 0.02463095 | 0.56986231 | 20.42 | 0.0001 |

Bounds on condition number: 1, 1

Step 2 Variable FACTOR1 Entered R-square = 0.38366915 C(p) = 4.88417229

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 0.70046371 | 0.35023186 | 13.70 | 0.0001 |
| Error | 44 | 1.12523356 | 0.02557349 | | |
| Total | 46 | 1.82569727 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.79624113 | 0.02332631 | 29.79799740 | 1165.19 | 0.0001 |
| FACTOR1 | -0.05328378 | 0.02357850 | 0.13060140 | 5.11 | 0.0288 |
| FACTOR5 | -0.11130279 | 0.02357850 | 0.56986231 | 22.28 | 0.0001 |

Bounds on condition number: 1, 4

Step 3 Variable FACTOR3 Entered R-square = 0.43824057 C(p) = 2.82147706

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 3 | 0.80009460 | 0.26669820 | 11.18 | 0.0001 |
| Error | 43 | 1.02560266 | 0.02385122 | | |
| Total | 46 | 1.82569727 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.79624113 | 0.02252716 | 29.79799740 | 1249.33 | 0.0001 |
| FACTOR1 | -0.05328378 | 0.02277070 | 0.13060140 | 5.48 | 0.0240 |
| FACTOR3 | -0.04653911 | 0.02277070 | 0.09963089 | 4.18 | 0.0471 |
| FACTOR5 | -0.11130279 | 0.02277070 | 0.56986231 | 23.89 | 0.0001 |

Bounds on condition number: 1, 9

R0063991

Type of result:sed, fish, class=BIOASSAY Analyte name=AMPHIPOD SURVIVAL

All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR5 | | 1 | 0.3121 | 0.3121 | 8.2098 | 20.4197 | 0.0001 |
| 2 | FACTOR1 | | 2 | 0.0715 | 0.3837 | 4.8842 | 5.1069 | 0.0288 |
| 3 | FACTOR3 | | 3 | 0.0546 | 0.4382 | 2.8219 | 4.1772 | 0.0471 |

R0063992



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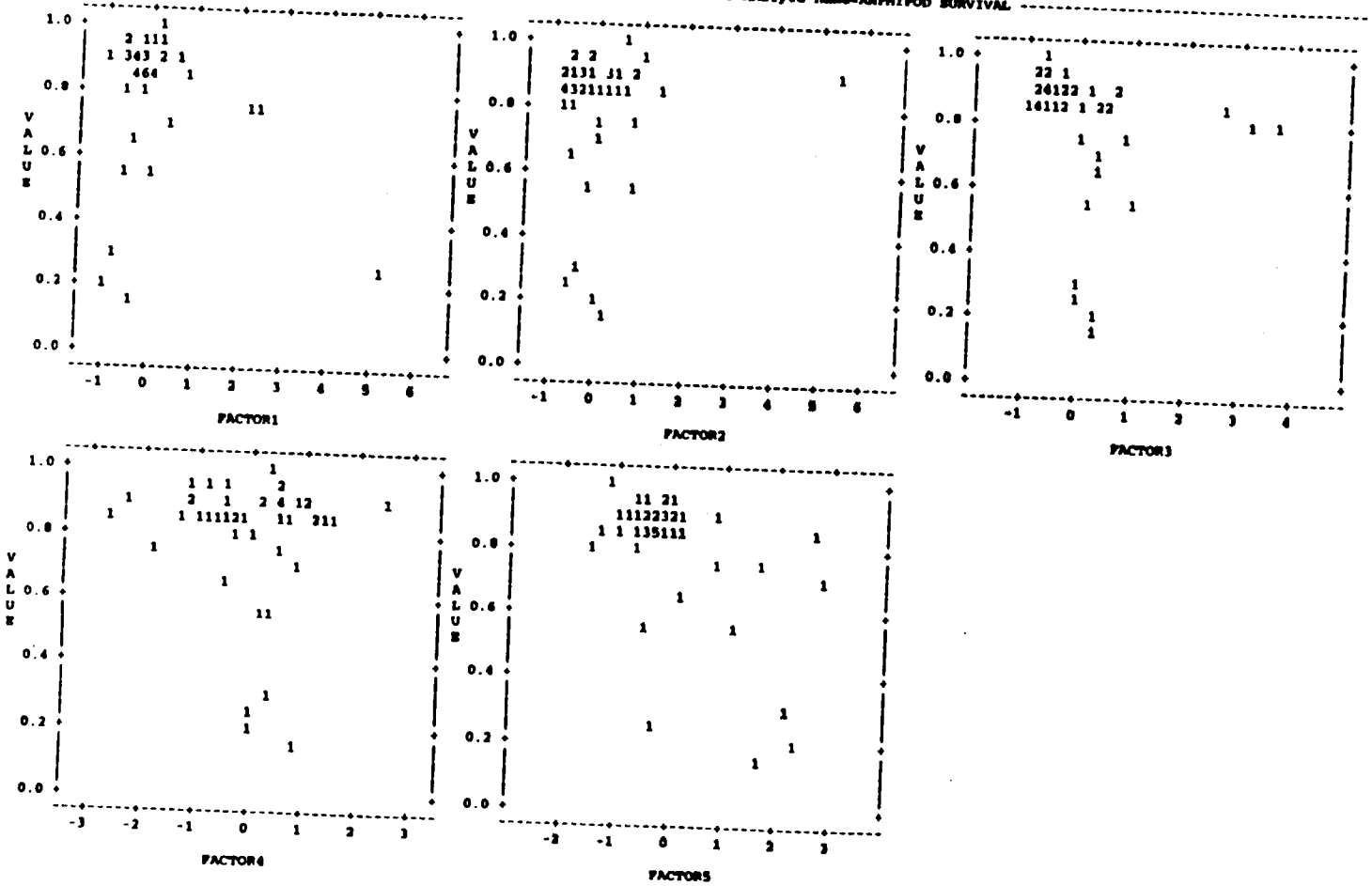
Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

Type of result:sed, fish, clam=BIOASSAY Analyte name=AMPHIPOD SURVIVAL




R0063993

Type of result:sed, fish, clam=BIOASSAY Analyte name=ECHINODERM NORMAL DEVELOPMENT

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR4 Entered R-square = 0.21352781 C(p) = 22.92914015

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 1.71075402 | 1.71075402 | 12.22 | 0.0011 |
| Error | 45 | 6.30110167 | 0.14002448 | | |
| Total | 46 | 8.01185570 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.37893617 | 0.05458245 | 6.74885319 | 48.20 | 0.0001 |
| FACTOR4 | 0.19284788 | 0.05517255 | 1.71075402 | 12.22 | 0.0011 |

Bounds on condition number: 1, 1

Step 2 Variable FACTOR5 Entered R-square = 0.42222827 C(p) = 7.43399944

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 3.38283196 | 1.69141598 | 16.08 | 0.0001 |
| Error | 44 | 4.62902374 | 0.10520508 | | |
| Total | 46 | 8.01185570 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.37893617 | 0.04731180 | 6.74885319 | 64.15 | 0.0001 |
| FACTOR4 | 0.19284788 | 0.04782329 | 1.71075402 | 16.26 | 0.0002 |
| FACTOR5 | -0.19065550 | 0.04782329 | 1.67207793 | 15.89 | 0.0002 |

Bounds on condition number: 1, 4

Step 3 Variable FACTOR2 Entered R-square = 0.46092781 C(p) = 6.18985726

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 3 | 3.69288711 | 1.23096237 | 12.26 | 0.0001 |
| Error | 43 | 4.31896859 | 0.10044113 | | |
| Total | 46 | 8.01185570 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.37893617 | 0.04622819 | 6.74885319 | 67.19 | 0.0001 |
| FACTOR2 | -0.08209951 | 0.04672797 | 0.31005515 | 3.09 | 0.0860 |
| FACTOR4 | 0.19284788 | 0.04672797 | 1.71075402 | 17.03 | 0.0002 |
| FACTOR5 | -0.19065550 | 0.04672797 | 1.67207793 | 16.65 | 0.0002 |

Bounds on condition number: 1, 9

R0063994

Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

---------- Type of result:sed, fish, clam=BIOASSAY Analyte name=ECHINODERM NORMAL DEVELOPMENT ----------

Step 4 Variable FACTOR3 Entered R-square = 0.49698149 C(p) = 5.14749802

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 4 | 3.98174562 | 0.99543640 | 10.37 | 0.0001 |
| Error | 42 | 4.03011008 | 0.09595500 | | |
| Total | 46 | 8.01185570 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.37893617 | 0.04518402 | 6.74885319 | 70.33 | 0.0001 |
| FACTOR2 | -0.08209951 | 0.04567251 | 0.31005515 | 3.23 | 0.0794 |
| FACTOR3 | 0.07924350 | 0.04567251 | 0.28885851 | 3.01 | 0.0901 |
| FACTOR4 | 0.19284788 | 0.04567251 | 1.71075402 | 17.83 | 0.0001 |
| FACTOR5 | -0.19065550 | 0.04567251 | 1.67207793 | 17.43 | 0.0001 |

Bounds on condition number: 1, 16

All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR4 | | 1 | 0.2135 | 0.2135 | 22.9291 | 12.2175 | 0.0011 |
| 2 | FACTOR5 | | 2 | 0.2087 | 0.4222 | 7.4340 | 15.8935 | 0.0002 |
| 3 | FACTOR2 | | 3 | 0.0387 | 0.4609 | 6.1899 | 3.0869 | 0.0860 |
| 4 | FACTOR3 | | 4 | 0.0361 | 0.4970 | 5.1675 | 3.0104 | 0.0901 |

R0063995

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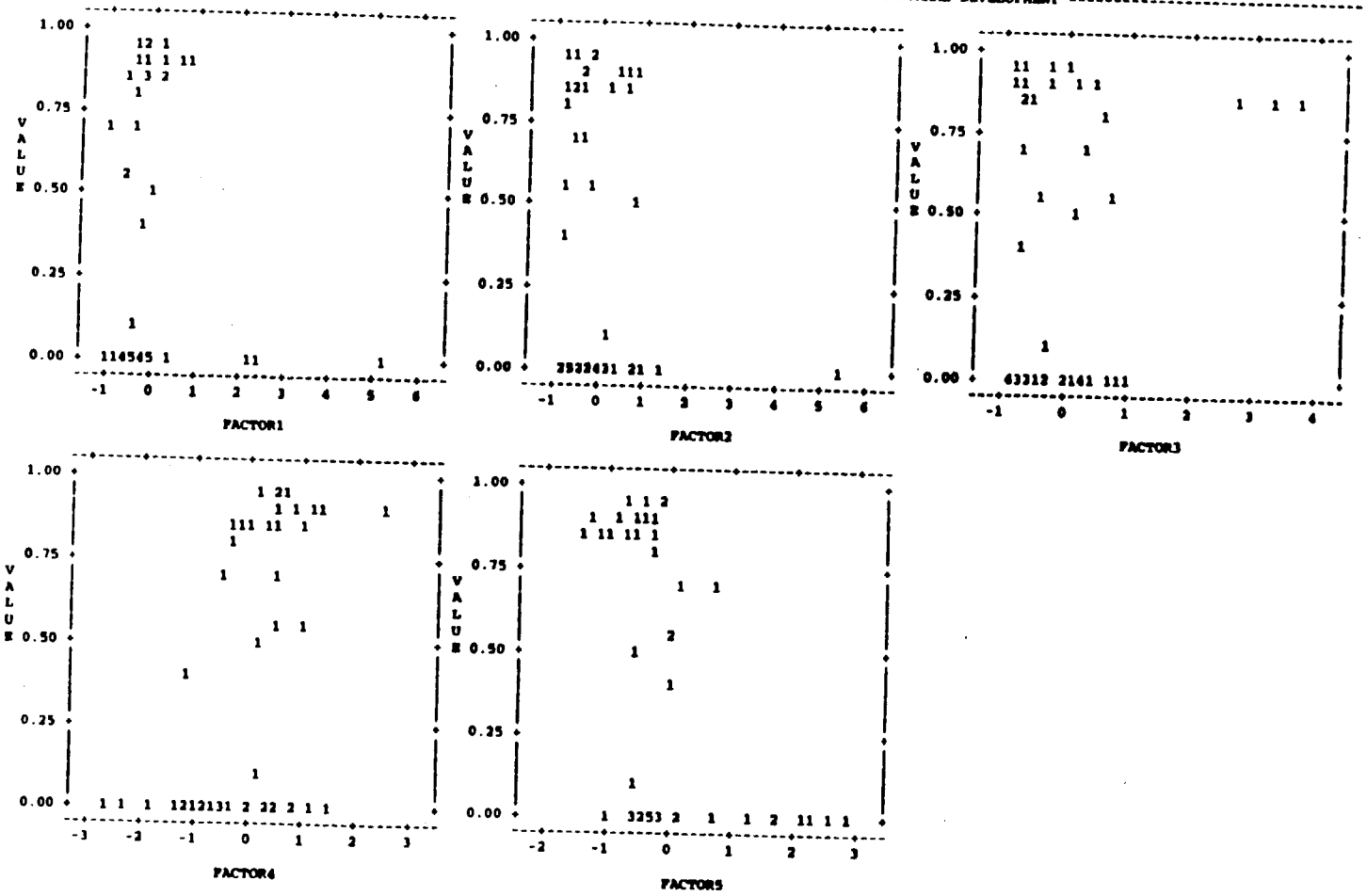
Type of result:sed, fish, clam=BIOASSAY Analyte name=ECHINODERM NORMAL DEVELOPMENT




R0063996

Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

---------- Type of result:sed, fish, clam=BIOASSAY Analyte name=ECHINODERM SURVIVAL ----------

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR4 Entered R-square = 0.11318159 C(p) = 7.50330774

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 0.21332755 | 0.21332755 | 5.74 | 0.0208 |
| Error | 45 | 1.67149798 | 0.03714440 | | |
| Total | 46 | 1.88482553 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.75617021 | 0.02811239 | 26.87428936 | 723.51 | 0.0001 |
| FACTOR4 | 0.06809960 | 0.02841631 | 0.21332755 | 5.74 | 0.0208 |

Bounds on condition number: 1, 1

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Step 2 Variable FACTOR5 Entered R-square = 0.19838566 C(p) = 4.65103195

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 0.37392236 | 0.18696118 | 5.44 | 0.0077 |
| Error | 44 | 1.51090317 | 0.03433871 | | |
| Total | 46 | 1.88482553 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.75617021 | 0.02702981 | 26.87428936 | 782.62 | 0.0001 |
| FACTOR4 | 0.06809960 | 0.02732204 | 0.21332755 | 6.21 | 0.0165 |
| FACTOR5 | -0.05908631 | 0.02732204 | 0.16059481 | 4.68 | 0.0360 |

Bounds on condition number: 1, 4

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Step 3 Variable FACTOR1 Entered R-square = 0.24163223 C(p) = 4.18818861

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 3 | 0.45543460 | 0.15181153 | 4.57 | 0.0073 |
| Error | 43 | 1.42939093 | 0.03324165 | | |
| Total | 46 | 1.88482553 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.75617021 | 0.02659453 | 26.87428936 | 808.45 | 0.0001 |
| FACTOR1 | 0.04209519 | 0.02688205 | 0.08151224 | 2.45 | 0.1247 |
| FACTOR4 | 0.06809960 | 0.02688205 | 0.21332755 | 6.42 | 0.0150 |
| FACTOR5 | -0.05908631 | 0.02688205 | 0.16059481 | 4.83 | 0.0334 |

Bounds on condition number: 1, 9

R0063997

Type of result:sed, fish, class=BIOASSAY Analyte name=ECHINODERM SURVIVAL

All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Variable Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR4 | | 1 | 0.1132 | 0.1132 | 7.8031 | 5.7422 | 0.0208 |
| 2 | FACTOR5 | | 2 | 0.0852 | 0.1984 | 4.6510 | 4.6768 | 0.0360 |
| 3 | FACTOR1 | | 3 | 0.0432 | 0.2416 | 4.1882 | 2.4521 | 0.1247 |

R0063998

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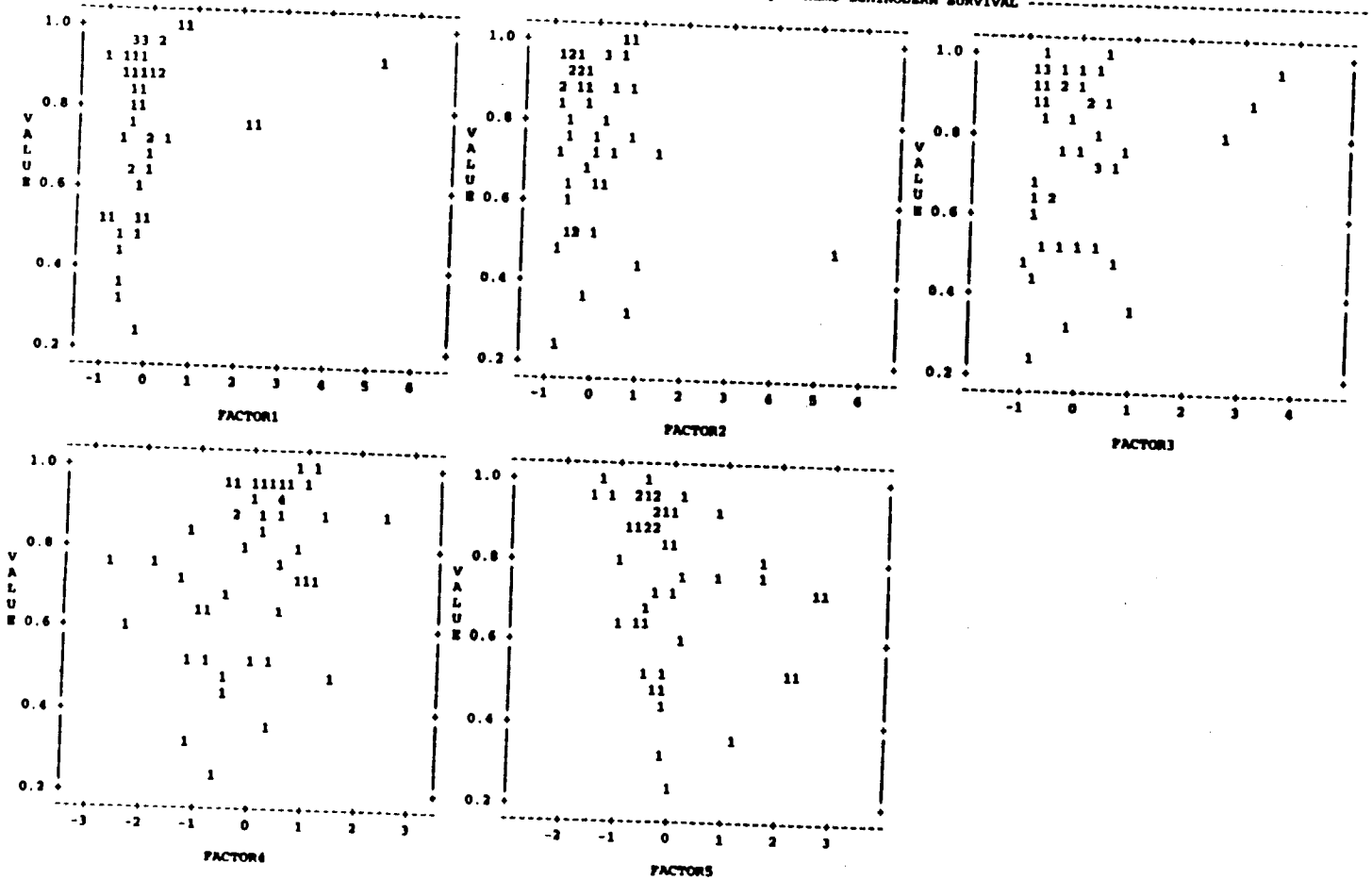
Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

Type of result:sed, fish, clam=BIOASSAY Analyte name=ECHINODERM SURVIVAL



Type of result:sed, fish, clam=BIOASSAY Analyte name=POLYCHAETE GROWTH

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR5 Entered R-square = 0.30436063 C(p) = 26.26051205

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 0.01078024 | 0.01078024 | 19.69 | 0.0001 |
| Error | 45 | 0.02463907 | 0.00054753 | | |
| Total | 46 | 0.03541931 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.10276596 | 0.00341316 | 0.49635957 | 906.54 | 0.0001 |
| FACTOR5 | 0.01530860 | 0.00345006 | 0.01078024 | 19.69 | 0.0001 |

Bounds on condition number: 1, 1

Step 2 Variable FACTOR1 Entered R-square = 0.54009446 C(p) = 3.46769848

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 0.01912978 | 0.00956489 | 25.84 | 0.0001 |
| Error | 44 | 0.01628954 | 0.00037022 | | |
| Total | 46 | 0.03541931 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.10276596 | 0.00280659 | 0.49635957 | 1340.73 | 0.0001 |
| FACTOR1 | 0.01347262 | 0.00283693 | 0.00834953 | 22.55 | 0.0001 |
| FACTOR5 | 0.01530860 | 0.00283693 | 0.01078024 | 29.12 | 0.0001 |

Bounds on condition number: 1, 4

Step 3 Variable FACTOR2 Entered R-square = 0.56212217 C(p) = 3.33786671

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 3 | 0.01990998 | 0.00663666 | 18.40 | 0.0001 |
| Error | 43 | 0.01550933 | 0.00036068 | | |
| Total | 46 | 0.03541931 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.10276596 | 0.00277021 | 0.49635957 | 1376.17 | 0.0001 |
| FACTOR1 | 0.01347262 | 0.00280016 | 0.00834953 | 23.15 | 0.0001 |
| FACTOR2 | -0.00411037 | 0.00280016 | 0.00078021 | 2.16 | 0.1486 |
| FACTOR5 | 0.01530860 | 0.00280016 | 0.01078024 | 29.89 | 0.0001 |

Bounds on condition number: 1, 9

R0064000

---------- Type of result:sed, fish, clam=BIOASSAY Analyte name=POLYCHAETE GROWTH ----------

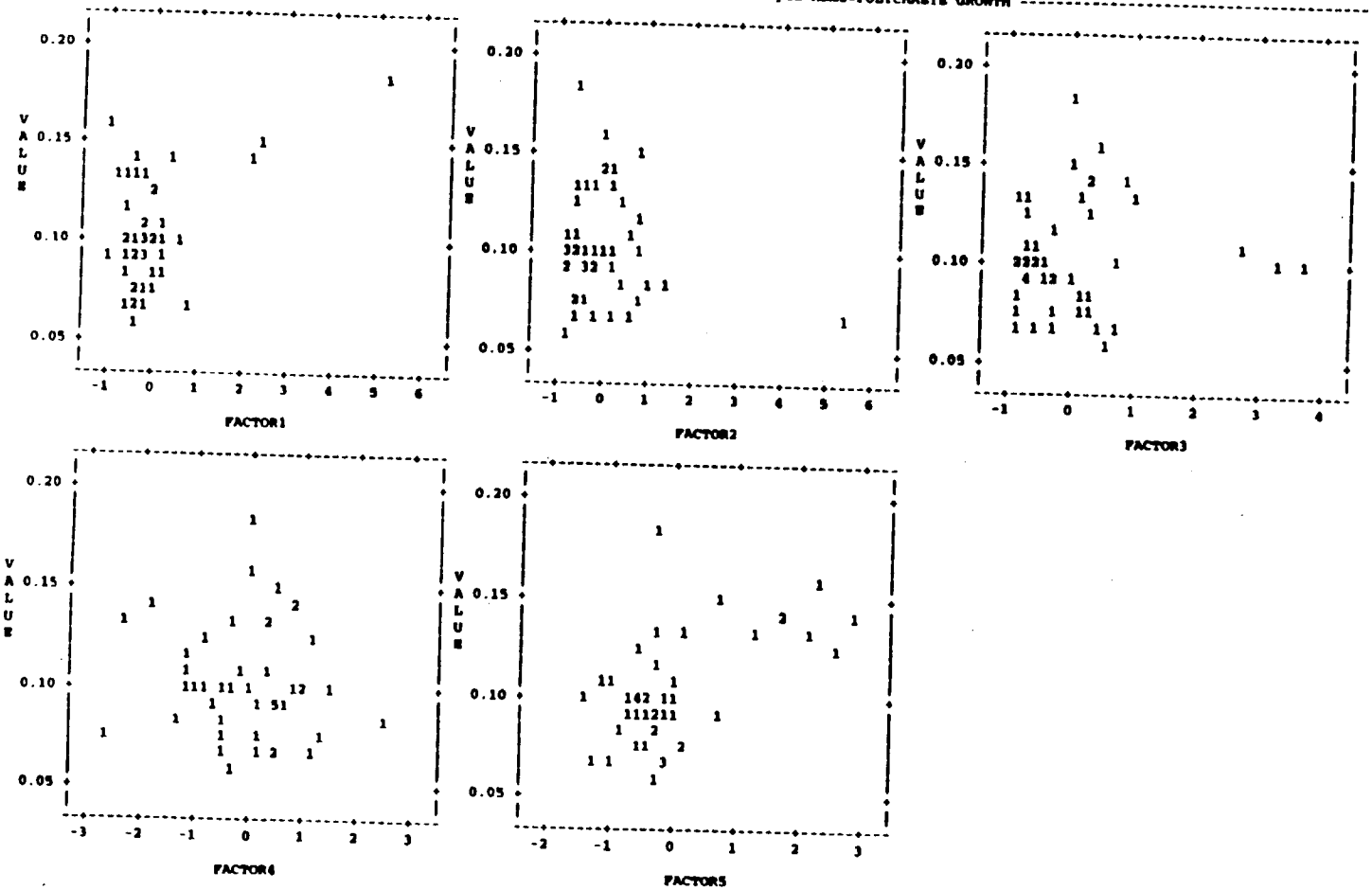
All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR5 | | 1 | 0.3044 | 0.3044 | 24.2605 | 19.6887 | 0.0001 |
| 2 | FACTOR1 | | 2 | 0.2357 | 0.5401 | 3.4677 | 22.5531 | 0.0001 |
| 3 | FACTOR2 | | 3 | 0.0230 | 0.5631 | 3.3379 | 2.1631 | 0.1486 |

R0064001

Type of result:sed, fish, clam=BIOASSAY Analyte name=POLYCHAETE GROWTH




R0064002

Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

---------- Type of result:sed, fish, clam=BIOASSAY Analyte name=POLYCHAETE SURVIVAL ----------

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR1 Entered R-square = 0.20724609 C(p) = 2.39961484

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 0.03241623 | 0.03241623 | 11.76 | 0.0013 |
| Error | 45 | 0.12399796 | 0.00275551 | | |
| Total | 46 | 0.15641418 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.93730496 | 0.00765688 | 41.29140804 | 14985.0 | 0.0001 |
| FACTOR1 | -0.02654620 | 0.00773966 | 0.03241623 | 11.76 | 0.0013 |

Bounds on condition number: 1, 1

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Step 2 Variable FACTOR5 Entered R-square = 0.27312205 C(p) = 0.62701519

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 0.04272016 | 0.02136008 | 8.27 | 0.0009 |
| Error | 44 | 0.11369402 | 0.00258396 | | |
| Total | 46 | 0.15641418 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 0.93730496 | 0.00741470 | 41.29140804 | 15979.9 | 0.0001 |
| FACTOR1 | -0.02654620 | 0.00749486 | 0.03261623 | 12.55 | 0.0010 |
| FACTOR5 | -0.01496658 | 0.00749486 | 0.01030393 | 3.99 | 0.0520 |

Bounds on condition number: 1, 4

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All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

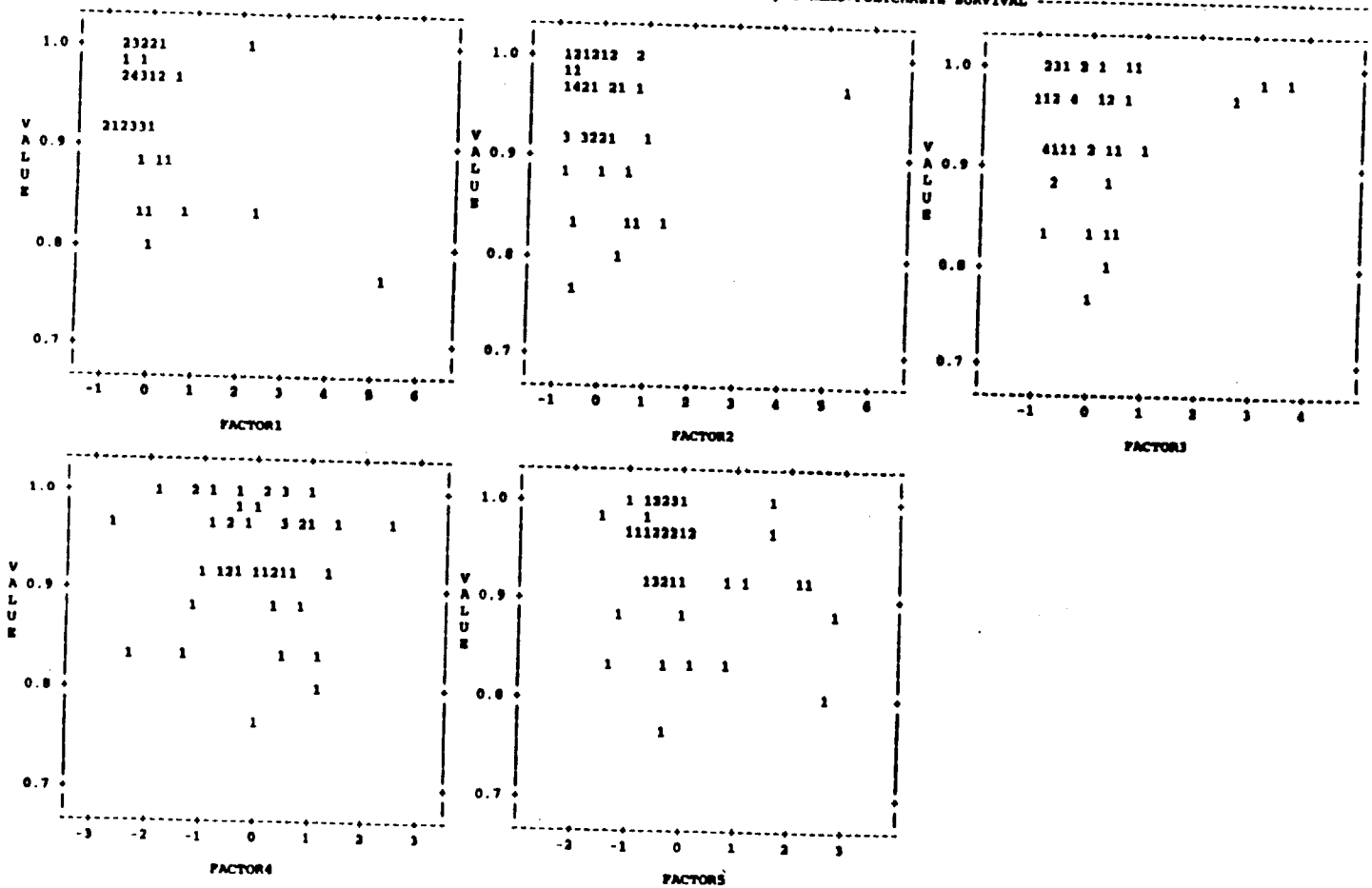
Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR1 | | 1 | 0.2072 | 0.2072 | 2.3996 | 11.7641 | 0.0013 |
| 2 | FACTOR5 | | 2 | 0.0659 | 0.2731 | 0.6270 | 3.9877 | 0.0520 |

R0064003

VOL 18

Type of result:sed, fish, clam=BIOASSAY Analyte name=POLYCHAETE SURVIVAL




R0064004

MATRIX CHEM

INFAUNA MARGALEF DIVERSITY INDEX

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.022 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 2.203 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| 11 | 4.947 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 3.323 | . | . | . | . | . | . | . | . | . | . |
| 13 | 7.390 | -.514 | 0.969 | -.895 | -.441 | . | . | . | . | . | . |
| 14 | 6.688 | -.075 | -.572 | -.783 | -.764 | -.218 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 15 | 3.031 | -.560 | -.150 | -.613 | 0.542 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 16 | 4.885 | -.950 | -.406 | -.682 | 0.432 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 17 | 7.317 | -.500 | 8.498 | 0.668 | -.579 | 0.785 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| 18 | 4.809 | 0.263 | 0.120 | -.671 | 0.976 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 19 | 4.548 | -.194 | -.406 | -.765 | 0.491 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 2 | 7.552 | -.517 | 0.642 | -.219 | -1.22 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| 20 | 5.217 | -.125 | -.492 | -.787 | 1.201 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 21 | 6.303 | 0.820 | 0.524 | 0.421 | 1.232 | -1.27 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 22 | 8.380 | 0.103 | 0.436 | 0.138 | 2.664 | -.813 | -.286 | -1.02 | -.894 | -.352 | 1.042 |
| 23 | 8.789 | 0.260 | -.388 | -.666 | 0.466 | -.490 | -.309 | -.730 | -.099 | 0.316 | 1.293 |
| 24 | 7.936 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 25 | 9.326 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 26 | 5.035 | -.320 | -.315 | -.353 | 0.519 | -.254 | -.228 | -.991 | -.480 | 0.448 | 0.595 |
| 27 | 6.465 | . | . | . | . | . | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 28 | 6.141 | -.453 | -.124 | -.218 | 0.207 | -.196 | 0.921 | . | . | . | . |
| 29 | 8.202 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | -.709 | -.235 | 0.722 | 0.191 |
| 3 | 5.361 | . | . | . | . | . | . | 0.211 | -1.02 | 0.261 | 0.231 |
| 30 | 7.726 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 9.202 | -.275 | -.730 | -.771 | -.726 | -.075 | -.316 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 10.94 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| 33 | 9.435 | -.270 | -.654 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.362 | 0.168 | 0.375 |
| 4 | 5.896 | -.311 | 0.277 | -.536 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 6.711 | -.223 | -.632 | 3.644 | -.083 | -1.44 | -.065 | 0.560 | -.642 | 0.398 | 0.212 |
| 40010.2 | 5.069 | -.523 | -.722 | 3.223 | -.272 | -.676 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 4.584 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 5.112 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 7.347 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 7.373 | -.531 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.434 | -.495 | -1.12 |
| 40032.1 | 9.804 | -.326 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| 41 | 5.329 | 0.073 | 0.897 | 0.199 | 0.136 | -.593 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| 42 | 14.70 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| 43 | 5.733 | . | . | . | . | . | . | . | . | . | . |
| 44 | 12.41 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.763 | 0.584 | 0.273 |
| 45 | 11.41 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.92 |
| 46 | 9.213 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | -.103 | 1.040 | -.278 | 1.377 | 0.799 |
| 47 | 12.24 | 0.032 | 1.337 | 0.299 | -1.30 | -.338 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| 48 | 7.991 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.456 | -.646 |
| 49 | 7.452 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.549 | -.182 | -3.41 | -1.43 |
| 5 | 7.308 | . | . | . | . | . | . | . | . | . | . |
| 50 | 13.69 | 2.287 | 0.066 | 0.615 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 8.480 | 0.478 | 0.016 | 0.307 | 0.826 | 2.882 | -.279 | -.892 | -.463 | -.615 | -2.00 |
| 52 | 7.427 | -.039 | 0.472 | 0.315 | 1.155 | 2.614 | -.236 | -1.00 | -.762 | 8.798 | -.147 |
| 6 | 6.784 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.941 | 0.140 | 0.095 |
| 7 | 6.433 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.946 | 0.124 | -.798 | -.778 |
| 8 | 5.417 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.689 | -.169 | 0.132 |
| 9 | 2.824 | -.497 | 0.191 | -.303 | 0.203 | -.561 | -.139 | 1.160 | -.257 | 0.243 | 0.620 |

R0064005

5 2 5 --

VOL 7 8

MATRIX CHEM

INFAUNA NUMBER OF SPECIES

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32.00 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 8.000 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| 11 | 21.00 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 10.00 | . | . | . | . | . | . | . | . | . | . |
| 13 | 36.00 | -.514 | 0.969 | -.895 | -.441 | -.218 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 34.00 | -.075 | -.572 | -.783 | -.764 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 9.000 | -.560 | -.150 | -.413 | 0.542 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 16 | 21.00 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| 17 | 37.00 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 18 | 20.00 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 18.00 | -.194 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| 2 | 42.00 | -.517 | 0.842 | -.219 | -1.22 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 22.00 | -.125 | -.492 | -.787 | 1.281 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 21 | 29.00 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.896 | -.352 | 1.042 |
| 22 | 30.00 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.293 |
| 23 | 33.00 | 0.260 | -.288 | -.666 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 42.00 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 51.00 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.448 | 0.595 |
| 26 | 23.00 | -.320 | -.315 | -.353 | 0.519 | -.254 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 27 | 29.00 | . | . | . | . | . | . | . | . | . | . |
| 28 | 27.00 | -.453 | -.124 | -.215 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| 29 | 38.00 | -.236 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 24.00 | . | . | . | . | . | . | . | . | . | . |
| 30 | 39.00 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 46.00 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 58.00 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| 33 | 49.00 | -.270 | -.854 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.168 | 0.375 |
| 4 | 32.00 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 30.00 | -.223 | -.632 | 3.644 | -.083 | -1.44 | -.065 | 0.560 | -.642 | 0.398 | 0.212 |
| 40010.2 | 33.33 | -.523 | -.722 | 3.223 | -.272 | -.674 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 28.00 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 21.00 | -.486 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 32.00 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 36.67 | -.531 | -.625 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.434 | -.495 | -1.12 |
| 40032.1 | 51.00 | -.324 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| 41 | 26.00 | 0.073 | 0.897 | 0.199 | 0.136 | -.553 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| 42 | 106.0 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| 43 | 38.00 | . | . | . | . | . | . | . | . | . | . |
| 44 | 91.00 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.763 | 0.584 | 0.273 |
| 45 | 79.00 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.92 |
| 46 | 78.00 | -1.02 | -.016 | 0.412 | -.060 | 2.326 | -.103 | 1.040 | -.278 | 1.377 | 0.799 |
| 47 | 96.00 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| 48 | 57.00 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.454 | -.646 |
| 49 | 49.00 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.549 | -.182 | -3.41 | -1.43 |
| 5 | 56.00 | . | . | . | . | . | . | . | . | . | . |
| 50 | 97.00 | 2.287 | 0.086 | 0.819 | -1.91 | 1.497 | 0.918 | -.306 | -1.81 | -2.38 | 3.510 |
| 51 | 58.00 | 0.478 | 0.014 | 0.307 | 0.826 | 2.882 | -.279 | -.893 | -.463 | -.615 | -2.00 |
| 52 | 46.00 | -.039 | 0.472 | 0.315 | 1.155 | 2.614 | -.236 | -1.00 | -.762 | 0.798 | -.147 |
| 6 | 36.00 | -.026 | -.329 | -.359 | -.762 | -.877 | -.197 | 0.370 | -.941 | 0.140 | 0.095 |
| 7 | 31.00 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.944 | 0.124 | -.798 | -.778 |
| 8 | 25.00 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.489 | -.169 | 0.132 |
| 9 | 9.000 | -.497 | 0.191 | -.303 | 0.203 | -.561 | -.139 | 1.160 | -.257 | 0.243 | 0.620 |

R0064006

| MATRIX | CHEM | STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INFAUNA | SHANNON-WIENER DIVERSITY INDEX | 1 | 2.727 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| | | 10 | 1.878 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| | | 11 | 2.743 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| | | 12 | 2.079 | . | . | . | . | . | . | . | . | . | . |
| | | 13 | 3.115 | -.514 | 0.969 | -.895 | -.441 | -.218 | -.030 | 1.240 | 0.713 | 0.275 | 0.699 |
| | | 14 | 3.165 | -.075 | -.572 | -.783 | -.764 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| | | 15 | 2.069 | -.560 | -.150 | -.413 | 0.542 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| | | 16 | 2.246 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| | | 17 | 3.123 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| | | 18 | 2.779 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| | | 19 | 2.555 | -.194 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| | | 2 | 2.669 | -.517 | 0.842 | -.219 | -1.22 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| | | 20 | 2.810 | -.125 | -.492 | -.787 | 1.201 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| | | 21 | 2.863 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.894 | -.352 | 1.042 |
| | | 22 | 2.610 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.293 |
| | | 23 | 3.106 | 0.260 | -.288 | -.666 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| | | 24 | 2.989 | -.248 | -.838 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| | | 25 | 3.183 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.448 | 0.999 |
| | | 26 | 2.583 | -.320 | -.315 | -.353 | 0.519 | -.254 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| | | 27 | 2.824 | . | . | . | . | . | . | . | . | . | . |
| | | 28 | 2.751 | -.453 | -.126 | -.215 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| | | 29 | 3.303 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| | | 3 | 2.587 | . | . | . | . | . | . | . | . | . | . |
| | | 30 | 3.214 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| | | 31 | 3.955 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| | | 32 | 3.683 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| | | 33 | 3.515 | -.270 | -.854 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.168 | 0.375 |
| | | 4 | 2.786 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| | | 40010.1 | 2.078 | -.823 | -.432 | 3.844 | -.083 | -1.44 | -.088 | 0.960 | -.642 | 0.398 | 0.212 |
| | | 40010.2 | 2.040 | -.923 | -.722 | 3.223 | -.272 | -.674 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| | | 40010.3 | 1.800 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.456 | 0.260 | -.124 | 0.745 |
| | | 40018.1 | 2.568 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| | | 40018.2 | 3.287 | -.418 | -.701 | 0.575 | -.272 | -.276 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| | | 40018.3 | 3.106 | -.531 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.636 | -.695 | -1.12 |
| | | 40032.1 | 3.479 | -.326 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| | | 41 | 2.770 | 0.073 | 0.897 | 0.199 | 0.136 | -.553 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| | | 42 | 3.553 | -.723 | -.315 | 0.080 | 0.368 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| | | 43 | 1.900 | . | . | . | . | . | . | . | . | . | . |
| | | 44 | 3.188 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.763 | 0.584 | 0.273 |
| | | 45 | 3.184 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.92 |
| | | 46 | 1.446 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | -.103 | 1.060 | -.278 | 1.377 | 0.799 |
| | | 47 | 2.842 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.636 |
| | | 48 | 2.128 | 5.243 | -.665 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.456 | -.666 |
| | | 49 | 2.500 | 2.311 | 0.739 | -.093 | 0.548 | 0.781 | -.152 | -.569 | -.182 | -3.41 | -1.43 |
| | | 5 | 1.128 | . | . | . | . | . | . | . | . | . | . |
| | | 50 | 3.406 | 2.287 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| | | 51 | 3.511 | 0.678 | 0.016 | 0.307 | 0.826 | 2.082 | -.379 | -.892 | -.483 | -.618 | -2.00 |
| | | 52 | 2.602 | -.039 | 0.472 | 0.318 | 1.155 | 2.614 | -.238 | -1.00 | -.762 | 0.798 | -.147 |
| | | 6 | 2.754 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.961 | 0.140 | 0.095 |
| | | 7 | 2.683 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.844 | 0.126 | -.798 | -.778 |
| | | 8 | 3.562 | -.302 | 0.008 | -.964 | -.976 | -.462 | -.256 | 0.923 | -.489 | -.169 | 0.132 |
| | | 9 | 1.879 | -.497 | 0.191 | -.303 | 0.203 | -.861 | -.139 | 1.160 | -.287 | 0.243 | 0.620 |

R0064007

MATRIX CHEM

INFAUNA TOTAL BIOMASS

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.588 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 0.457 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| 11 | 1.623 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 1.394 | . | . | . | . | . | . | . | . | . | . |
| 13 | 1.463 | -.514 | 0.969 | -.895 | -.441 | -.218 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 2.060 | -.075 | -.572 | -.783 | -.764 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 0.076 | -.560 | -.150 | -.413 | 0.562 | 0.035 | -.180 | -.042 | 1.930 | -.009 | 0.489 |
| 16 | 0.457 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.007 | -1.06 | 1.117 |
| 17 | 2.642 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 18 | 2.745 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 7.250 | -.194 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| 2 | 2.730 | -.517 | 0.842 | -.219 | -1.23 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 0.516 | -.125 | -.492 | -.787 | 1.201 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 21 | 2.797 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.894 | -.352 | 1.042 |
| 22 | 5.062 | 0.103 | 0.436 | 0.138 | 2.464 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.293 |
| 23 | 3.637 | 0.260 | -.288 | -.666 | 0.406 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 3.873 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 7.859 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.448 | 0.595 |
| 26 | 10.94 | -.320 | -.315 | -.353 | 0.519 | -.254 | 6.466 | -.372 | 0.037 | 0.288 | -.594 |
| 27 | 0.382 | . | . | . | . | . | . | . | . | . | . |
| 28 | 0.982 | -.453 | -.124 | -.219 | 0.207 | -.196 | 0.921 | -.785 | -.235 | 0.722 | 0.191 |
| 29 | 1.819 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 2.775 | . | . | . | . | . | . | . | . | . | . |
| 30 | 3.709 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 12.96 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 2.428 | -.281 | -.701 | -.731 | -1.24 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| 33 | 8.669 | -.270 | -.854 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.168 | 0.375 |
| 4 | 19.20 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 4.745 | -.223 | -.632 | 3.644 | -.083 | -1.44 | -.065 | 0.560 | -.662 | 0.398 | 0.212 |
| 40010.2 | 5.176 | -.523 | -.722 | 3.223 | -.272 | -.674 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 3.068 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 0.408 | -.466 | -.892 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 0.963 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 2.358 | -.531 | -.828 | 0.660 | 0.973 | -.033 | -.372 | -.788 | 1.434 | -.499 | -1.12 |
| 40032.1 | 3.971 | -.324 | -.680 | -.297 | -2.86 | 0.206 | -.131 | -1.03 | 0.405 | 0.227 | -.468 |
| 41 | 2.168 | 0.073 | 0.897 | 0.199 | 0.136 | -.583 | -.137 | 0.588 | 0.709 | -1.12 | -1.78 |
| 42 | 293.7 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.248 | 0.388 | -.246 | 1.110 | 1.658 |
| 43 | 3.240 | . | . | . | . | . | . | . | . | . | . |
| 44 | 111.3 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.763 | 0.584 | 0.273 |
| 45 | 102.6 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.92 |
| 46 | 66.41 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | -.103 | 1.040 | -.278 | 1.277 | 0.799 |
| 47 | 92.35 | 0.032 | 1.337 | 0.299 | -1.30 | -.339 | -.239 | 0.372 | 0.193 | -.784 | -.436 |
| 48 | 16.16 | 5.243 | -.645 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.654 | -.646 |
| 49 | 9.565 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.569 | -.182 | -3.41 | -1.43 |
| 5 | 4.343 | . | . | . | . | . | . | . | . | . | . |
| 50 | 159.6 | 2.287 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 50.54 | 0.478 | 0.014 | 0.307 | 0.826 | 2.082 | -.379 | -.892 | -.463 | -.615 | -2.00 |
| 52 | 9.707 | -.039 | 0.472 | 0.315 | 1.155 | 3.614 | -.236 | -1.00 | -.762 | 0.798 | -.147 |
| 6 | 3.034 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.941 | 0.140 | 0.095 |
| 7 | 1.599 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.944 | 0.124 | -.798 | -.778 |
| 8 | 1.799 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.689 | -.169 | 0.132 |
| 9 | 0.055 | -.497 | 0.191 | -.303 | 0.203 | -.561 | -.139 | 1.160 | -.297 | 0.263 | 0.620 |

R0064008

Bechtel/Navy Clean II

Task 5-2: Multiple Regression with PCA Scores

Data Used in Multiple Regression



MATRIX CHEM

INFAUNA TOTAL COUNT

| STATION | VALUE | FACTOR1 | FACTOR2 | FACTOR3 | FACTOR4 | FACTOR5 | FACTOR6 | FACTOR7 | FACTOR8 | FACTOR9 | FACTOR10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 172.0 | -.344 | 0.191 | -.721 | -.380 | -.299 | -.170 | 0.921 | 0.537 | -.201 | 0.328 |
| 10 | 24.00 | 0.621 | 0.891 | -.687 | 0.772 | -.558 | 0.013 | -.025 | 0.658 | -1.44 | 0.882 |
| 11 | 57.00 | 0.212 | 0.693 | -.631 | 0.367 | -1.15 | -.262 | 1.112 | -1.79 | -.270 | -.725 |
| 12 | 15.00 | . | . | . | . | . | . | . | . | . | . |
| 13 | 114.0 | -.514 | 0.969 | -.895 | -.441 | -.210 | -.038 | 1.240 | 0.713 | 0.275 | 0.699 |
| 14 | 139.0 | -.075 | -.572 | -.783 | -.764 | -.619 | -.120 | 0.981 | -.778 | -.079 | 0.308 |
| 15 | 14.00 | -.560 | -.150 | -.413 | 0.542 | 0.035 | -.180 | -.042 | 1.530 | -.009 | 0.489 |
| 16 | 60.00 | -.950 | -.406 | -.682 | 0.432 | 0.755 | -.102 | 0.699 | 4.807 | -1.06 | 1.117 |
| 17 | 137.0 | -.500 | 5.498 | 0.668 | -.579 | -.205 | -.031 | -1.33 | 0.552 | 1.573 | 0.036 |
| 18 | 52.00 | 0.263 | 0.120 | -.671 | 0.976 | -.612 | -.334 | -.590 | -.515 | -.063 | -.043 |
| 19 | 42.00 | -.194 | -.406 | -.765 | 0.491 | -.296 | -.362 | -.857 | -.444 | 0.433 | 0.124 |
| 2 | 228.0 | -.517 | 0.042 | -.219 | -1.22 | -.218 | 0.217 | 0.268 | -.363 | 0.730 | -1.03 |
| 20 | 56.00 | -.125 | -.492 | -.787 | 1.281 | -.379 | -.335 | -.819 | -.501 | 0.400 | -.021 |
| 21 | 85.00 | 0.820 | 0.524 | 0.421 | 1.222 | -1.27 | -.286 | -1.02 | -.894 | -.352 | 1.042 |
| 22 | 98.00 | 0.103 | 0.436 | 0.138 | 3.444 | -.813 | -.309 | -.730 | -.099 | 0.314 | 1.893 |
| 23 | 113.0 | 0.260 | -.288 | -.666 | 0.486 | -.490 | -.297 | -.901 | -.347 | -.242 | -.372 |
| 24 | 175.0 | -.248 | -.638 | -.790 | -2.34 | 0.168 | -.390 | -1.07 | -.160 | 0.383 | -.749 |
| 25 | 211.0 | -.127 | -.689 | -.637 | -1.22 | -.148 | -.228 | -.991 | -.480 | 0.448 | 0.595 |
| 26 | 79.00 | -.320 | -.315 | -.393 | 0.519 | -.254 | 6.466 | -.373 | 0.037 | 0.288 | -.594 |
| 27 | 76.00 | . | . | . | . | . | . | . | . | . | . |
| 28 | 49.00 | -.453 | -.124 | -.215 | 0.207 | -.196 | 0.921 | -.705 | -.235 | 0.722 | 0.191 |
| 29 | 91.00 | -.238 | -.820 | -.052 | 0.726 | -.650 | -.316 | 0.211 | -1.02 | 0.261 | 0.231 |
| 3 | 73.00 | . | . | . | . | . | . | . | . | . | . |
| 30 | 137.0 | -.271 | -.625 | -.825 | 0.538 | -.184 | -.369 | -.810 | -.108 | 0.339 | -.115 |
| 31 | 133.0 | -.275 | -.730 | -.771 | -.726 | -.075 | -.314 | -.823 | -.078 | 0.198 | -.031 |
| 32 | 183.0 | -.281 | -.701 | -.731 | -1.26 | -.015 | -.209 | -.844 | -.073 | 0.363 | 0.399 |
| 33 | 162.0 | -.270 | -.854 | -.928 | 1.500 | -.373 | -.480 | -.743 | -.342 | 0.168 | 0.375 |
| 4 | 192.0 | -.311 | 0.277 | -.534 | 0.442 | -.970 | -.001 | 2.480 | -.298 | -.757 | 0.975 |
| 40010.1 | 466.3 | -.223 | -.632 | 1.644 | -.083 | -1.44 | -.065 | 0.560 | -.642 | 0.398 | 0.212 |
| 40010.2 | 590.0 | -.523 | -.722 | 3.223 | -.272 | -.674 | 0.004 | -.641 | 1.013 | -.130 | 0.053 |
| 40010.3 | 405.5 | -.198 | -.680 | 2.707 | -.187 | -.956 | -.156 | -.454 | 0.260 | -.124 | 0.745 |
| 40018.1 | 50.00 | -.466 | -.592 | 0.316 | -.426 | 0.189 | -.345 | -.870 | 0.342 | -.144 | -1.34 |
| 40018.2 | 68.00 | -.418 | -.701 | 0.575 | -.272 | -.274 | -.299 | -.434 | 0.278 | -.362 | -1.26 |
| 40018.3 | 132.0 | -.531 | -.825 | 0.660 | 0.972 | -.033 | -.372 | -.788 | 1.434 | -.495 | -1.12 |
| 40032.1 | 164.0 | -.324 | -.660 | -.297 | -2.66 | 0.206 | -.131 | -1.03 | 0.405 | 0.237 | -.468 |
| 41 | 109.0 | 0.073 | 0.897 | 0.199 | 0.136 | -.553 | -.137 | 0.588 | 0.709 | -1.12 | -1.75 |
| 42 | 1266 | -.723 | -.315 | 0.080 | 0.388 | 2.157 | -.265 | 0.380 | -.244 | 1.115 | 1.658 |
| 43 | 635.0 | . | . | . | . | . | . | . | . | . | . |
| 44 | 1415 | -.377 | 0.102 | 0.340 | 0.795 | 1.686 | -.099 | 1.217 | -.763 | 0.584 | 0.273 |
| 45 | 929.0 | -.506 | -.190 | 1.066 | 0.337 | 1.242 | 0.102 | 3.134 | -.778 | -.223 | -1.93 |
| 46 | 4264 | -1.02 | -.016 | 0.412 | -.060 | 2.324 | - 103 | 1.040 | -.278 | 1.377 | 0.799 |
| 47 | 2345 | 0.032 | 1.337 | 0.299 | -1.30 | -.239 | -.239 | 0.373 | 0.193 | -.784 | -.636 |
| 48 | 1105 | 8.243 | -.445 | -.011 | -.057 | -.304 | -.099 | 1.123 | 1.738 | 3.454 | -.646 |
| 49 | 627.0 | 2.311 | 0.739 | -.053 | 0.548 | 0.781 | -.152 | -.549 | -.182 | -3.41 | -1.43 |
| 5 | 1856 | . | . | . | . | . | . | . | . | . | . |
| 50 | 1113 | 2.287 | 0.066 | 0.815 | -1.91 | 1.697 | 0.918 | -.306 | -1.01 | -2.38 | 3.510 |
| 51 | 830.0 | 0.478 | 0.014 | 0.307 | 0.826 | 2.882 | -.279 | -.892 | -.483 | -.615 | -2.00 |
| 52 | 428.0 | -.039 | 0.472 | 0.315 | 1.155 | 2.614 | -.236 | -1.00 | -.762 | 0.798 | -.147 |
| 6 | 174.0 | -.026 | -.329 | -.359 | -.762 | -.577 | -.197 | 0.370 | -.961 | 0.140 | 0.095 |
| 7 | 106.0 | 0.040 | -.152 | -.843 | -.423 | -.567 | 0.060 | 0.944 | 0.124 | -.798 | -.778 |
| 8 | 84.00 | -.302 | 0.008 | -.564 | -.976 | -.462 | -.256 | 0.923 | -.489 | -.169 | 0.132 |
| 9 | 17.00 | -.497 | 0.191 | -.303 | 0.203 | -.561 | -.139 | 1.160 | -.257 | 0.243 | 0.620 |

R0064009

MATRIX=INFAUNA CHEM=HARGALEF DIVERSITY INDEX

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR5 Entered R-square = 0.31408835 C(p) = 5.20634945

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 106.83754137 | 106.83754137 | 20.61 | 0.0001 |
| Error | 45 | 233.31370158 | 5.18474892 | | |
| Total | 46 | 340.15124295 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 7.22731442 | 0.33213522 | 2455.00146833 | 473.50 | 0.0001 |
| FACTOR5 | 1.52399319 | 0.33572598 | 106.83754137 | 20.61 | 0.0001 |

Bounds on condition number: 1, 1

Step 2 Variable FACTOR4 Entered R-square = 0.40559419 C(p) = 0.77525520

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 137.96336653 | 68.98168326 | 15.01 | 0.0001 |
| Error | 44 | 202.18787642 | 4.59517901 | | |
| Total | 46 | 340.15124295 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 7.22731442 | 0.31268157 | 2455.00146833 | 534.26 | 0.0001 |
| FACTOR4 | -0.82258639 | 0.31606201 | 31.12582516 | 6.77 | 0.0126 |
| FACTOR5 | 1.52399319 | 0.31606201 | 106.83754137 | 23.25 | 0.0001 |

Bounds on condition number: 1, 4

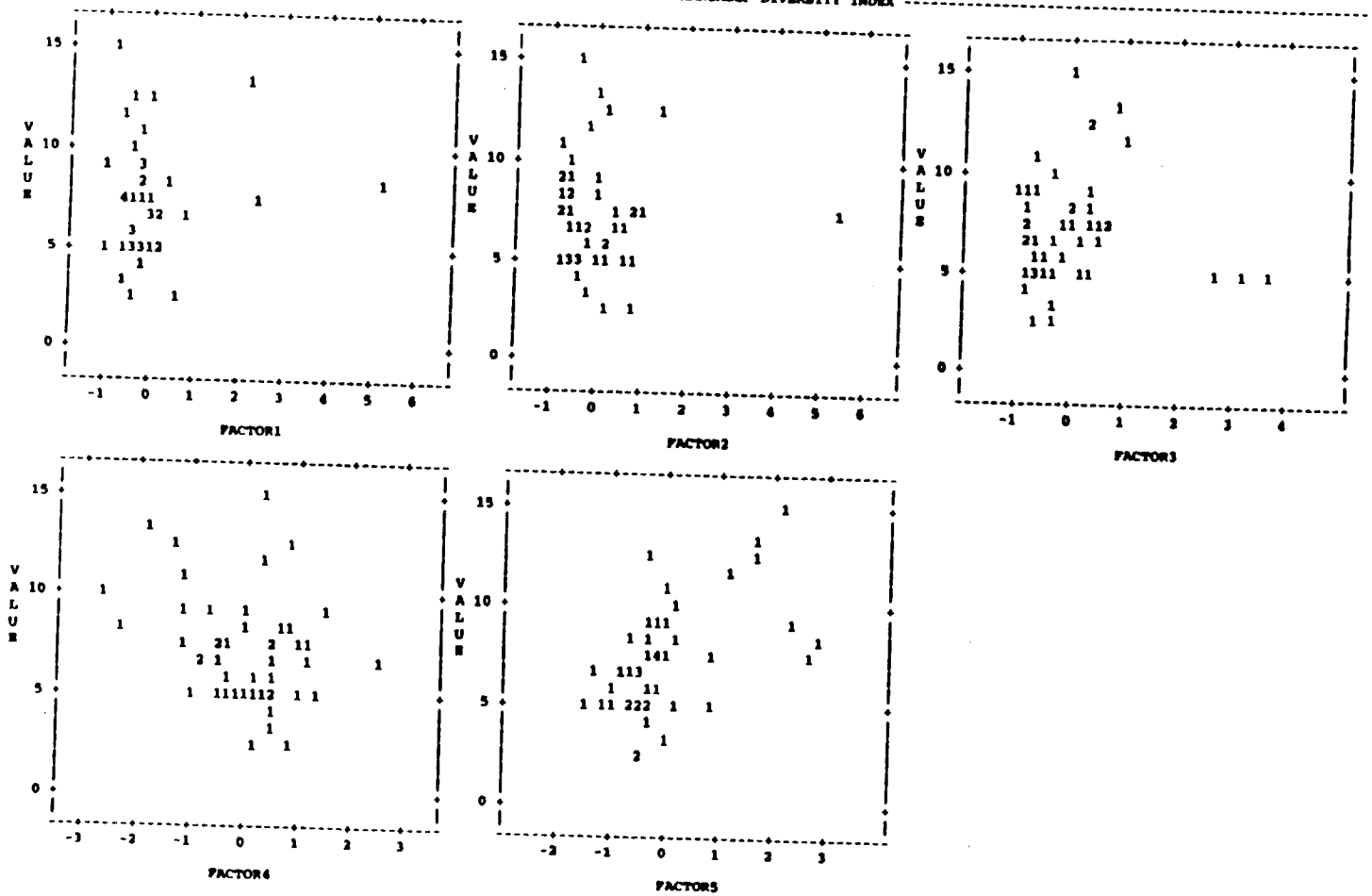
All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Variable Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR5 | | 1 | 0.3141 | 0.3141 | 5.2063 | 20.6061 | 0.0001 |
| 2 | FACTOR4 | | 2 | 0.0915 | 0.4056 | 0.7753 | 6.7736 | 0.0126 |

R0064010

MATRIX=INFAUNA CHEN-MARGALEF DIVERSITY INDEX




R0064011

MATRIX=INFAUNA CHEM=NUMBER OF SPECIES

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR5 Entered R-square = 0.40200792 C(p) = 7.78163592

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 9947.84098767 | 9947.84098767 | 30.25 | 0.0001 |
| Error | 45 | 14797.54435512 | 328.83431900 | | |
| Total | 46 | 24745.38534279 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 40.70212766 | 2.64508504 | 77863.17021277 | 236.79 | 0.0001 |
| FACTOR5 | 14.70569321 | 2.67368139 | 9947.84098767 | 30.25 | 0.0001 |

Bounds on condition number: 1, 1

Step 2 Variable FACTOR4 Entered R-square = 0.46825843 C(p) = 4.15562631

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 11587.23533073 | 5793.61766537 | 19.37 | 0.0001 |
| Error | 44 | 13158.15001206 | 299.04886391 | | |
| Total | 46 | 24745.38534279 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 40.70212766 | 2.52244758 | 77863.17021277 | 260.37 | 0.0001 |
| FACTOR4 | -5.96984149 | 2.54971807 | 1639.39434306 | 5.48 | 0.0238 |
| FACTOR5 | 14.70569321 | 2.54971807 | 9947.84098767 | 33.26 | 0.0001 |

Bounds on condition number: 1, 4

Step 3 Variable FACTOR1 Entered R-square = 0.49438669 C(p) = 3.93680823

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 3 | 12233.78911697 | 4077.92970566 | 14.02 | 0.0001 |
| Error | 43 | 12511.59622582 | 290.96735409 | | |
| Total | 46 | 24745.38534279 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 40.70212766 | 2.48813078 | 77863.17021277 | 267.60 | 0.0001 |
| FACTOR1 | 3.74906883 | 2.51503027 | 646.55378624 | 2.22 | 0.1433 |
| FACTOR4 | -5.96984149 | 2.51503027 | 1639.39434306 | 5.63 | 0.0221 |
| FACTOR5 | 14.70569321 | 2.51503027 | 9947.84098767 | 34.19 | 0.0001 |

Bounds on condition number: 1, 9

R0064012

Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

---------- MATRIX=INFAUNA CHEM=NUMBER OF SPECIES ----------

All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

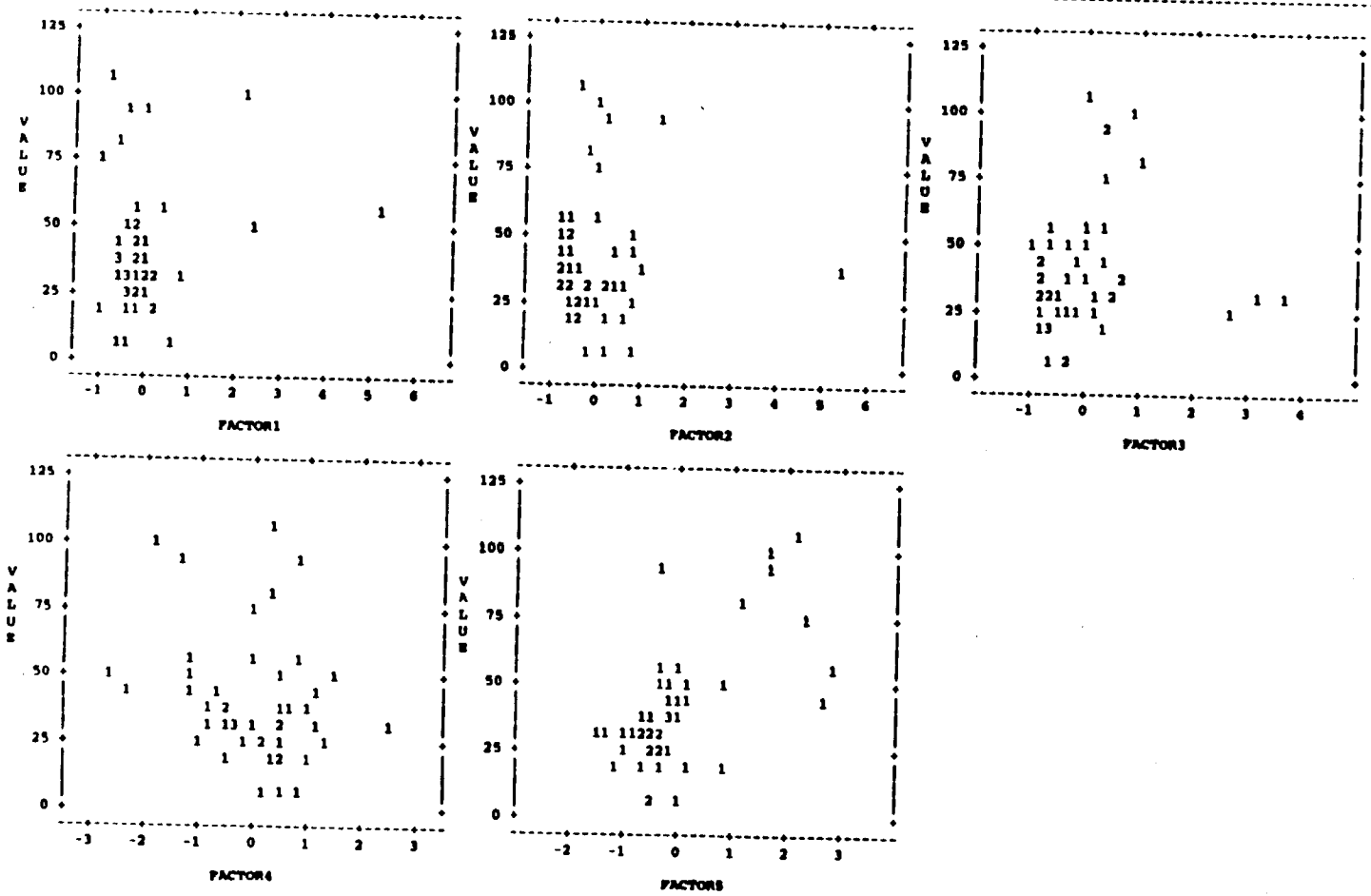
Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR5 | | 1 | 0.4020 | 0.4020 | 7.7816 | 30.2518 | 0.0001 |
| 2 | FACTOR4 | | 2 | 0.0663 | 0.4683 | 4.1586 | 5.4820 | 0.0238 |
| 3 | FACTOR1 | | 3 | 0.0261 | 0.4944 | 3.9368 | 2.3221 | 0.1433 |

R0064013

VOL 18

MATRIX=INFAUNA CHEM=NUMBER OF SPECIES




R0064014

Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

---------- MATRIX=INFAUNA CHEM=SHANNON-WIENER DIVERSITY INDEX ----------

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR3 Entered R-square = 0.11623106 C(p) = 1.10743196

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 1.43454894 | 1.43454894 | 5.92 | 0.0190 |
| Error | 45 | 10.90766768 | 0.24239262 | | |
| Total | 46 | 12.34221662 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 2.77412548 | 0.07181427 | 361.70129251 | 1492.21 | 0.0001 |
| FACTOR3 | -0.17659515 | 0.07259067 | 1.43454894 | 5.92 | 0.0190 |

Bounds on condition number: 1, 1

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Step 2 Variable FACTOR4 Entered R-square = 0.16286284 C(p) = 0.78011772

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 2.01008846 | 1.00504423 | 4.28 | 0.0200 |
| Error | 44 | 10.33212816 | 0.23482109 | | |
| Total | 46 | 12.34221662 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 2.77412548 | 0.07068376 | 361.70129251 | 1540.33 | 0.0001 |
| FACTOR3 | -0.17659515 | 0.07144793 | 1.43454894 | 6.11 | 0.0174 |
| FACTOR4 | -0.11185584 | 0.07144793 | 0.57553952 | 2.45 | 0.1246 |

Bounds on condition number: 1, 4

---

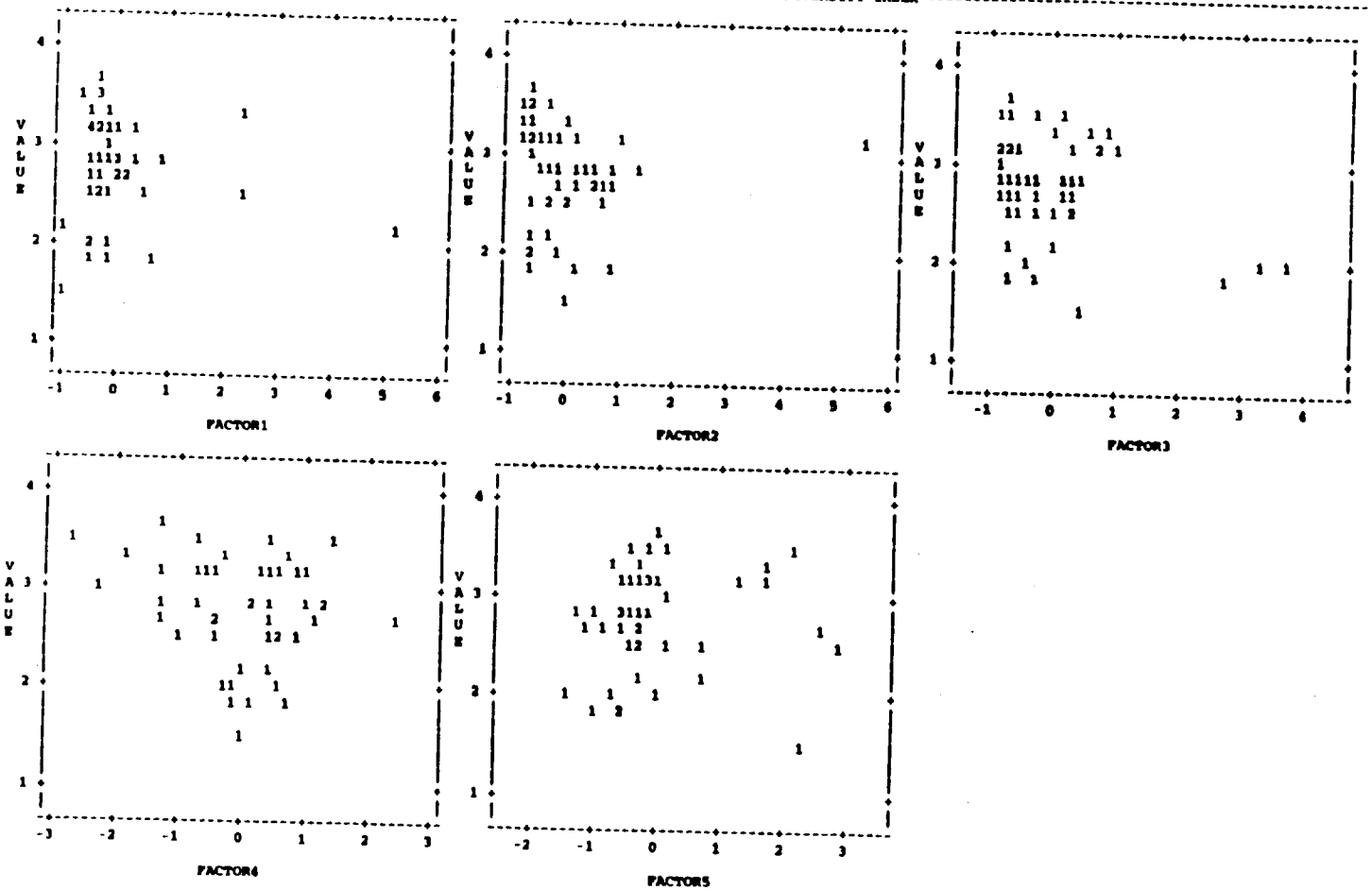
All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR3 | | 1 | 0.1162 | 0.1162 | 1.1074 | 5.9183 | 0.0190 |
| 2 | FACTOR4 | | 2 | 0.0466 | 0.1629 | 0.7801 | 2.4510 | 0.1246 |

R0064015

MATRIX=INFAUNA CHEM=SHANNON-WIENER DIVERSITY INDEX




R0064016

MATRIX=INFAUNA CHEM=TOTAL BIOMASS

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR5 Entered R-square = 0.35747064 C(p) = -0.26450690

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 45862.29327065 | 45862.29327065 | 25.04 | 0.0001 |
| Error | 45 | 82434.37971505 | 1831.87510478 | | |
| Total | 46 | 128296.67298570 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 22.29418794 | 6.24308146 | 23360.44835433 | 12.75 | 0.0009 |
| FACTOR5 | 31.57540776 | 6.31057619 | 45862.29327065 | 25.04 | 0.0001 |

Bounds on condition number: 1, 1

All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Variable Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR5 | | 1 | 0.3575 | 0.3575 | -0.2645 | 25.0387 | 0.0001 |

R0064017



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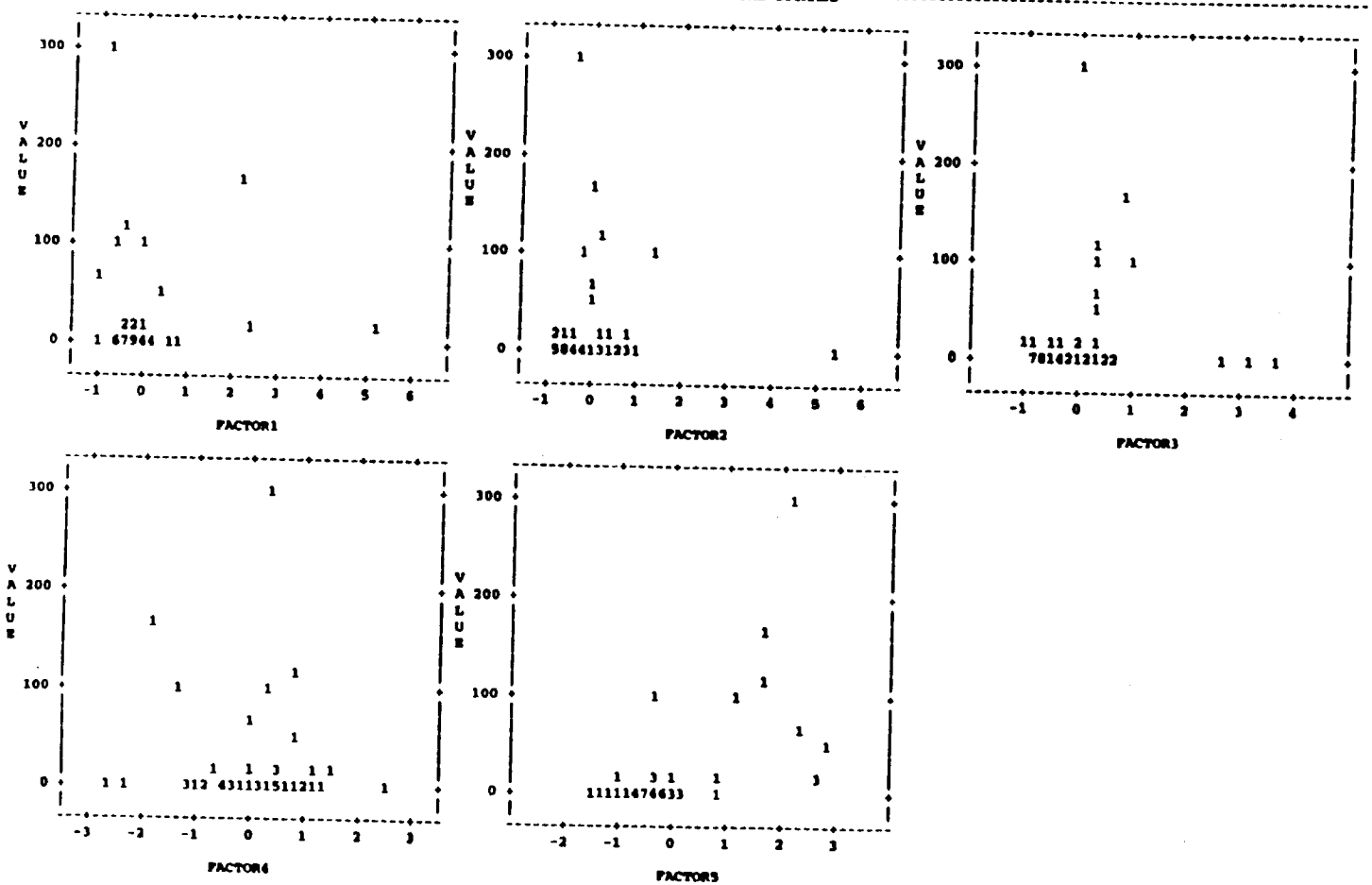
Bechtel/Navy Clean II
Task 5-2: Multiple Regression with PCA Scores
Stepwise Multiple Regression: Entry Level=0.15, Stay Level=0.15

MATRIX=INFAUNA CHEM=TOTAL BIOMASS




R0064018

MATRIX=INFAUNA CHEM=TOTAL COUNT

Stepwise Procedure for Dependent Variable VALUE

Step 1 Variable FACTOR5 Entered R-square = 0.29007950 C(p) = 3.23440106

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 1 | 7258535.0136509 | 7258535.0136509 | 18.39 | 0.0001 |
| Error | 45 | 17764036.850415 | 394756.37445367 | | |
| Total | 46 | 25022571.864066 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 415.10283688 | 91.64645000 | 8098587.1637116 | 20.52 | 0.0001 |
| FACTOR5 | 397.23323052 | 92.63729122 | 7258535.0136509 | 18.39 | 0.0001 |

Bounds on condition number: 1, 1

Step 2 Variable FACTOR3 Entered R-square = 0.35190674 C(p) = 1.20782992

| | DF | Sum of Squares | Mean Square | F | Prob>F |
|---|---|---|---|---|---|
| Regression | 2 | 8805611.5734428 | 4402805.7867214 | 11.95 | 0.0001 |
| Error | 44 | 16216960.290623 | 368567.27933235 | | |
| Total | 46 | 25022571.864066 | | | |

| Variable | Parameter Estimate | Standard Error | Type II Sum of Squares | F | Prob>F |
|---|---|---|---|---|---|
| INTERCEP | 415.10283688 | 88.55426024 | 8098587.1637116 | 21.97 | 0.0001 |
| FACTOR3 | 183.39056444 | 89.51163142 | 1547076.5597919 | 4.20 | 0.0465 |
| FACTOR5 | 397.23323052 | 89.51163142 | 7258535.0136504 | 19.69 | 0.0001 |

Bounds on condition number: 1, 4

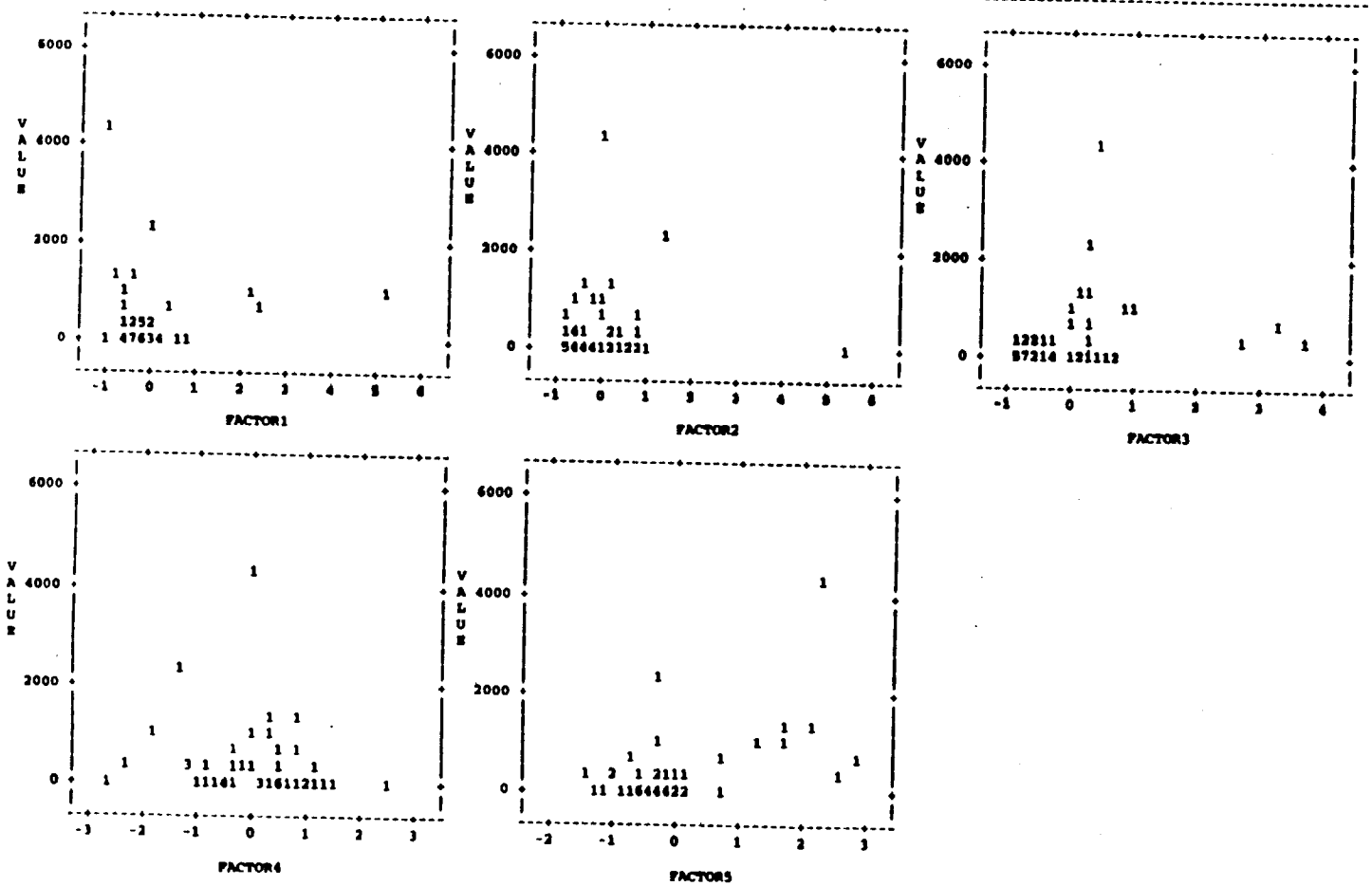
All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable VALUE

| Step | Variable Entered | Variable Removed | Number In | Partial R**2 | Model R**2 | C(p) | F | Prob>F |
|---|---|---|---|---|---|---|---|---|
| 1 | FACTOR5 | | 1 | 0.2901 | 0.2901 | 3.2344 | 18.3874 | 0.0001 |
| 2 | FACTOR3 | | 2 | 0.0618 | 0.3519 | 1.2078 | 4.1975 | 0.0465 |

R0064019

MATRIX=INFAUNA CHEM=TOTAL COUNT




R0064020

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1645

## APPENDIX S

# STATISTICAL CALCULATIONS - PART 2

DE_DEVEL DE-Develp

Hi-Res Chart # 29:Normal q-q plot of de-develp
Hi-Res Chart # 30:Detrended normal q-q plot of de-develp

| | Statistic | df | Significance |
|---|---|---|---|
| Shapiro-Wilks | .7056 | 49 | < .0100 |
| K-S (Lilliefors) | .3057 | 49 | .0000 |

Hi-Res Chart # 31:Boxplot of de_devel

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R0064022

- - - - - O N E W A Y - - - - -

Variable RDE_DEVE RANK of DE_DEVEL
By Variable ZONE_NUM Zone-Number

Analysis of Variance

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 8 | 4307.3694 | 538.4212 | 4.3034 | .0008 |
| Within Groups | 40 | 5004.6306 | 125.1158 | | |
| Total | 48 | 9312.0000 | | | |

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R0064023

- - - - - O N E W A Y - - - - -

Variable RDE_DEVE RANK of DE_DEVEL
By Variable ZONE_NUM Zone-Number

Multiple Range Tests: Tukey-HSD test with significance level .050
Harmonic Mean Cell size = 4.9693

The actual range used is the listed RANGE * 5.0177
with the following value(s) for RANGE: 4.64

(*) Indicates significant differences which are shown in the lower triangle

| Mean | ZONE_NUM | H | G | B | D | A | F | E | f | C |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.5000 | H | | | | | | | | | |
| 11.2500 | G | | | | | | | | | |
| 16.7500 | B | | | | | | | | | |
| 19.5000 | D | | | | | | | | | |
| 27.0833 | A | | | | | | | | | |
| 31.3333 | F | | | | | | | | | |
| 33.2500 | E | * | | | | | | | | |
| 33.4000 | Ref | * | | | | | | | | |
| 34.7222 | C | * | * | | | | | | | |

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

| | | | | | |
|---|---|---|---|---|---|
| Group | H | G | B | D | A |
| Mean | 9.5000 | 11.2500 | 16.7500 | 19.5000 | 27.0833 |
| Group | F | | | | |
| Mean | 31.3333 | | | | |

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Subset 2

| | | | | | |
|---|---|---|---|---|---|
| Group | G | B | D | A | F |
| Mean | 11.2500 | 16.7500 | 19.5000 | 27.0833 | 31.3333 |
| Group | E | Ref | | | |
| Mean | 33.2500 | 33.4000 | | | |

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Subset 3

| Group | B | D | A | F | E |
|---|---|---|---|---|---|
| Mean | 16.7500 | 19.5000 | 27.0833 | 31.3333 | 33.2500 |
| Group | Ref | C | | | |
| Mean | 33.4000 | 34.7222 | | | |

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RA_SURV RA-Surv

Hi-Res Chart # 44:Normal q-q plot of ra-surv
Hi-Res Chart # 45:Detrended normal q-q plot of ra-surv

| | Statistic | df | Significance |
|---|---|---|---|
| Shapiro-Wilks | .6522 | 49 | < .0100 |
| K-S (Lilliefors) | .2685 | 49 | .0000 |

Hi-Res Chart # 46:Boxplot of ra_surv

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R0064026

- - - - - O N E W A Y - - - - -

Variable RRA_SURV RANK of RA_SURV
By Variable ZONE_NUM Zone-Number

Analysis of Variance

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 8 | 5340.5694 | 667.5712 | 5.4431 | .0001 |
| Within Groups | 41 | 5028.4306 | 122.6446 | | |
| Total | 49 | 10369.0000 | | | |

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1651

R0064027

- - - - - O N E W A Y - - - - -

Variable RRA_SURV RANK of RA_SURV
By Variable ZONE_NUM Zone-Number

Multiple Range Tests: Tukey-HSD test with significance level .050
Harmonic Mean Cell size = 5.0625

The actual range used is the listed RANGE * 4.9220
with the following value(s) for RANGE: 4.63

(*) Indicates significant differences which are shown in the lower triangle

| Mean | ZONE_NUM | R e G H f A F B E C D |
|---|---|---|
| 5.7500 | G | |
| 7.5000 | H | |
| 21.3333 | Ref | |
| 26.5833 | A | |
| 30.5000 | F | * * |
| 31.7500 | B | * * |
| 33.1667 | E | * * |
| 33.5556 | C | * * |
| 33.9167 | D | * * |

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

| Group | G | H | Ref | A |
|---|---|---|---|---|
| Mean | 5.7500 | 7.5000 | 21.3333 | 26.5833 |

Subset 2

| Group | Ref | A | F | B | E |
|---|---|---|---|---|---|
| Mean | 21.3333 | 26.5833 | 30.5000 | 31.7500 | 33.1667 |
| Group | C | D | | | |
| Mean | 33.5556 | 33.9167 | | | |

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1652

- - - - - O N E W A Y - - - - -

Variable RLPAH RANK of LPAH
By Variable ZONE_NUM Zone-Number

Analysis of Variance

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 8 | 8080.5575 | 1010.0697 | 15.7974 | .0000 |
| Within Groups | 42 | 2685.4425 | 63.9391 | | |
| Total | 50 | 10766.0000 | | | |

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- - - - - O N E W A Y - - - - -

Variable RLPAH RANK of LPAH
By Variable ZONE_NUM Zone-Number

Multiple Range Tests: Tukey-HSD test with significance level .050
Harmonic Mean Cell size = 5.1312

The actual range used is the listed RANGE * 3.5300
with the following value(s) for RANGE: 4.62

(*) Indicates significant differences which are shown in the lower triangle

| Mean | ZONE_NUM | R e A f C D B E F G H |
|---|---|---|
| 14.5833 | A | |
| 14.7143 | Ref | |
| 15.2222 | C | |
| 19.6667 | D | |
| 23.7500 | B | |
| 33.8333 | E | * * * |
| 41.5000 | F | * * * * * |
| 43.3333 | G | * * * * * |
| 49.5000 | H | * * * * * |

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

| Group | A | Ref | C | D | B |
|---|---|---|---|---|---|
| Mean | 14.5833 | 14.7143 | 15.2222 | 19.6667 | 23.7500 |

Subset 2

| Group | D | B | E |
|---|---|---|---|
| Mean | 19.6667 | 23.7500 | 33.8333 |

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1654

R0064030

Subset 3

| Group | E | F | G | H |
|---|---|---|---|---|
| Mean | 33.8333 | 41.5000 | 43.3333 | 49.5000 |

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1655

R0064031

- - - - - O N E W A Y - - - - -

Variable RDDTS RANK of DDTS
By Variable ZONE_NUM Zone-Number

Analysis of Variance

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 8 | 6690.5486 | 836.3186 | 8.0601 | .0000 |
| Within Groups | 42 | 4357.9514 | 103.7607 | | |
| Total | 50 | 11048.5000 | | | |

Levene Test for Homogeneity of Variances

| Statistic | df1 | df2 | 2-tail Sig. |
|---|---|---|---|
| 3.7807 | 8 | 42 | .002 |

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- - - - - O N E W A Y - - - - -

Variable RDDTS RANK of DDTS
By Variable ZONE_NUM Zone-Number

Multiple Range Tests: Tukey-HSD test with significance level .050
Harmonic Mean Cell size = 5.1312

The actual range used is the listed RANGE * 4.4968
with the following value(s) for RANGE: 4.62

(*) Indicates significant differences which are shown in the lower triangle

| Mean | ZONE_NUM | B | A | D | C | H | E | G | R e f | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 4.0000 | B | | | | | | | | | |
| 9.5000 | A | | | | | | | | | |
| 19.5000 | D | | | | | | | | | |
| 23.7778 | C | | | | | | | | | |
| 27.3750 | H | * | | | | | | | | |
| 33.7500 | E | * | * | | | | | | | |
| 35.1667 | G | * | * | | | | | | | |
| 39.0000 | Ref | * | * | | | | | | | |
| 42.0000 | F | * | * | * | | | | | | |

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

| Group | B | A | D | C |
|---|---|---|---|---|
| Mean | 4.0000 | 9.5000 | 19.5000 | 23.7778 |

Subset 2

| Group | A | D | C | H |
|---|---|---|---|---|
| Mean | 9.5000 | 19.5000 | 23.7778 | 27.3750 |

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R0064033

Subset 3

| Group | D | C | H | E | G |
|---|---|---|---|---|---|
| Mean | 19.5000 | 23.7778 | 27.3750 | 33.7500 | 35.1667 |
| Group | Ref | | | | |
| Mean | 39.0000 | | | | |

Subset 4

| Group | C | H | E | G | Ref |
|---|---|---|---|---|---|
| Mean | 23.7778 | 27.3750 | 33.7500 | 35.1667 | 39.0000 |
| Group | F | | | | |
| Mean | 42.0000 | | | | |

VOL 18 1658

- - - - - O N E W A Y - - - - -

Variable RBENZOFL RANK of BENZOFLU
By Variable ZONE_NUM Zone-Number

Analysis of Variance

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 8 | 8930.1607 | 1116.2701 | 22.2900 | .0000 |
| Within Groups | 42 | 2103.3393 | 50.0795 | | |
| Total | 50 | 11033.5000 | | | |

Levene Test for Homogeneity of Variances

| Statistic | df1 | df2 | 2-tail Sig. |
|---|---|---|---|
| 4.6390 | 8 | 42 | .000 |

VOL 18

1659

R0064035

- - - - - O N E W A Y - - - - -

Variable RBENZOFL RANK of BENZOFLU
By Variable ZONE_NUM Zone-Number

Multiple Range Tests: Tukey-HSD test with significance level .050
Harmonic Mean Cell size = 5.1312

The actual range used is the listed RANGE * 3.1241
with the following value(s) for RANGE: 4.62

(*) Indicates significant differences which are shown in the lower triangle

| Mean | ZONE_NUM | A | f | C | B | D | G | E | F | H |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.0000 | A | | | | | | | | | |
| 13.0714 | Ref | | | | | | | | | |
| 16.0000 | C | | | | | | | | | |
| 25.2500 | B | * | | | | | | | | |
| 30.9167 | D | * | * | * | | | | | | |
| 32.6667 | G | * | * | * | | | | | | |
| 38.8333 | E | * | * | * | | | | | | |
| 45.0000 | F | * | * | * | * | | | | | |
| 49.5000 | H | * | * | * | * | * | * | | | |

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

| Group | A | Ref | C |
|---|---|---|---|
| Mean | 7.0000 | 13.0714 | 16.0000 |

Subset 2

| Group | Ref | C | B |
|---|---|---|---|
| Mean | 13.0714 | 16.0000 | 25.2500 |

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1660

R0064036

Subset 3

| Group | B | D | G | E |
|---|---|---|---|---|
| Mean | 25.2500 | 30.9167 | 32.6667 | 38.8333 |

Subset 4

| Group | D | G | E | F |
|---|---|---|---|---|
| Mean | 30.9167 | 32.6667 | 38.8333 | 45.0000 |

Subset 5

| Group | E | F | H |
|---|---|---|---|
| Mean | 38.8333 | 45.0000 | 49.5000 |

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1661

- - - - - O N E W A Y - - - - -

Variable RHPAH RANK of HPAH
By Variable ZONE_NUM Zone-Number

Analysis of Variance

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 8 | 9087.9206 | 1135.9901 | 24.3852 | .0000 |
| Within Groups | 42 | 1956.5794 | 46.5852 | | |
| Total | 50 | 11044.5000 | | | |

Levene Test for Homogeneity of Variances

| Statistic | df1 | df2 | 2-tail Sig. |
|---|---|---|---|
| 3.8409 | 8 | 42 | .002 |

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1662

- - - - - O N E W A Y - - - - -

Variable RHPAH RANK of HPAH
By Variable ZONE_NUM Zone-Number

Multiple Range Tests: Tukey-HSD test with significance level .050
Harmonic Mean Cell size = 5.1312

The actual range used is the listed RANGE * 3.0131
with the following value(s) for RANGE: 4.62

(*) Indicates significant differences which are shown in the lower triangle

| Mean | ZONE_NUM | R<br>e<br>A f C B D G E F H |
|---|---|---|
| 7.0833 | A | |
| 14.6429 | Ref | |
| 14.9444 | C | |
| 23.2500 | B | * |
| 29.0000 | D | * * * |
| 35.0833 | G | * * * |
| 39.3333 | E | * * * * |
| 45.0000 | F | * * * * * |
| 49.5000 | H | * * * * * * |

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

| Group | A | Ref | C |
|---|---|---|---|
| Mean | 7.0833 | 14.6429 | 14.9444 |

Subset 2

| Group | Ref | C | B |
|---|---|---|---|
| Mean | 14.6429 | 14.9444 | 23.2500 |

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Subset 3

| Group | B | D | G |
|---|---|---|---|
| Mean | 23.2500 | 29.0000 | 35.0833 |

Subset 4

| Group | D | G | E |
|---|---|---|---|
| Mean | 29.0000 | 35.0833 | 39.3333 |

Subset 5

| Group | G | E | F |
|---|---|---|---|
| Mean | 35.0833 | 39.3333 | 45.0000 |

Subset 6

| Group | E | F | H |
|---|---|---|---|
| Mean | 39.3333 | 45.0000 | 49.5000 |

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1664

- - - - - O N E W A Y - - - - -

Variable RPAH RANK of PAH
By Variable ZONE_NUM Zone-Number

Analysis of Variance

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 8 | 9304.4385 | 1163.0548 | 28.0647 | .0000 |
| Within Groups | 42 | 1740.5615 | 41.4419 | | |
| Total | 50 | 11045.0000 | | | |

Levene Test for Homogeneity of Variances

| Statistic | df1 | df2 | 2-tail Sig. |
|---|---|---|---|
| 3.3922 | 8 | 42 | .004 |

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1665

R0064041

- - - - - O N E W A Y - - - - -

Variable RPAH RANK of PAH
By Variable ZONE_NUM Zone-Number

Multiple Range Tests: Tukey-HSD test with significance level .050
Harmonic Mean Cell size = 5.1312

The actual range used is the listed RANGE * 2.8419
with the following value(s) for RANGE: 4.62

(*) Indicates significant differences which are shown in the lower triangle

| Mean | ZONE_NUM | R e A f C B D G E F H |
|---|---|---|
| 7.5833 | A | |
| 14.4286 | Ref | |
| 14.7222 | C | |
| 22.2500 | B | * |
| 27.5000 | D | * |
| 38.1667 | G | * * * * |
| 38.5000 | E | * * * * |
| 45.0000 | F | * * * * * |
| 49.5000 | H | * * * * * |

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

| Group | A | Ref | C |
|---|---|---|---|
| Mean | 7.5833 | 14.4286 | 14.7222 |

Subset 2

| Group | Ref | C | B | D |
|---|---|---|---|---|
| Mean | 14.4286 | 14.7222 | 22.2500 | 27.5000 |

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R0064042

Subset 3

| Group | D | G | E |
|---|---|---|---|
| Mean | 27.5000 | 38.1667 | 38.5000 |

Subset 4

| Group | G | E | F | H |
|---|---|---|---|---|
| Mean | 38.1667 | 38.5000 | 45.0000 | 49.5000 |

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APPENDIX T

# HUMAN HEALTH RISK ASSESSMENT RESULTS

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1668

**Table T-1**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin California Halibut Fillet**

| CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 7440-38-2 | Arsenic | I | A | A | A | 4.6E-01 | mg/kg | Fish | 1.8E+00 | 4.8E-05 | 8.4E-05 |
| 2 72-55-9 | DDE | P | B2 | B2 | B2 | 1.3E-01 | mg/kg | Fish | 3.4E-01 | 1.4E-05 | 4.7E-06 |
| | | | | | | | | | **Total of Top 20 Contributors:** | | **8.9E-05** |
| | | | | | | | | | **Grand Total for Recreational Fisher - Adult:** | | **8.9E-05** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

I:\cto26\hhra\rec_926\basin\hal_fil\SUMRAFED.RTF



R0064045

# Table T-2
## Site 7
## Summary of Chronic Hazard Index for the Adult Recreational Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.6E-01 mg/kg | Fish | 3.0E-04 | 1.1E-04 | 3.7E-01 |
| 2 | 22967-92-6 | Mercury (methyl) | I | 1.4E-01 mg/kg | Fish | 3.0E-04 | 3.4E-05 | 1.1E-01 |
| 3 | 7440-50-8 | Copper and compounds | I | 1.5E+00 mg/kg | Fish | 3.7E-02 | 3.6E-04 | 9.7E-03 |
| 4 | 7440-66-6 | Zinc | I | 1.2E+01 mg/kg | Fish | 3.0E-01 | 2.9E-03 | 9.5E-03 |
| 5 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.0E-03 mg/kg | Fish | 3.0E-05 | 2.5E-07 | 8.5E-03 |
| | | | | | | **Total of Top 20 Contributors:** | | **8.2E-01** |
| | | | | | | **Grand Total for Recreational Fisher - Adult:** | | **8.2E-01** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

I:\cto26\hhra\rsc_926\basin\hal_fl\SUMRAHAZ.RTF



R0064046

# Table T-3
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.6E-01 | mg/kg | Fish | 1.8E+00 | 9.6E-06 | 1.7E-05 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.3E-01 | mg/kg | Fish | 3.4E-01 | 2.7E-06 | 9.3E-07 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | | **1.8E-05** |
| | | | | | | | | | | **Grand Total for Recreational Fisher - Child:** | | **1.8E-05** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

I:\cto26\hhra\rsc_926\basin\hal_fil\SUMRCFED.RTF



R0064047

# Table T-4
## Site 7
## Summary of Chronic Hazard Index for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.6E-01 | mg/kg | Fish | 3.0E-04 | 1.1E-04 | 3.7E-01 |
| 2 | 22967-92-6 | Mercury (methyl) | I | 1.4E-01 | mg/kg | Fish | 3.0E-04 | 3.4E-05 | 1.1E-01 |
| 3 | 7440-50-8 | Copper and compounds | I | 1.5E+00 | mg/kg | Fish | 3.7E-02 | 3.6E-04 | 9.6E-03 |
| 4 | 7440-66-6 | Zinc | I | 1.2E+01 | mg/kg | Fish | 3.0E-01 | 2.8E-03 | 9.4E-03 |
| 5 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.0E-03 | mg/kg | Fish | 3.0E-06 | 2.5E-07 | 8.4E-03 |

**Total of Top 20 Contributors:** **8.1E-01**

**Grand Total for Recreational Fisher - Child:** **8.1E-01**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064048

VOL 18

**Table T-5**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for West Baisn White Croaker Fillet**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.2E+00 | mg/kg | Fish | 1.8E+00 | 1.3E-04 | 2.2E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 6.7E-01 | mg/kg | Fish | 3.4E-01 | 7.0E-05 | 2.4E-05 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 6.4E-02 | mg/kg | Fish | 2.4E-01 | 6.7E-06 | 1.6E-06 |

**Total of Top 20 Contributors:** **2.5E-04**

**Grand Total for Recreational Fisher - Adult:** **2.5E-04**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064049

**Table T-6**
**Site 7**
**Summary of Chronic Hazard Index for the Adult Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin White Croaker Fillet**

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.2E+00 | mg/kg | Fish | 3.0E-04 | 3.0E-04 | 1.0E+00 |
| 2 | 33213-65-9 | Endosulfan II | P | 5.9E-02 | mg/kg | Fish | 5.0E-05 ** | 1.4E-05 | 2.9E-01 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 8.0E-02 | mg/kg | Fish | 3.0E-04 | 2.0E-05 | 6.5E-02 |
| 4 | 56-35-9 | Tributyltin oxide (TBTO) | I | 6.4E-03 | mg/kg | Fish | 3.0E-05 | 1.6E-06 | 5.2E-02 |
| 5 | 7782-49-2 | Selenium | I | 4.6E-01 | mg/kg | Fish | 5.0E-03 | 1.1E-04 | 2.2E-02 |
| 6 | 7440-50-8 | Copper and compounds | I | 1.5E+00 | mg/kg | Fish | 3.7E-02 | 3.7E-04 | 1.0E-02 |
| 7 | 7440-66-6 | Zinc | I | 9.4E+00 | mg/kg | Fish | 3.0E-01 | 2.3E-03 | 7.6E-03 |
| 8 | 72-20-8 | Endrin | P | 8.5E-03 | mg/kg | Fish | 3.0E-04 | 2.1E-06 | 6.9E-03 |

**Total of Top 20 Contributors: 1.5E+00**

**Grand Total for Recreational Fisher - Adult: 1.5E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064050

VOL 18

**Table T-7**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin White Croaker Fillet**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.2E+00 | mg/kg | Fish | 1.8E+00 | 2.6E-06 | 4.5E-06 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 6.7E-01 | mg/kg | Fish | 3.4E-01 | 1.4E-06 | 4.8E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 6.4E-02 | mg/kg | Fish | 2.4E-01 | 1.3E-06 | 3.2E-07 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | | **9.0E-06** |
| | | | | | | | | | | **Grand Total for Recreational Fisher - Child:** | | **9.0E-06** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064051

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VOL 18

# Table T-8
## Site 7
## Summary of Chronic Hazard Index for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.2E+00 mg/kg | Fish | 3.0E-04 | 3.0E-04 | 9.9E-01 |
| 2 | 33213-65-9 | Endosulfan II | P | 5.9E-02 mg/kg | Fish | 5.0E-05 ** | 1.4E-05 | 2.9E-01 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 8.0E-02 mg/kg | Fish | 3.0E-04 | 1.9E-05 | 6.5E-02 |
| 4 | 56-35-9 | Tributyltin oxide (TBTO) | I | 6.4E-03 mg/kg | Fish | 3.0E-05 | 1.5E-06 | 5.1E-02 |
| 5 | 7782-49-2 | Selenium | I | 4.6E-01 mg/kg | Fish | 5.0E-03 | 1.1E-04 | 2.2E-02 |
| 6 | 7440-50-8 | Copper and compounds | I | 1.5E+00 mg/kg | Fish | 3.7E-02 | 3.7E-04 | 1.0E-02 |
| 7 | 7440-66-6 | Zinc | I | 9.4E+00 mg/kg | Fish | 3.0E-01 | 2.3E-03 | 7.6E-03 |
| 8 | 72-20-8 | Endrin | P | 8.5E-03 mg/kg | Fish | 3.0E-04 | 2.1E-06 | 6.9E-03 |

**Total of Top 20 Contributors:** **1.4E+00**

**Grand Total for Recreational Fisher - Child:** **1.4E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064052

**Table T-9**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin California Halibut Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.3E-01 | mg/kg | Fish | 1.8E+00 | 4.5E-05 | 7.9E-05 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.6E-01 | mg/kg | Fish | 3.4E-01 | 1.7E-05 | 5.7E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 3.8E-03 | mg/kg | Fish | 2.4E-01 | 3.9E-07 | 9.5E-08 |
| | | | | | | | | | | | **Total of Top 20 Contributors:** | **8.4E-05** |
| | | | | | | | | | | | **Grand Total for Recreational Fisher - Adult:** | **8.4E-05** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-10
## Site 7
## Summary of Chronic Hazard Index for the Adult Recreational Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.3E-01 | mg/kg | Fish | 3.0E-04 | 1.0E-04 | 3.5E-01 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 9.4E-03 | mg/kg | Fish | 3.0E-05 | 2.3E-06 | 7.6E-02 |
| 3 | 7440-50-8 | Copper and compounds | I | 8.5E+00 | mg/kg | Fish | 3.7E-02 | 2.1E-03 | 5.6E-02 |
| 4 | 33213-65-9 | Endosulfan II | P | 7.2E-03 | mg/kg | Fish | 5.0E-05 ** | 1.8E-06 | 3.5E-02 |
| 5 | 22967-92-6 | Mercury (methyl) | I | 4.0E-02 | mg/kg | Fish | 3.0E-04 | 9.8E-06 | 3.3E-02 |
| 6 | 7782-49-2 | Selenium | I | 3.9E-01 | mg/kg | Fish | 5.0E-03 | 9.5E-06 | 1.9E-02 |
| 7 | 7440-66-6 | Zinc | I | 1.8E+01 | mg/kg | Fish | 3.0E-01 | 4.4E-03 | 1.5E-02 |

**Total of Top 20 Contributors:** 5.8E-01

**Grand Total for Recreational Fisher - Adult:** 5.8E-01

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064054

**Table T-11**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin California Halibut Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.3E-01 | mg/kg | Fish | 1.8E+00 | 8.9E-06 | 1.6E-05 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.6E-01 | mg/kg | Fish | 3.4E-01 | 3.4E-06 | 1.1E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 3.8E-03 | mg/kg | Fish | 2.4E-01 | 7.9E-06 | 1.9E-06 |
| | | | | | | | | | | | **Total of Top 20 Contributors:** | **1.7E-05** |
| | | | | | | | | | | | **Grand Total for Recreational Fisher - Child:** | **1.7E-05** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-12
## Site 7
## Summary of Chronic Hazard Index for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.3E-01 | mg/kg | Fish | 3.0E-04 | 1.0E-04 | 3.5E-01 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 9.4E-03 | mg/kg | Fish | 3.0E-05 | 2.3E-06 | 7.6E-02 |
| 3 | 7440-50-8 | Copper and compounds | I | 8.5E+00 | mg/kg | Fish | 3.7E-02 | 2.1E-03 | 5.6E-02 |
| 4 | 33213-65-9 | Endosulfan II | P | 7.2E-03 | mg/kg | Fish | 5.0E-05 ** | 1.7E-06 | 3.5E-02 |
| 5 | 22967-92-6 | Mercury (methyl) | I | 4.0E-02 | mg/kg | Fish | 3.0E-04 | 9.7E-06 | 3.2E-02 |
| 6 | 7782-49-2 | Selenium | I | 3.9E-01 | mg/kg | Fish | 5.0E-03 | 9.5E-05 | 1.9E-02 |
| 7 | 7440-66-6 | Zinc | I | 1.8E+01 | mg/kg | Fish | 3.0E-01 | 4.3E-03 | 1.4E-02 |

**Total of Top 20 Contributors:** 5.8E-01

**Grand Total for Recreational Fisher - Child:** 5.8E-01

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064056

**Table T-13**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin whiote Croaker Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.4E+00 | mg/kg | Fish | 1.8E+00 | 1.4E-04 | 2.5E-04 |
| 2 | 7440-41-7 | Beryllium and compounds | I | B2 | B2 | B2 | 6.0E-02 | mg/kg | Fish | 4.3E+00 | 6.3E-06 | 2.7E-05 |
| 3 | 72-55-9 | DDE | P | B2 | B2 | B2 | 5.1E-01 | mg/kg | Fish | 3.4E-01 | 5.4E-05 | 1.8E-05 |
| 4 | 319-84-6 | HCH (alpha) | P | B2 | B2 | B2 | 3.2E-03 | mg/kg | Fish | 6.3E+00 | 3.3E-07 | 2.1E-06 |
| 5 | 72-54-8 | DDD | P | B2 | B2 | B2 | 3.3E-02 | mg/kg | Fish | 2.4E-01 | 3.4E-06 | 8.3E-07 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | | **3.0E-04** |
| | | | | | | | | | | **Grand Total for Recreational Fisher - Adult:** | | **3.0E-04** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064057

# Table T-14
## Site 7
## Summary of Chronic Hazard Index for the Adult Recreational Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.4E+00 | mg/kg | Fish | 3.0E-04 | 3.3E-04 | 1.1E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.2E-02 | mg/kg | Fish | 3.0E-05 | 2.9E-06 | 9.8E-02 |
| 3 | 33213-65-9 | Endosulfan II | P | 1.8E-02 | mg/kg | Fish | 5.0E-05 ** | 4.5E-06 | 8.9E-02 |
| 4 | 22967-92-6 | Mercury (methyl) | I | 7.0E-02 | mg/kg | Fish | 3.0E-04 | 1.7E-05 | 5.7E-02 |
| 5 | 7782-49-2 | Selenium | I | 9.0E-01 | mg/kg | Fish | 5.0E-03 | 2.2E-04 | 4.4E-02 |
| 6 | 7440-47-3 | Chromium (total) | I | 4.2E-01 | mg/kg | Fish | 5.0E-03 | 1.0E-04 | 2.1E-02 |
| 7 | 7440-50-8 | Copper and compounds | I | 3.1E+00 | mg/kg | Fish | 3.7E-02 | 7.5E-04 | 2.0E-02 |
| 8 | 7440-66-6 | Zinc | I | 1.2E+01 | mg/kg | Fish | 3.0E-01 | 3.0E-03 | 9.9E-03 |
| 9 | 72-20-8 | Endrin | P | 9.4E-03 | mg/kg | Fish | 3.0E-04 | 2.3E-06 | 7.7E-03 |
| 10 | 7440-41-7 | Beryllium and compounds | I | 6.0E-02 | mg/kg | Fish | 5.0E-03 | 1.5E-05 | 2.9E-03 |
| 11 | 319-84-6 | HCH (alpha) | P | 3.2E-03 | mg/kg | Fish | 3.0E-04 | 7.7E-07 | 2.6E-03 |

**Total of Top 20 Contributors:** 1.5E+00

**Grand Total for Recreational Fisher - Adult:** 1.5E+00

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064058

VOL 18

**Table T-15**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin White Croaker Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.4E+00 | mg/kg | Fish | 1.8E+00 | 2.8E-05 | 5.0E-05 |
| 2 | 7440-41-7 | Beryllium and compounds | I | B2 | B2 | B2 | 6.0E-02 | mg/kg | Fish | 4.3E+00 | 1.2E-06 | 5.4E-06 |
| 3 | 72-55-9 | DDE | P | B2 | B2 | B2 | 5.1E-01 | mg/kg | Fish | 3.4E-01 | 1.1E-05 | 3.6E-06 |
| 4 | 319-84-6 | HCH (alpha) | P | B2 | B2 | B2 | 3.2E-03 | mg/kg | Fish | 6.3E+00 | 6.6E-08 | 4.2E-07 |
| 5 | 72-54-8 | DDD | P | B2 | B2 | B2 | 3.3E-02 | mg/kg | Fish | 2.4E-01 | 6.9E-07 | 1.6E-07 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | | **5.9E-05** |
| | | | | | | | | | | **Grand Total for Recreational Fisher - Child:** | | **5.9E-05** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064059

# Table 16
## Site 7
## Summary of Chronic Hazard Index for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.4E+00 mg/kg | Fish | 3.0E-04 | 3.3E-04 | 1.1E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.2E-02 mg/kg | Fish | 3.0E-05 | 2.9E-06 | 9.7E-02 |
| 3 | 33213-65-9 | Endosulfan II | P | 1.8E-02 mg/kg | Fish | 5.0E-05 ** | 4.4E-06 | 8.9E-02 |
| 4 | 22967-92-6 | Mercury (methyl) | I | 7.0E-02 mg/kg | Fish | 3.0E-04 | 1.7E-05 | 5.7E-02 |
| 5 | 7782-49-2 | Selenium | I | 9.0E-01 mg/kg | Fish | 5.0E-03 | 2.2E-04 | 4.4E-02 |
| 6 | 7440-47-3 | Chromium (total) | I | 4.2E-01 mg/kg | Fish | 5.0E-03 | 1.0E-04 | 2.0E-02 |
| 7 | 7440-50-8 | Copper and compounds | I | 3.1E+00 mg/kg | Fish | 3.7E-02 | 7.5E-04 | 2.0E-02 |
| 8 | 7440-66-6 | Zinc | I | 1.2E+01 mg/kg | Fish | 3.0E-01 | 3.0E-03 | 9.9E-03 |
| 9 | 72-20-8 | Endrin | P | 9.4E-03 mg/kg | Fish | 3.0E-04 | 2.3E-06 | 7.6E-03 |
| 10 | 7440-41-7 | Beryllium and compounds | I | 6.0E-02 mg/kg | Fish | 5.0E-03 | 1.5E-05 | 2.9E-03 |
| 11 | 319-84-6 | HCH (alpha) | P | 3.2E-03 mg/kg | Fish | 3.0E-04 | 7.7E-07 | 2.6E-03 |

**Total of Top 20 Contributors:** **1.8E+00**

**Grand Total for Recreational Fisher - Child:** **1.5E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-17
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Fillet

| CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 7440-38-2 | Arsenic | I | A | A | A | 8.7E-01 | mg/kg | Fish | 1.8E+00 | 9.1E-05 | 1.6E-04 |
| 2 72-55-9 | DDE | P | B2 | B2 | B2 | 5.5E-02 | mg/kg | Fish | 3.4E-01 | 5.8E-06 | 2.0E-06 |
| | | | | | | | | | | Total of Top 20 Contributors: | 1.6E-04 |
| | | | | | | | | | | Grand Total for Recreational Fisher - Adult: | 1.6E-04 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-18
## Site 7
## Summary of Chronic Hazard Index for the Adult Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 8.7E-01 mg/kg | Fish | 3.0E-04 | 2.1E-04 | 7.1E-01 |
| 2 | 22967-92-6 | Mercury (methyl) | I | 1.3E-01 mg/kg | Fish | 3.0E-04 | 3.2E-05 | 1.1E-01 |
| 3 | 7782-49-2 | Selenium | I | 1.1E+00 mg/kg | Fish | 5.0E-03 | 2.6E-04 | 5.1E-02 |
| 4 | 7440-50-8 | Copper and compounds | I | 3.2E+00 mg/kg | Fish | 3.7E-02 | 7.7E-04 | 2.1E-02 |
| 5 | 7440-66-6 | Zinc | I | 2.2E+01 mg/kg | Fish | 3.0E-01 | 5.3E-03 | 1.8E-02 |
| | | | | | | Total of Top 20 Contributors: | | 9.0E-01 |
| | | | | | | Grand Total for Recreational Fisher - Adult: | | 9.0E-01 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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VOL 18

**Table T-19**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for Reference California Halibut Fillet**

| CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 7440-38-2 | Arsenic | I | A | A | A | 8.7E-01 | mg/kg | Fish | 1.8E+00 | 1.8E-05 | 3.2E-05 |
| 2 72-55-9 | DDE | P | B2 | B2 | B2 | 5.5E-02 | mg/kg | Fish | 3.4E-01 | 1.2E-06 | 3.9E-07 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | **3.2E-05** |
| | | | | | | | | | | **Grand Total for Recreational Fisher - Child:** | **3.2E-05** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-20
## Site 7
## Summary of Chronic Hazard Index for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | | 8.7E-01 | mg/kg | Fish | 3.0E-04 | 2.1E-04 | 7.0E-01 |
| 2 | 22967-92-6 | Mercury (methyl) | | 1.3E-01 | mg/kg | Fish | 3.0E-04 | 3.2E-05 | 1.1E-01 |
| 3 | 7782-49-2 | Selenium | | 1.1E+00 | mg/kg | Fish | 6.0E-03 | 2.5E-04 | 8.1E-02 |
| 4 | 7440-50-8 | Copper and compounds | | 3.2E+00 | mg/kg | Fish | 3.7E-02 | 7.6E-04 | 2.1E-02 |
| 5 | 7440-66-6 | Zinc | | 2.2E+01 | mg/kg | Fish | 3.0E-01 | 5.3E-03 | 1.8E-02 |

**Total of Top 20 Contributors:** **9.0E-01**

**Grand Total for Recreational Fisher - Child:** **9.0E-01**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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VOL 18

**Table T-21**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for Reference White Croaker Fillet**

| CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 7440-38-2 | Arsenic | I | A | A | A | 1.5E+00 mg/kg | Fish | 1.8E+00 | 1.6E-04 | 2.8E-04 |
| 2 72-55-9 | DDE | P | B2 | B2 | B2 | 2.5E+00 mg/kg | Fish | 3.4E-01 | 2.6E-04 | 8.9E-05 |
| 3 72-54-8 | DDD | P | B2 | B2 | B2 | 4.1E-02 mg/kg | Fish | 2.4E-01 | 4.3E-06 | 1.0E-06 |
| | | | | | | | | | **Total of Top 20 Contributors:** | **3.7E-04** |
| | | | | | | | | | **Grand Total for Recreational Fisher - Adult:** | **3.7E-04** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-22
## Site 7
## Summary of Chronic Hazard Index for the Adult Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.5E+00 mg/kg | Fish | 3.0E-04 | 3.7E-04 | 1.2E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.6E-02 mg/kg | Fish | 3.0E-05 | 3.8E-06 | 1.3E-01 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 5.0E-02 mg/kg | Fish | 3.0E-04 | 1.2E-05 | 4.1E-02 |

**Total of Top 20 Contributors:** 1.4E+00

**Grand Total for Recreational Fisher - Adult:** 1.4E+00

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-23
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.6E+00 | mg/kg | Fish | 1.8E+00 | 3.2E-06 | 6.6E-06 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 2.5E+00 | mg/kg | Fish | 3.4E-01 | 5.2E-06 | 1.8E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 4.1E-02 | mg/kg | Fish | 2.4E-01 | 8.6E-07 | 2.1E-07 |
| | | | | | | | | | | | Total of Top 20 Contributors: | 7.4E-06 |
| | | | | | | | | | | | Grand Total for Recreational Fisher - Child: | 7.4E-06 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-24
## Site 7
## Summary of Chronic Hazard Index for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.8E+00 mg/kg | Fish | 3.0E-04 | 3.7E-04 | 1.2E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.6E-02 mg/kg | Fish | 3.0E-05 | 3.8E-06 | 1.3E-01 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 5.0E-02 mg/kg | Fish | 3.0E-04 | 1.2E-05 | 4.0E-02 |
| | | | | | | Total of Top 20 Contributors: | | 1.4E+00 |
| | | | | | | Grand Total for Recreational Fisher - Child: | | 1.4E+00 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-25
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Recreational Fisher
## Top 20 Chemicals with Associated Pathway

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.5E-01 mg/kg | Fish | 1.8E+00 | 4.7E-05 | 8.2E-05 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.5E-01 mg/kg | Fish | 3.4E-01 | 1.6E-05 | 5.5E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 6.5E-03 mg/kg | Fish | 2.4E-01 | 6.7E-07 | 1.6E-07 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | **8.8E-05** |
| | | | | | | | | | | **Grand Total for Recreational Fisher - Adult:** | **8.8E-05** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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VOL 18

**Table T-26**
**Site 7**
**Summary of Chronic Hazard Index for the Adult Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for Reference California Halibut Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.5E-01 mg/kg | Fish | 3.0E-04 | 1.1E-04 | 3.7E-01 |
| 2 | 7440-50-8 | Copper and compounds | I | 2.7E+01 mg/kg | Fish | 3.7E-02 | 6.6E-03 | 1.8E-01 |
| 3 | 56-35-9 | Tributyltin oxide (TBTO) | I | 7.9E-03 mg/kg | Fish | 3.0E-05 | 1.9E-06 | 8.5E-02 |
| 4 | 7440-02-0 | Nickel (soluble salts) | I | 4.4E+00 mg/kg | Fish | 2.0E-02 | 1.1E-03 | 5.4E-02 |
| 5 | 33213-65-9 | Endosulfan II | P | 5.0E-03 mg/kg | Fish | 5.0E-05 ** | 1.2E-06 | 2.5E-02 |
| 6 | 22967-92-6 | Mercury (methyl) | I | 3.0E-02 mg/kg | Fish | 3.0E-04 | 7.3E-06 | 2.4E-02 |
| 7 | 7440-66-6 | Zinc | I | 2.8E+01 mg/kg | Fish | 3.0E-01 | 6.9E-03 | 2.3E-02 |

**Total of Top 20 Contributors:** **7.4E-01**

**Grand Total for Recreational Fisher - Adult:** **7.4E-01**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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VOL 18

**Table T-27**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for Reference California Halibut Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.6E-01 | mg/kg | Fish | 1.8E+00 | 9.4E-08 | 1.6E-06 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.5E-01 | mg/kg | Fish | 3.4E-01 | 3.2E-08 | 1.1E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 6.5E-03 | mg/kg | Fish | 2.4E-01 | 1.3E-07 | 3.2E-08 |

**Total of Top 20 Contributors:** 1.7E-05

**Grand Total for Recreational Fisher - Child:** 1.7E-05

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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T-27

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# Table T-28
## Site 7
## Summary of Chronic Hazard Index for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.5E-01 | mg/kg | Fish | 3.0E-04 | 1.1E-04 | 3.6E-01 |
| 2 | 7440-50-8 | Copper and compounds | I | 2.7E+01 | mg/kg | Fish | 3.7E-02 | 6.6E-03 | 1.8E-01 |
| 3 | 56-35-9 | Tributyltin oxide (TBTO) | I | 7.9E-03 | mg/kg | Fish | 3.0E-05 | 1.9E-06 | 6.4E-02 |
| 4 | 7440-02-0 | Nickel (soluble salts) | I | 4.4E+00 | mg/kg | Fish | 2.0E-02 | 1.1E-03 | 5.3E-02 |
| 5 | 33213-65-9 | Endosulfan II | P | 5.0E-03 | mg/kg | Fish | 5.0E-05 ** | 1.2E-06 | 2.4E-02 |
| 6 | 22967-92-6 | Mercury (methyl) | I | 3.0E-02 | mg/kg | Fish | 3.0E-04 | 7.3E-06 | 2.4E-02 |
| 7 | 7440-66-6 | Zinc | I | 2.8E+01 | mg/kg | Fish | 3.0E-01 | 6.9E-03 | 2.3E-02 |

**Total of Top 20 Contributors:** **7.3E-01**

**Grand Total for Recreational Fisher - Child:** **7.3E-01**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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VOL 18

**Table T-29**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Recreational Fisher**
**Top 20 Chemicals with Associated Pathway for Reference White Croaker Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.1E+00 | mg/kg | Fish | 1.8E+00 | 1.1E-04 | 2.0E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 4.8E-01 | mg/kg | Fish | 3.4E-01 | 5.0E-05 | 1.7E-05 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 4.0E-02 | mg/kg | Fish | 2.4E-01 | 4.2E-06 | 1.0E-06 |

**Total of Top 20 Contributors:** **2.2E-04**

**Grand Total for Recreational Fisher - Adult:** **2.2E-04**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-30
## Site 7
## Summary of Chronic Hazard Index for the Adult Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.1E+00 mg/kg | Fish | 3.0E-04 | 2.7E-04 | 8.9E-01 |
| 2 | 33213-65-9 | Endosulfan II | P | 2.0E-02 mg/kg | Fish | 5.0E-05 ** | 4.8E-06 | 9.6E-02 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 7.0E-02 mg/kg | Fish | 3.0E-04 | 1.7E-05 | 5.7E-02 |
| 4 | 7782-49-2 | Selenium | I | 7.2E-01 mg/kg | Fish | 5.0E-03 | 1.8E-04 | 3.6E-02 |
| 5 | 56-35-9 | Tributyltin oxide (TBTO) | I | 4.1E-03 mg/kg | Fish | 3.0E-05 | 9.9E-07 | 3.3E-02 |
| 6 | 7440-66-6 | Zinc | I | 1.6E+01 mg/kg | Fish | 3.0E-01 | 3.8E-03 | 1.3E-02 |
| 7 | 7440-50-8 | Copper and compounds | I | 1.6E+00 mg/kg | Fish | 3.7E-02 | 3.8E-04 | 1.0E-02 |

**Total of Top 20 Contributors:** 1.1E+00

**Grand Total for Recreational Fisher - Adult:** 1.1E+00

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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VOL 18

## Table T-31
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.1E+00 mg/kg | Fish | 1.8E+00 | 2.3E-06 | 4.0E-06 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 4.6E-01 mg/kg | Fish | 3.4E-01 | 9.9E-06 | 3.4E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 4.0E-02 mg/kg | Fish | 2.4E-01 | 8.3E-07 | 2.0E-07 |
| | | | | | | | | | | Total of Top 20 Contributors: | 4.3E-06 |
| | | | | | | | | | | Grand Total for Recreational Fisher - Child: | 4.3E-06 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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VOL 18

## Table T-32
## Site 7
## Summary of Chronic Hazard Index for the Child Recreational Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.1E+00 mg/kg | Fish | 3.0E-04 | 2.6E-04 | 8.8E-01 |
| 2 | 33213-65-9 | Endosulfan II | P | 2.0E-02 mg/kg | Fish | 5.0E-05 ** | 4.8E-06 | 9.5E-02 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 7.0E-02 mg/kg | Fish | 3.0E-04 | 1.7E-05 | 5.7E-02 |
| 4 | 7782-49-2 | Selenium | I | 7.2E-01 mg/kg | Fish | 5.0E-03 | 1.7E-04 | 3.5E-02 |
| 5 | 56-35-9 | Tributyltin oxide (TBTO) | I | 4.1E-03 mg/kg | Fish | 3.0E-05 | 9.9E-07 | 3.3E-02 |
| 6 | 7440-66-6 | Zinc | I | 1.6E+01 mg/kg | Fish | 3.0E-01 | 3.8E-03 | 1.3E-02 |
| 7 | 7440-50-8 | Copper and compounds | I | 1.6E+00 mg/kg | Fish | 3.7E-02 | 3.8E-04 | 1.0E-02 |

**Total of Top 20 Contributors:** **1.1E+00**

**Grand Total for Recreational Fisher - Child:** **1.1E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064076

**Table T-33**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Subsistence Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin California Halibut Fillet**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.6E-01 | mg/kg | Fish | 1.8E+00 | 3.6E-04 | 6.2E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.3E-01 | mg/kg | Fish | 3.4E-01 | 1.0E-04 | 3.5E-05 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | | **6.6E-04** |
| | | | | | | | | | | **Grand Total for Subsistence Fisher - Adult:** | | **6.6E-04** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-34
## Site 7
## Summary of Chronic Hazard Index for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.6E-01 | mg/kg | Fish | 3.0E-04 | 8.3E-04 | 2.8E+00 |
| 2 | 22967-92-6 | Mercury (methyl) | I | 1.4E-01 | mg/kg | Fish | 3.0E-04 | 2.5E-04 | 8.4E-01 |
| 3 | 7440-50-8 | Copper and compounds | I | 1.5E+00 | mg/kg | Fish | 3.7E-02 | 2.7E-03 | 7.2E-02 |
| 4 | 7440-66-6 | Zinc | I | 1.2E+01 | mg/kg | Fish | 3.0E-01 | 2.1E-02 | 7.0E-02 |
| 5 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.0E-03 | mg/kg | Fish | 3.0E-05 | 1.9E-06 | 6.3E-02 |

**Total of Top 20 Contributors:** **3.8E+00**

**Grand Total for Subsistence Fisher - Adult:** **3.8E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-35
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.6E-01 | mg/kg | Fish | 1.8E+00 | 7.1E-05 | 1.2E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.3E-01 | mg/kg | Fish | 3.4E-01 | 2.0E-06 | 6.9E-06 |
| | | | | | | | | | | | Total of Top 20 Contributors: | 1.3E-04 |
| | | | | | | | | | | | Grand Total for Subsistence Fisher - Child: | 1.3E-04 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064079

**Table T-36**
**Site 7**
**Summary of Chronic Hazard Index for the Child Subsistence Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin California Halibut Fillet**

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.6E-01 mg/kg | Fish | 3.0E-04 | 8.2E-04 | 2.7E+00 |
| 2 | 22967-92-6 | Mercury (methyl) | I | 1.4E-01 mg/kg | Fish | 3.0E-04 | 2.5E-04 | 8.4E-01 |
| 3 | 7440-50-8 | Copper and compounds | I | 1.5E+00 mg/kg | Fish | 3.7E-02 | 2.6E-03 | 7.1E-02 |
| 4 | 7440-66-6 | Zinc | I | 1.2E+01 mg/kg | Fish | 3.0E-01 | 2.1E-02 | 7.0E-02 |
| 5 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.0E-03 mg/kg | Fish | 3.0E-05 | 1.9E-06 | 6.2E-02 |
| | | | | | | **Total of Top 20 Contributors:** | | **3.6E+00** |
| | | | | | | **Grand Total for Subsistence Fisher - Child:** | | **3.8E+00** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064080

**Table T-37**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Subsistence Fisher**
**Top 20 Chemicals with Associated Pathwayfor West Basin White Croaker Fillet**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.2E+00 | mg/kg | Fish | 1.8E+00 | 9.5E-04 | 1.7E-03 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 6.7E-01 | mg/kg | Fish | 3.4E-01 | 5.2E-04 | 1.8E-04 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 6.4E-02 | mg/kg | Fish | 2.4E-01 | 4.9E-06 | 1.2E-05 |
| | | | | | | | | | | | **Total of Top 20 Contributors:** | **1.9E-03** |
| | | | | | | | | | | | **Grand Total for Subsistence Fisher - Adult:** | **1.9E-03** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value



R0064081

## Table T-38
## Site 7
## Summary of Chronic Hazard Index for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.2E+00 | mg/kg | Fish | 3.0E-04 | 2.2E-03 | 7.4E+00 |
| 2 | 33213-65-9 | Endosulfan II | P | 5.9E-02 | mg/kg | Fish | 5.0E-05 | **1.1E-04 | 2.1E+00 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 8.0E-02 | mg/kg | Fish | 3.0E-04 | 1.4E-04 | 4.8E-01 |
| 4 | 56-35-9 | Tributyltin oxide (TBTO) | I | 6.4E-03 | mg/kg | Fish | 3.0E-05 | 1.2E-05 | 3.8E-01 |
| 5 | 7782-49-2 | Selenium | I | 4.6E-01 | mg/kg | Fish | 6.0E-03 | 8.3E-04 | 1.7E-01 |
| 6 | 7440-50-8 | Copper and compounds | I | 1.6E+00 | mg/kg | Fish | 3.7E-02 | 2.8E-03 | 7.4E-02 |
| 7 | 7440-66-6 | Zinc | I | 9.4E+00 | mg/kg | Fish | 3.0E-01 | 1.7E-02 | 5.7E-02 |
| 8 | 72-20-8 | Endrin | P | 8.5E-03 | mg/kg | Fish | 3.0E-04 | 1.5E-05 | 5.1E-02 |

**Total of Top 20 Contributors:** **1.1E+01**

**Grand Total for Subsistence Fisher - Adult:** **1.1E+01**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064082

## Table T-39
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.2E+00 | mg/kg | Fish | 1.8E+00 | 1.9E-04 | 3.3E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 6.7E-01 | mg/kg | Fish | 3.4E-01 | 1.0E-04 | 3.5E-05 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 6.4E-02 | mg/kg | Fish | 2.4E-01 | 9.8E-06 | 2.4E-06 |

**Total of Top 20 Contributors:** **3.7E-04**

**Grand Total for Subsistence Fisher - Child:** **3.7E-04**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064083

# Table T-40
## Site 7
## Summary of Chronic Hazard Index for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.2E+00 mg/kg | Fish | 3.0E-04 | 2.2E-03 | 7.3E+00 |
| 2 | 33213-65-9 | Endosulfan II | P | 5.9E-02 mg/kg | Fish | 5.0E-05 | **1.1E-04 | 2.1E+00 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 8.0E-02 mg/kg | Fish | 3.0E-04 | 1.4E-04 | 4.8E-01 |
| 4 | 56-35-9 | Tributyltin oxide (TBTO) | I | 6.4E-03 mg/kg | Fish | 3.0E-05 | 1.1E-05 | 3.8E-01 |
| 5 | 7782-49-2 | Selenium | I | 4.6E-01 mg/kg | Fish | 5.0E-03 | 8.2E-04 | 1.6E-01 |
| 6 | 7440-50-8 | Copper and compounds | I | 1.5E+00 mg/kg | Fish | 3.7E-02 | 2.7E-03 | 7.4E-02 |
| 7 | 7440-66-6 | Zinc | I | 9.4E+00 mg/kg | Fish | 3.0E-01 | 1.7E-02 | 5.6E-02 |
| 8 | 72-20-8 | Endrin | P | 8.5E-03 mg/kg | Fish | 3.0E-04 | 1.5E-05 | 5.1E-02 |

**Total of Top 20 Contributors:** 1.1E+01

**Grand Total for Subsistence Fisher - Child:** 1.1E+01

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value



R0064084

**Table T-41**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Subsistence Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin California Halibut Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.3E-01 | mg/kg | Fish | 1.8E+00 | 3.3E-04 | 5.8E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.6E-01 | mg/kg | Fish | 3.4E-01 | 1.2E-04 | 4.2E-05 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 3.8E-03 | mg/kg | Fish | 2.4E-01 | 2.9E-06 | 7.0E-07 |

**Total of Top 20 Contributors:** 6.3E-04

**Grand Total for Subsistence Fisher - Adult:** 6.3E-04

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064085

VOL 18

## Table T-42
## Site 7
## Summary of Chronic Hazard Index for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.3E-01 | mg/kg | Fish | 3.0E-04 | 7.8E-04 | 2.6E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 9.4E-03 | mg/kg | Fish | 3.0E-05 | 1.7E-05 | 5.7E-01 |
| 3 | 7440-50-8 | Copper and compounds | I | 6.5E+00 | mg/kg | Fish | 3.7E-02 | 1.5E-02 | 4.1E-01 |
| 4 | 33213-65-9 | Endosulfan II | P | 7.2E-03 | mg/kg | Fish | 5.0E-06 ** | 1.3E-06 | 2.6E-01 |
| 5 | 22967-92-6 | Mercury (methyl) | I | 4.0E-02 | mg/kg | Fish | 3.0E-04 | 7.2E-05 | 2.4E-01 |
| 6 | 7782-49-2 | Selenium | I | 3.9E-01 | mg/kg | Fish | 6.0E-03 | 7.1E-04 | 1.4E-01 |
| 7 | 7440-66-6 | Zinc | I | 1.8E+01 | mg/kg | Fish | 3.0E-01 | 3.2E-02 | 1.1E-01 |

**Total of Top 20 Contributors:** **4.3E+00**

**Grand Total for Subsistence Fisher - Adult:** **4.3E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064086

# Table T-43
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.3E-01 | mg/kg | Fish | 1.8E+00 | 6.6E-06 | 1.2E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.6E-01 | mg/kg | Fish | 3.4E-01 | 2.5E-06 | 8.4E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 3.8E-03 | mg/kg | Fish | 2.4E-01 | 5.8E-07 | 1.4E-07 |
| | | | | | | | | | | | Total of Top 20 Contributors: | 1.2E-04 |
| | | | | | | | | | | | Grand Total for Subsistence Fisher - Child: | 1.2E-04 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064087

## Table T-44
## Site 7
## Summary of Chronic Hazard Index for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.3E-01 | mg/kg | Fish | 3.0E-04 | 7.7E-04 | 2.6E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 9.4E-03 | mg/kg | Fish | 3.0E-05 | 1.7E-05 | 5.6E-01 |
| 3 | 7440-50-8 | Copper and compounds | I | 8.5E+00 | mg/kg | Fish | 3.7E-02 | 1.5E-02 | 4.1E-01 |
| 4 | 33213-65-9 | Endosulfan II | P | 7.2E-03 | mg/kg | Fish | 5.0E-06 ** | 1.3E-06 | 2.8E-01 |
| 5 | 22967-92-6 | Mercury (methyl) | I | 4.0E-02 | mg/kg | Fish | 3.0E-04 | 7.2E-06 | 2.4E-01 |
| 6 | 7782-49-2 | Selenium | I | 3.9E-01 | mg/kg | Fish | 5.0E-03 | 7.0E-04 | 1.4E-01 |
| 7 | 7440-66-6 | Zinc | I | 1.8E+01 | mg/kg | Fish | 3.0E-01 | 3.2E-02 | 1.1E-01 |

**Total of Top 20 Contributors:** **4.3E+00**

**Grand Total for Subsistence Fisher - Child:** **4.3E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064088

## Table T-45
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.4E+00 | mg/kg | Fish | 1.8E+00 | 1.1E-03 | 1.9E-03 |
| 2 | 7440-41-7 | Beryllium and compounds | I | B2 | B2 | B2 | 6.0E-02 | mg/kg | Fish | 4.3E+00 | 4.6E-06 | 2.0E-04 |
| 3 | 72-55-9 | DDE | P | B2 | B2 | B2 | 5.1E-01 | mg/kg | Fish | 3.4E-01 | 4.0E-04 | 1.3E-04 |
| 4 | 72-54-8 | DDD | P | B2 | B2 | B2 | 3.3E-02 | mg/kg | Fish | 2.4E-01 | 2.5E-06 | 6.1E-06 |
| | | | | | | | | | | Total of Top 20 Contributors: | | 2.2E-03 |
| | | | | | | | | | | Grand Total for Subsistence Fisher - Adult: | | 2.2E-03 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064089

## Table T-46
## Site 7
## Summary of Chronic Hazard Index for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.4E+00 mg/kg | Fish | 3.0E-04 | 2.5E-03 | 8.3E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.2E-02 mg/kg | Fish | 3.0E-06 | 2.2E-06 | 7.2E-01 |
| 3 | 33213-65-9 | Endosulfan II | P | 1.8E-02 mg/kg | Fish | 6.0E-05 | **3.3E-05 | 6.6E-01 |
| 4 | 22967-92-6 | Mercury (methyl) | I | 7.0E-02 mg/kg | Fish | 3.0E-04 | 1.3E-04 | 4.2E-01 |
| 5 | 7782-49-2 | Selenium | I | 9.0E-01 mg/kg | Fish | 5.0E-03 | 1.6E-03 | 3.3E-01 |
| 6 | 7440-47-3 | Chromium (total) | I | 4.2E-01 mg/kg | Fish | 5.0E-03 | 7.6E-04 | 1.5E-01 |
| 7 | 7440-50-8 | Copper and compounds | I | 3.1E+00 mg/kg | Fish | 3.7E-02 | 6.8E-03 | 1.8E-01 |
| 8 | 7440-66-6 | Zinc | I | 1.2E+01 mg/kg | Fish | 3.0E-01 | 2.2E-02 | 7.4E-02 |
| 9 | 72-20-8 | Endrin | P | 9.4E-03 mg/kg | Fish | 3.0E-04 | 1.7E-05 | 5.7E-02 |
| 10 | 7440-41-7 | Beryllium and compounds | I | 6.0E-02 mg/kg | Fish | 6.0E-03 | 1.1E-04 | 2.2E-02 |
| | | | | | | Total of Top 20 Contributors: | | 1.1E+01 |
| | | | | | | Grand Total for Subsistence Fisher - Adult: | | 1.1E+01 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064090

VOL 78

**Table T-47**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Subsistence Fisher**
**Top 20 Chemicals with Associated Pathway for West Basin White Croaker Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.4E+00 | mg/kg | Fish | 1.8E+00 | 2.1E-04 | 3.7E-04 |
| 2 | 7440-41-7 | Beryllium and compounds | I | B2 | B2 | B2 | 6.0E-02 | mg/kg | Fish | 4.3E+00 | 9.2E-06 | 4.0E-05 |
| 3 | 72-55-9 | DDE | P | B2 | B2 | B2 | 5.1E-01 | mg/kg | Fish | 3.4E-01 | 7.9E-05 | 2.7E-05 |
| 4 | 72-54-8 | DDD | P | B2 | B2 | B2 | 3.3E-02 | mg/kg | Fish | 2.4E-01 | 5.1E-06 | 1.2E-06 |
| | | | | | | | | | | | **Total of Top 20 Contributors:** | **4.4E-04** |
| | | | | | | | | | | | **Grand Total for Subsistence Fisher - Child:** | **4.4E-04** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064091

## Table T-48
## Site 7
## Summary of Chronic Hazard Index for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for West Basin White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.4E+00 mg/kg | Fish | 3.0E-04 | 2.5E-03 | 8.2E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.2E-02 mg/kg | Fish | 3.0E-05 | 2.1E-05 | 7.2E-01 |
| 3 | 33213-65-9 | Endosulfan II | P | 1.8E-02 mg/kg | Fish | 5.0E-05 ** | 3.3E-05 | 6.5E-01 |
| 4 | 22967-92-6 | Mercury (methyl) | I | 7.0E-02 mg/kg | Fish | 3.0E-04 | 1.3E-04 | 4.2E-01 |
| 5 | 7782-49-2 | Selenium | I | 9.0E-01 mg/kg | Fish | 5.0E-03 | 1.6E-03 | 3.2E-01 |
| 6 | 7440-47-3 | Chromium (total) | I | 4.2E-01 mg/kg | Fish | 6.0E-03 | 7.8E-04 | 1.3E-01 |
| 7 | 7440-50-8 | Copper and compounds | I | 3.1E+00 mg/kg | Fish | 3.7E-02 | 5.5E-03 | 1.5E-01 |
| 8 | 7440-66-6 | Zinc | I | 1.2E+01 mg/kg | Fish | 3.0E-01 | 2.2E-02 | 7.3E-02 |
| 9 | 72-20-8 | Endrin | P | 9.4E-03 mg/kg | Fish | 3.0E-04 | 1.7E-06 | 6.6E-02 |
| 10 | 7440-41-7 | Beryllium and compounds | I | 6.0E-02 mg/kg | Fish | 6.0E-03 | 1.1E-04 | 2.1E-02 |

**Total of Top 20 Contributors:** **1.1E+01**

**Grand Total for Subsistence Fisher - Child:** **1.1E+01**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064092

**Table T-49**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Subsistence Fisher**
**Top 20 Chemicals with Associated Pathway for Reference California Halibut Fillet**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 8.7E-01 | mg/kg | Fish | 1.8E+00 | 6.7E-04 | 1.2E-03 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 5.5E-02 | mg/kg | Fish | 3.4E-01 | 4.3E-06 | 1.5E-06 |

**Total of Top 20 Contributors: 1.2E-03**

**Grand Total for Subsistence Fisher - Adult: 1.2E-03**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064093

# Table T-50
## Site 7
## Summary of Chronic Hazard Index for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 8.7E-01 mg/kg | Fish | 3.0E-04 | 1.6E-03 | 5.2E+00 |
| 2 | 22967-92-6 | Mercury (methyl) | I | 1.3E-01 mg/kg | Fish | 3.0E-04 | 2.4E-04 | 7.8E-01 |
| 3 | 7782-49-2 | Selenium | I | 1.1E+00 mg/kg | Fish | 5.0E-03 | 1.9E-03 | 3.8E-01 |
| 4 | 7440-50-8 | Copper and compounds | I | 8.2E+00 mg/kg | Fish | 3.7E-02 | 5.7E-03 | 1.5E-01 |
| 5 | 7440-66-6 | Zinc | I | 2.2E+01 mg/kg | Fish | 3.0E-01 | 4.0E-02 | 1.3E-01 |

**Total of Top 20 Contributors:** **6.7E+00**

**Grand Total for Subsistence Fisher - Adult:** **6.7E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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**Table T-51**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Subsistence Fisher**
**Top 20 Chemicals with Associated Pathway for Reference California Halibut Fillet**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 8.7E-01 | mg/kg | Fish | 1.8E+00 | 1.3E-04 | 2.3E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 5.5E-02 | mg/kg | Fish | 3.4E-01 | 8.5E-06 | 2.9E-06 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | | **2.4E-04** |
| | | | | | | | | | | **Grand Total for Subsistence Fisher - Child:** | | **2.4E-04** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-52
## Site 7
## Summary of Chronic Hazard Index for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 8.7E-01 | mg/kg | Fish | 3.0E-04 | 1.6E-03 | 5.2E+00 |
| 2 | 22967-92-6 | Mercury (methyl) | I | 1.3E-01 | mg/kg | Fish | 3.0E-04 | 2.3E-04 | 7.6E-01 |
| 3 | 7782-49-2 | Selenium | I | 1.1E+00 | mg/kg | Fish | 5.0E-03 | 1.9E-03 | 3.8E-01 |
| 4 | 7440-50-8 | Copper and compounds | I | 3.2E+00 | mg/kg | Fish | 3.7E-02 | 5.6E-03 | 1.5E-01 |
| 5 | 7440-66-6 | Zinc | I | 2.2E+01 | mg/kg | Fish | 3.0E-01 | 3.9E-02 | 1.3E-01 |
| | | | | | | | | Total of Top 20 Contributors: | 6.6E+00 |
| | | | | | | | | Grand Total for Subsistence Fisher - Child: | 6.6E+00 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-53
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Federal Cancer Class Inhalation | Federal Cancer Class Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.5E+00 | mg/kg | Fish | 1.8E+00 | 1.2E-03 | 2.1E-03 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 2.5E+00 | mg/kg | Fish | 3.4E-01 | 1.9E-03 | 6.6E-04 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 4.1E-02 | mg/kg | Fish | 2.4E-01 | 3.2E-05 | 7.7E-06 |

**Total of Top 20 Contributors:** 2.7E-03

**Grand Total for Subsistence Fisher - Adult:** 2.7E-03

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-54
## Site 7
## Summary of Chronic Hazard Index for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.5E+00 | mg/kg | Fish | 3.0E-04 | 2.8E-03 | 9.2E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.6E-02 | mg/kg | Fish | 3.0E-05 | 2.8E-05 | 9.4E-01 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 8.0E-02 | mg/kg | Fish | 3.0E-04 | 9.0E-05 | 3.0E-01 |
| | | | | | | | Total of Top 20 Contributors: | | 1.0E+01 |
| | | | | | | | Grand Total for Subsistence Fisher - Adult: | | 1.0E+01 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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R0064098

## Table T-55
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.6E+00 | mg/kg | Fish | 1.8E+00 | 2.3E-04 | 4.1E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 2.5E+00 | mg/kg | Fish | 3.4E-01 | 3.8E-04 | 1.3E-04 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 4.1E-02 | mg/kg | Fish | 2.4E-01 | 6.4E-06 | 1.5E-06 |

**Total of Top 20 Contributors:** **5.4E-04**

**Grand Total for Subsistence Fisher - Child:** **5.4E-04**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-56
## Site 7
## Summary of Chronic Hazard Index for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Fillet

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.5E+00 | mg/kg | Fish | 3.0E-04 | 2.7E-03 | 9.1E+00 |
| 2 | 56-35-9 | Tributyltin oxide (TBTO) | I | 1.6E-02 | mg/kg | Fish | 3.0E-05 | 2.8E-05 | 9.3E-01 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 5.0E-02 | mg/kg | Fish | 3.0E-04 | 8.9E-05 | 3.0E-01 |
| | | | | | | | **Total of Top 20 Contributors:** | | **1.0E+01** |
| | | | | | | | **Grand Total for Subsistence Fisher - Child:** | | **1.0E+01** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-57
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.5E-01 | mg/kg | Fish | 1.8E+00 | 3.5E-04 | 6.1E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.5E-01 | mg/kg | Fish | 3.4E-01 | 1.2E-04 | 4.0E-05 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 6.5E-03 | mg/kg | Fish | 2.4E-01 | 5.0E-06 | 1.2E-06 |

**Total of Top 20 Contributors:** **6.5E-04**

**Grand Total for Subsistence Fisher - Adult:** **6.5E-04**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-58
## Site 7
## Summary of Chronic Hazard Index for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.5E-01 mg/kg | Fish | 3.0E-04 | 8.1E-04 | 2.7E+00 |
| 2 | 7440-50-8 | Copper and compounds | I | 2.7E+01 mg/kg | Fish | 3.7E-02 | 4.9E-02 | 1.3E+00 |
| 3 | 56-35-9 | Tributyltin oxide (TBTO) | I | 7.9E-03 mg/kg | Fish | 3.0E-05 | 1.4E-05 | 4.6E-01 |
| 4 | 7440-02-0 | Nickel (soluble salts) | I | 4.4E+00 mg/kg | Fish | 2.0E-02 | 8.0E-03 | 4.0E-01 |
| 5 | 33213-65-9 | Endosulfan II | P | 5.0E-03 mg/kg | Fish | 5.0E-05 ** | 9.1E-06 | 1.8E-01 |
| 6 | 22967-92-6 | Mercury (methyl) | I | 3.0E-02 mg/kg | Fish | 3.0E-04 | 5.4E-05 | 1.8E-01 |
| 7 | 7440-66-6 | Zinc | I | 2.8E+01 mg/kg | Fish | 3.0E-01 | 6.1E-02 | 1.7E-01 |

**Total of Top 20 Contributors:** **5.4E+00**

**Grand Total for Subsistence Fisher - Adult:** **5.4E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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## Table T-59
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 4.5E-01 | mg/kg | Fish | 1.8E+00 | 6.9E-05 | 1.2E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 1.5E-01 | mg/kg | Fish | 3.4E-01 | 2.4E-06 | 8.0E-06 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 6.5E-03 | mg/kg | Fish | 2.4E-01 | 9.9E-07 | 2.4E-07 |
| | | | | | | | | | | **Total of Top 20 Contributors:** | | **1.3E-04** |
| | | | | | | | | | | **Grand Total for Subsistence Fisher - Child:** | | **1.3E-04** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value



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# Table T-60
## Site 7
## Summary of Chronic Hazard Index for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference California Halibut Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 4.5E-01 | mg/kg | Fish | 3.0E-04 | 8.1E-04 | 2.7E+00 |
| 2 | 7440-50-8 | Copper and compounds | I | 2.7E+01 | mg/kg | Fish | 3.7E-02 | 4.9E-02 | 1.3E+00 |
| 3 | 56-35-9 | Tributyltin oxide (TBTO) | I | 7.9E-03 | mg/kg | Fish | 3.0E-05 | 1.4E-05 | 4.7E-01 |
| 4 | 7440-02-0 | Nickel (soluble salts) | I | 4.4E+00 | mg/kg | Fish | 2.0E-02 | 7.9E-03 | 3.9E-01 |
| 5 | 33213-65-9 | Endosulfan II | P | 5.0E-03 | mg/kg | Fish | 5.0E-05 ** | 9.0E-06 | 1.8E-01 |
| 6 | 22967-92-6 | Mercury (methyl) | I | 3.0E-02 | mg/kg | Fish | 3.0E-04 | 5.4E-05 | 1.8E-01 |
| 7 | 7440-66-6 | Zinc | I | 2.8E+01 | mg/kg | Fish | 3.0E-01 | 5.1E-02 | 1.7E-01 |

**Total of Top 20 Contributors:** **5.4E+00**

**Grand Total for Subsistence Fisher - Child:** **5.4E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-61
## Site 7
## Summary of U.S. EPA Excess Lifetime Cancer Risks for the Adult Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.1E+00 | mg/kg | Fish | 1.8E+00 | 8.4E-04 | 1.5E-03 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 4.9E-01 | mg/kg | Fish | 3.4E-01 | 3.7E-04 | 1.3E-04 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 4.0E-02 | mg/kg | Fish | 2.4E-01 | 3.1E-05 | 7.4E-06 |
| | | | | | | | | | | Total of Top 20 Contributors: | | 1.6E-03 |
| | | | | | | | | | | Grand Total for Subsistence Fisher - Adult: | | 1.6E-03 |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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**Table T-62**
**Site 7**
**Summary of Chronic Hazard Index for the Adult Subsistence Fisher**
**Top 20 Chemicals with Associated Pathway for Reference White Croaker Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.1E+00 mg/kg | Fish | 3.0E-04 | 2.0E-03 | 6.6E+00 |
| 2 | 33213-65-9 | Endosulfan II | P | 2.0E-02 mg/kg | Fish | 5.0E-05 ** | 3.5E-05 | 7.1E-01 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 7.0E-02 mg/kg | Fish | 3.0E-04 | 1.3E-04 | 4.2E-01 |
| 4 | 7782-49-2 | Selenium | I | 7.2E-01 mg/kg | Fish | 5.0E-03 | 1.3E-03 | 2.6E-01 |
| 5 | 56-35-9 | Tributyltin oxide (TBTO) | I | 4.1E-03 mg/kg | Fish | 3.0E-05 | 7.4E-06 | 2.5E-01 |
| 6 | 7440-66-6 | Zinc | I | 1.6E+01 mg/kg | Fish | 3.0E-01 | 2.8E-02 | 9.5E-02 |
| 7 | 7440-50-8 | Copper and compounds | I | 1.6E+00 mg/kg | Fish | 3.7E-02 | 2.8E-03 | 7.6E-02 |

**Total of Top 20 Contributors:** **8.4E+00**

**Grand Total for Subsistence Fisher - Adult:** **8.4E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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**Table T-63**
**Site 7**
**Summary of U.S. EPA Excess Lifetime Cancer Risks for the Child Subsistence Fisher**
**Top 20 Chemicals with Associated Pathway for Reference White Croaker Whole Body**

| | CAS Number | Chemical Name | Chemical Type | Federal Cancer Class Oral | Inhalation | Dermal | Sample Concentration | | Sample Set | U.S. EPA Slope Factor (kg-d/mg) | Chronic Daily Intake (mg/kg-d) | Excess Lifetime Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | A | A | A | 1.1E+00 | mg/kg | Fish | 1.8E+00 | 1.7E-04 | 2.9E-04 |
| 2 | 72-55-9 | DDE | P | B2 | B2 | B2 | 4.8E-01 | mg/kg | Fish | 3.4E-01 | 7.3E-05 | 2.5E-05 |
| 3 | 72-54-8 | DDD | P | B2 | B2 | B2 | 4.0E-02 | mg/kg | Fish | 2.4E-01 | 6.1E-06 | 1.5E-06 |
| | | | | | | | | | | | **Total of Top 20 Contributors:** | **3.2E-04** |
| | | | | | | | | | | | **Grand Total for Subsistence Fisher - Child:** | **3.2E-04** |

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# Table T-64
## Site 7
## Summary of Chronic Hazard Index for the Child Subsistence Fisher
## Top 20 Chemicals with Associated Pathway for Reference White Croaker Whole Body

| | CAS Number | Chemical Name | Chemical Type | Sample Concentration | Sample Set | Reference Dose (mg/kg-d) | Chronic Daily Intake (mg/kg-d) | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|
| 1 | 7440-38-2 | Arsenic | I | 1.1E+00 mg/kg | Fish | 3.0E-04 | 2.0E-03 | 6.5E+00 |
| 2 | 33213-65-9 | Endosulfan II | P | 2.0E-02 mg/kg | Fish | 5.0E-05 ** | 3.5E-05 | 7.0E-01 |
| 3 | 22967-92-6 | Mercury (methyl) | I | 7.0E-02 mg/kg | Fish | 3.0E-04 | 1.3E-04 | 4.2E-01 |
| 4 | 7782-49-2 | Selenium | I | 7.2E-01 mg/kg | Fish | 5.0E-03 | 1.3E-03 | 2.6E-01 |
| 5 | 56-35-9 | Tributyltin oxide (TBTO) | I | 4.1E-03 mg/kg | Fish | 3.0E-05 | 7.3E-06 | 2.4E-01 |
| 6 | 7440-66-6 | Zinc | I | 1.6E+01 mg/kg | Fish | 3.0E-01 | 2.8E-02 | 9.4E-02 |
| 7 | 7440-50-8 | Copper and compounds | I | 1.6E+00 mg/kg | Fish | 3.7E-02 | 2.8E-03 | 7.6E-02 |

**Total of Top 20 Contributors:** **8.3E+00**

**Grand Total for Subsistence Fisher - Child:** **8.3E+00**

* See Biota Sample Concentration Report for all measured and calculated Biota samples.
** Estimated Value

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# APPENDIX U

## COPEC FATE AND TRANSPORT

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# Appendix U
# COPEC FATE AND TRANSPORT

Environmental fate and transport processes affect most chemicals, leading to their accumulation and ultimate depletion in environmental media. This section first presents general processes that may control chemical fate and transport in surface water and sediments, focusing on those processes relevant to West Basin chemicals of potential ecological concern (COPECs). Following release into the aquatic environment, chemicals may be transported to the atmosphere or throughout the water column either in a dissolved phase or sorbed to suspended sediment particles. Chemicals sorbed to suspended particulates may eventually be deposited in bed sediments. As they are dispersed in the aquatic environment, chemicals may also be transformed or degraded through physical, chemical, or biological processes. Secondly, this section contains qualitative, COPEC-specific analyses of the movement and ultimate fate of chemicals discharged into the West Basin, utilizing physical and chemical properties of the COPECs as a basis for describing their behavior within West Basin.

## 1.0 ENVIRONMENTAL FATE AND TRANSPORT PROCESSES

This section presents general and West Basin-specific fate and transport information for chemicals in sediments and in aquatic environments.

### 1.1 Environmental Fate Processes

Chemicals released to surface waters or sediments undergo a number of physical, chemical, and biological processes that may alter their chemical makeup or their chemical properties. These processes include chemical reaction, biotransformation, and bioaccumulation.

#### 1.1.1 PHOTOLYSIS

Chemicals exposed to direct sunlight may be degraded by photolysis. Photolysis of chemicals in aquatic systems occurs when sunlight of irradiating wavelengths above 290 nm is absorbed by the chemical (U.S. EPA 1982) resulting in bond cleavage, dimerization, oxidation, hydrolysis, or rearrangement. The susceptibility of a compound to photolysis is directly proportional to its absorption maxima in ambient sunlight. The most susceptible compounds possess a high degree of unsaturation as is typically associated with structures containing conjugated double bonds or fused aromatic rings (e.g., polynuclear aromatic hydrocarbons [PAHs] and polychlorinated biphenyls [PCBs] containing five or more chlorine atoms). Certain of the high molecular weight organic chemicals found in West Basin may therefore be expected to degrade via photolysis if exposed to direct sunlight.

#### 1.1.2 HYDROLYSIS

Hydrolysis refers to reaction of a chemical with water, usually resulting in the introduction of a hydroxyl functional group into a molecule and loss of a leaving group (-X).



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Organic chemicals: $R\text{-}X + H_2O \Leftrightarrow ROH + HX$

Metal salts: $M\text{-}X + H_2O \Leftrightarrow MOH + H^+ + X^-$

The hydrolysis of some classes of compounds are catalyzed by acids or bases, and therefore the hydrolysis rates of these chemicals in the environment can be pH dependent. Hydrolysis is not expected to be environmentally significant for organic COPECs in West Basin. The PAHs contain no hydrolyzable functional groups and chemical hydrolysis of the organochlorine pesticides only occur at extreme pHs or temperatures, or with catalysts not available in aquatic environments. Studies on the aqueous stability of organotins have shown very little, if any, chemical degradation in the absence of light energy (SWRCB 1988). On the other hand, hydrolysis may be an important fate process for many of the highly charged and divalent metal ions found in West Basin (e.g., $Be^{2+}$, $Cr^{3+}$, $Cu^{2+}$, $Pb^{2+}$, and $Zn^{2+}$).

### 1.1.3 OXIDATION

Chemical oxidation of organic chemicals in aquatic environments may occur due to several different oxidants, among which are singlet oxygen ($O_2^*$), alkyl peroxyl radical ($RO_2^*$), alkoxy radical ($RO^*$), or hydroxyl radical ($OH^*$). Oxidation reactions are considered discrete processes apart from photochemistry even though the source of these oxidants is primarily photochemical. The oxidants react with chemicals in their ground state and therefore oxidation does not involve the photochemistry of the chemical itself. Availability of oxidants within the environment depends on concentrations and origins of humic-fulvic materials and sunlight intensity (U.S. EPA 1982). Although not expected to be a major fate process, oxidation of PAHs and organochlorine pesticides may occur within West Basin. On the other hand, metal-catalyzed oxidation is an important degradation process for phenol.

### 1.1.4 COMPLEXATION

Complexation refers to the reaction of a metal ion with an anionic ligand to form a soluble compound called a complex. Transition metals form the most stable complexes, while alkaline earth metals form less stable complexes, and the alkali metals form virtually no complexes. Common inorganic ligands are $OH^-$, $CO_3^{2-}$, $CN^-$, $SO_4^{2-}$, $S^{2-}$, $Cl^-$, $F^-$, $NH_3$, $PO_4^{3-}$, and polyphosphates. Common organic ligands include amines, pyridines, and phenols, as well as humic substances. Organic ligands often form stronger complexes with a given metal than inorganic ligands (Connell and Miller 1984). All of the metal ions identified as COPECs within West Basin are subject to complexation.

### 1.1.5 BIOTRANSFORMATION

Another important chemical fate process in water and sediments is biotransformation (biodegradation) by microorganisms (e.g., protozoa, bacteria, fungi, and algae). Reactions include hydrolysis, oxidation, reduction, and rearrangement of chemical structures to ultimately produce carbon dioxide and water (U.S. EPA 1982). The factors that influence



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the biotransformation of a chemical include pH, temperature, dissolved oxygen (DO), available nutrients, the presence of other organic chemicals that may serve as co-metabolites or alternative energy sources, and the populations and types of organisms capable of transforming the chemical (Connell and Miller 1984). Biodegradation in sediments is the dominant fate process for PAHs and organotins. Organochlorine pesticides, lower chlorinated PCBs (i.e., the mono- through tetrachlorinated compounds), phenol, and certain metals (e.g., As, Pb, Hg), are also expected to be degraded or transformed by microorganisms.

### 1.1.6 BIOACCUMULATION

Bioaccumulation is considered an important environmental fate mechanism for those compounds identified as COPECs within West Basin. All of the organic COPECs (with the exception of phenol) and most of the metals will potentially be bioaccumulated by aquatic organisms. Chemical uptake by such organisms can occur either directly from the physical environment or from gastrointestinal absorption.

## 1.2 Environmental Transport Processes

Chemicals may enter surface waters via precipitation from air, groundwater inflow, or surface water runoff. Once within the aquatic environment, the key physical processes that primarily govern the distribution of chemicals are volatilization, adsorption, sedimentation of suspended particulates, and resuspension and subsequent transport of bed sediments.

### 1.2.1 VOLATILIZATION

Chemicals may be released to the atmosphere from surface waters by volatilization. A number of parameters are used to represent the tendency of a chemical to evaporate, including vapor pressure and the Henry's Law Constant. Larger values of vapor pressure and Henry's Law Constant indicate a greater tendency to vaporize. Both vapor pressure and Henry's Law Constant are temperature-dependent, and, in most cases, the volatilization of a chemical increases with temperature. Many chemicals, such as pesticides, PCBs, and petroleum hydrocarbons, volatilize at relatively high rates despite low vapor pressures because of high activity coefficients in solution. Volatilization is an important loss process for pollutants with low solubilities and low polarity (Connell and Miller 1984). Although PAHs, PCBs, organochlorine pesticides, phenol, arsenic, and mercury may volatilize from surface waters, volatilization is not considered a major transport process for West Basin COPECs.

### 1.2.2 ADSORPTION

Adsorption is the term used to describe the affinity of a solute for the surface of a solid. Chemicals in aquatic environments, especially those organic compounds (except phenol) and metals identified as West Basin COPECs, may be sorbed to bed sediments, biota, or suspended particulates. If not degraded, the sorbed chemical may be transported on the



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particulates or enter the food chain and may later be desorbed from the particulates back into solution in the water column. Many organic compounds form a hydrophobic bond with (i.e., adsorb to) the organic matter naturally present in sediments (Connell and Miller 1984). Many inorganic compounds will likewise bond to mineral groups (e.g., hydrous iron and manganese oxides) present at the surface of sediment particles.

### 1.2.3 SEDIMENTATION

Sedimentation plays a major role in the transport and ultimate fate of chemicals in an aquatic environment. No sediment transport or accumulation studies were performed for this RI. Chemical-sorbed particles suspended in the water column are deposited in bed sediments, which, in turn, act as a sink or even a continuing source of contamination via sediment resuspension. Suspended particles, including large organic compounds like humic substances, clays, and iron oxides, generally have diameters less than 50 to 100 μm. They are unable to sink rapidly through the water column because of their small size, and thus are easily maintained in suspension by the action of currents. These finer particles with slow settling velocities (less than 1 m/d) may, in time, coalesce to form particles large enough to overcome the buoyancy and drag forces preventing them from readily settling to the bed sediments.

### 1.2.4 SEDIMENT RESUSPENSION AND TRANSPORT

The redistribution of bottom sediments requires the initial mobilization of sediments and subsequent transport by currents. The intensity of currents required to initiate sediment motion is far less than that required for subsequent transport. Currents persisting in West Basin are not strong enough to mobilize sediments (JEG 1993). However, other mechanisms, such as ship operations and, to a lesser extent, dredging activities, can mobilize the bottom sediments and make them available for transport. Once suspended, these sediments can be transported throughout West Basin by tidal and wind-driven currents.

Ship-induced sediment disturbance occurs throughout the general harbor area of West Basin. Areas in West Basin that are not disturbed by vessel activities are the marina, where small crafts are not likely to disturb the bottom, the northwest harbor, and areas underneath the piers. Based on the absence of potential physical disturbance, current speeds, and circulation patterns, these locations probably act as net sediment depositional areas.

## 2.0 FATE AND TRANSPORT OF WEST BASIN COPECS

Table U-1 contains the list of West Basin COPECs along with the corresponding physical and chemical parameters used to provide the site-specific evaluation of transport and fate processes within this section. These parameters include volatilization coefficients (Henry's Law Constant, vapor pressure), octanol-water partition coefficients, sediment-water partition coefficients, water solubility, and half-lives in surface water.



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## 2.1 Organic Compounds

Both PAHs and organochlorine pesticides are subject to photolytic and microbial degradation. The rate at which such degradations occur, however, varies with molecular weight (PAHs) and degree of chlorine substitution (pesticides) and is reflected by the half-life in the aqueous phase. Low-molecular weight polynuclear aromatic hydrocarbon (LPAH) compounds have short half-lives. Short half-lives indicate that a compound is not environmentally persistent, is more water soluble, and is far less likely to bioaccumulate. LPAH compounds are less likely to accumulate in biological tissue and sediments as a result of these properties.

In contrast, high-molecular weight polynuclear aromatic hydrocarbon (HPAH) compounds and chlorinated pesticides have longer half-lives (up to 250 days) and are more recalcitrant to microbial breakdown in surface water and sediments. HPAH homologues and chlorinated pesticides are also more prone to bioaccumulate and even to biomagnify in aquatic systems. This is reflected by higher partition coefficients as shown in Table U-1 ($K_{ow}$ and BCF as indicators of partitioning into biological tissue, and $K_{oc}$ values as indicators of partitioning into sediments).

### 2.1.1 PAHS

PAHs are made up of two or more aromatic (e.g., benzene) rings. Differences observed in the behavior of HPAHs as compared to LPAHs may be attributed to the number and arrangement of the aromatic rings that make up their overall structure. HPAH compounds with five or more rings are relatively insoluble, as indicated by the high values of log $K_{ow}$ and log $K_{oc}$ associated with these compounds.

Rapid direct photolysis of PAHs is an important fate process in surface water. Singlet oxygen is the oxidant and quinones are the products in photolysis reactions involving PAHs. With the exception of benzo(a)anthracene, free-radical oxidation of most PAHs is likely to be slow and is therefore not likely to be a significant environmental process. Volatilization, while not generally important for anthracene and phenanthrene, may play a role in acenaphthylene transport depending on mixing rates in both the water and air column. Adsorption is the dominant aquatic transport process for PAHs. Consideration of the log $K_{ow}$ coefficients indicate that PAHs can be strongly adsorbed onto suspended and sedimentary particulate matter, especially particulates high in organic content. It is likely that these compounds can be readily transported as adsorbed matter or suspended particulates in waters. Data for PAHs in general indicate that they will accumulate in the sediments and biota of the aquatic environment (U.S. EPA 1985). Removal rates from the water column associated with adsorption and subsequent sedimentation are probably slower than photolysis and microbial degradation, but may be competitive with volatilization (U.S. EPA 1985).

Data for PAHs suggest that bioaccumulation is a short-term process (U.S. EPA 1985). Although PAHs are rapidly accumulated, they also are rapidly metabolized and excreted, and consequently long-term partitioning into biota is not a significant fate process. PAHs



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can be metabolized by multicellular organisms and degraded by microbes. Degradation by mammals is likely to be incomplete, with parent compound and metabolites being excreted by the urinary system. Biodegradation by microorganisms is probably the ultimate fate process for PAHs.

### 2.1.2 PESTICIDES

Chlorinated hydrocarbon insecticides are similar in that they have low water solubility, high lipophilicity, and are comparatively persistent in the natural environment. They also tend to bioaccumulate in individual organisms and biomagnify in food chains. In natural waters, the major proportion of the lipophilic pesticides are either adsorbed onto suspended and settled particles or partitioned into organic substrates.

Removal of pesticides from the water column may occur by sedimentary sorption, degradation by microorganisms, uptake by aquatic organisms, or dilution via translocation to the open oceans (Connell and Miller 1984). Pesticides may also decompose via photolytic reactions which are influenced by factors such as natural photosensitizers, pH, and availability of DO. Organochlorine pesticides associated with suspended particulate matter will ultimately be transferred to bed sediments. Once in the sediments, pesticides may be re-released to the waters, absorbed by benthic organisms, transformed or degraded by microbiological organisms, or permanently buried. Microbial degradation of dichloro-diphenyl-trichloroethane (DDT) and lindane proceeds more favorably under anaerobic conditions.

### 2.1.3 PCBs

PCBs are a family of compounds composed of two connected benzene rings (biphenyl) with 1 to 10 chlorine atoms attached; 209 congeners are possible. The physical, chemical, and biological properties of PCBs depend to a large degree on the amount and location of the chlorine atoms on the biphenyl structure. PCBs were commercially produced as mixtures of chlorinated species, the most common trade name being "Aroclor". Aroclors are characterized by a four digit number which indicates the composition of the PCB mixture. The first two digits indicate the type of parent compound (e.g., a "12" represents chlorinated biphenyl compounds) The last two digits represent the percentage weight of chlorine in the individual Aroclor. For example, Aroclor 1260 is composed of biphenyl compounds with 60 percent chlorine by weight.

Although individual congeners vary in the rates at which processes occur, some generalizations of fate and transport properties can be made about PCBs as a class of compounds. The primary processes that determine the fate of PCBs in the environment include adsorption, biodegradation, and bioaccumulation. PCBs are relatively inert, and therefore persistent, compounds, with low vapor pressures, low water solubility, and high log octanol-water partition coefficients. Adsorption to sediments is the primary non-destructive fate mechanism. The affinity of PCBs for sediments increases as the organic carbon of the sediment increases. PCBs are relatively immobile in sediments, however,



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sediments may serve as a PCB reservoir, promoting movement into other media through diffusion, desorption, or dissolution.

PCBs are primarily degraded by two routes. Congeners with less than four chlorine atoms per molecule can be biodegraded by some microorganisms, resulting in significant destruction and transformation of the molecule (U.S. EPA 1979). However, PCBs with five or more chlorines per molecule are not biodegradable. Of the Aroclors of concern at West Basin, Aroclor 1260 contains mostly penta-, hexa-, and heptachlorobiphenyls (Connell and Miller 1984), and therefore is not readily biodegradable. Highly chlorinated PCBs can, however, be photolyzed by ultraviolet (UV) light, but it is not known whether photodegradation occurs to a significant degree in the environment (U.S. EPA 1979).

Bioaccumulation of PCBs also occurs, with most of the compound stored in the adipose tissue of the body (U.S. EPA 1985). The tendency of PCBs to bioaccumulate depends on their degree of chlorination. The highly chlorinated PCB compounds, such as Aroclor 1260, have higher octanol-water partition coefficients, and are therefore more likely to bioaccumulate.

### 2.1.4 PHENOL

Phenol consists of a single aromatic ring with a hydroxyl group attached. Phenol is readily degraded in surface water, with reported half lives of 0.22 to 10 days (Howard et al. 1991). Photooxidation may be an important degradation process, especially in aerated, clear, surface waters. Phenol may also be nonphotolytically oxidized in highly aerated waters that contain iron and copper in solution or as part of the suspended particulates (U.S. EPA 1985). The relatively low log octanol-water partition coefficient and high water solubility of phenol suggests that sorption to particulate matter and bioaccumulation are not important environmental fate processes. Biodegradation can be a significant fate pathway in aquatic systems when significant concentrations of microorganisms are present. In addition, it is possible that phenol present in surface waters can volatilize into the atmosphere (U.S. EPA 1985).

## 2.2 Organotins

Organotin compounds, once released into waters, will dissociate to form organotin cations. The cation has both ionic properties, due to the positive charge, and lipophilic properties from the butyl moieties. Organotin cations normally react with anions in seawater to form a mixture of hydroxide, chloride, and carbonate molecules. The concentration of chloride ion, dissolved carbon dioxide, and pH will influence the proportion of each organotin species (SWRCB 1988).

Three major processes determine organotin fate in the environment: biological uptake and metabolism; adsorption onto particulates and sediments; and chemical or microbial degradation. Partition coefficients and measurements of organotin in sediment samples indicate that organotin adsorbs to particulate matter in the water column and in sediments. The fraction of organotin adsorbed on particulates will depend greatly on the



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concentration of suspended solids in the water column. Laboratory studies have shown that agitated sediments can, in turn, release sorbed organotin to the surrounding water. Organisms exposed to contaminated sediments in laboratory studies have also been shown to accumulate organotin.

While studies indicate that the rate of chemical degradation of organotin in water is minimal, microbial degradation of organotin has been shown to be the most significant route of degradation in salt water. The half-life of organotin in salt water from microbial degradation has been reported as being as short as 4 days. Degradation of organotin in sediments is a slower process than in water, with an aerobic half-life of 162 days reported in marine sediments. Although laboratory UV irradiation of water containing organotin produces rapid degradation, degradation by natural sunlight has been shown to be insignificant.

## 2.3 Metals

Metals are fundamentally different from organic compounds in that they are naturally occurring elements that do not disappear or degrade from the environment. Metals vary widely in solubility, ability to complex with various ligands in the aquatic environment, bioaccumulation potential, toxicity, and sorption potential. The following paragraphs will discuss the fate and transport properties specific to those metals identified as West Basin COPECs.

One group of metals potentially a cause of concern in West Basin sediments are the divalent cationic metals, which include beryllium, copper, lead, zinc, and mercury. While these metals vary in toxicity, they behave similarly in aquatic environments and thus are frequently addressed collectively. For example, these metals readily complex with sulfides and other ligands under anaerobic conditions. This complexation is predictable and has been shown to correlate with chemical bioavailability in aqueous sediments.

Similar factors control environmental fate and transport for most metals. For example, most metals in aqueous systems will tend to interact with hydroxyl ions to form hydrolyzed species, or with inorganic anions such as $HCO_3^-$, $CO_3^{2-}$, $NO_3^-$, $SO_4^{2-}$, $Cl^-$, and $F^-$ to form complexed species (Connell and Miller 1984). These interactions may well yield compounds of lesser or greater solubility than the unassociated metal. Many hydrolyzed metals are sparingly soluble. Hydrolysis may induce precipitation, thereby affecting the fate of the metal. On the other hand, complexation may increase solubility, thereby affecting the transport of the metal. The fate of metallic species in the environment is primarily dependent upon such factors as sorption, chemical speciation and complexation, biological transformation, and bioaccumulation.

### 2.3.1 ARSENIC

The oxidation state of arsenic is used in determining both its behavior in the environment and its toxicity. Under aquatic conditions, arsenic may be found in any of four oxidation states depending on factors such as pH and Eh: +5, +3, 0, and -3. Metallic arsenic occurs



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only rarely, and the -3 oxidation state is stable only under conditions of extremely low ionization potential. Interconversions of the +3 and +5 valence states as well as organic complexation are the most important forms of arsenic.

Arsenic is generally quite mobile in the environment; the degree of mobility is dependent on its chemical form and the properties of the surrounding medium. Volatilization is important in the aquatic environment when biological activity or highly reducing conditions produce arsine or methylarsenics. Cycling of arsenic by sediments is governed by adsorption and desorption, and is one of the factors controlling its environmental fate. Arsenic may be sorbed onto clays, iron oxides, and organic material (U.S. EPA 1979). Pentavalent arsenic species tend to sorb to a greater extent than trivalent species. The ultimate fate of arsenic in the aquatic environment is probably the deep ocean, although it may pass through numerous stages before finally reaching the sea.

A number of studies show that arsenic is bioaccumulated primarily in fatty tissue. Bioaccumulation has been shown to occur more readily in marine conditions than in fresh water conditions. Arsenic in sediments may be mobilized by biomethylation.

### 2.3.2 BERYLLIUM

Most beryllium compounds are readily soluble in water. However, in water, soluble beryllium salts are hydrolyzed to form beryllium hydroxide; the solubility of beryllium hydroxide is quite low in the pH range of most natural waters (U.S. EPA 1985). Beryllium is also expected to be adsorbed onto clay mineral surfaces at low pH and to be complexed into some insoluble compounds at high pH. Thus, in most natural environments, beryllium is likely to be present in sorbed or precipitated, rather than dissolved, form.

Beryllium may be accumulated to a slight extent by aquatic organisms. Although it has a low solubility in water, it is possible that benthic organisms could accumulate beryllium from sediment and thereby transfer the metal to higher organisms via the food chain. There is no evidence for food chain magnification, however (U.S. EPA 1985).

### 2.3.3 CHROMIUM

Chromium is a heavy metal that generally exists in either a trivalent or hexavalent oxidation state. The chemical analyses for this RI did not identify specific chromium types. Hexavalent chromium ($Cr^{6+}$) is rather soluble and is quite mobile in surface water, existing in solution as a component of a complex anion. It is not sorbed to any significant degree by clays or hydrous metal oxides. The anionic form varies according to pH and may be a chromate ($CrO_4^{2-}$), hydrochromate ($HCrO_4^-$), or dichromate ($Cr_2O_7^{2-}$). The speciation is dependent on pH, with the dichromate predominating at very low pH and the chromate predominating at basic to neutral pH. The chromate and hydrochromate forms of $Cr^{6+}$ are favored in the pH ranges typical of natural waters. Hexavalent chromium is efficiently removed by activated carbon and thus may have some affinity for organic



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materials in natural waters. Hexavalent chromium is a moderately strong oxidizing agent and reacts with reducing materials to form trivalent chromium.

The trivalent ($Cr^{3+}$) oxidation state is the most stable and important in aqueous media. Trivalent chromium is relatively insoluble and evidences little toxicity (U.S. EPA 1985). Most trivalent chromium is hydrolyzed and precipitates as chromium hydroxide. Sorption to sediments and bioaccumulation will remove much of the remaining trivalent chromium from solution. It forms a number of complexes with organic and inorganic ligands, including water, sulfate, and ammonia. Studies have shown that chromium-containing sediments do not release significant amounts of deposited chromium under either oxidizing or reducing conditions (U.S. EPA 1985). Chromium may be present in sediments in the form of precipitated, mineral, and adsorbed species.

### 2.3.4 COPPER

The primary fate processes of copper include formation of complexes (especially with humic substances), sorption (especially to hydrous metal oxides, clays, and organic materials), and bioaccumulation. Copper is present as $Cu^{2+}$ in aqueous solutions and has a strong affinity for hydrous iron and manganese oxides, clays, carbonate minerals, and organic matter. Sorption to these materials, both suspended in the water column and in sediments, results in relative enrichment of the solid phase and reduction in dissolved levels. The levels of copper able to remain in solution are directly dependent on water chemistry. Generally, ionic copper is more soluble in low pH waters and less soluble in high pH waters (U.S. EPA 1985).

Copper is strongly bioaccumulated and biological activity is a primary fate mechanism for copper. Seasonal fluctuations have been observed in aqueous copper concentrations with higher levels of copper occurring in the fall and winter and lower levels occurring in the spring and summer. This pattern probably reflects the following:

- Copper is taken up by biota in spring and summer.
- Adsorption of copper may be enhanced by greater availability of biogenic ligands.
- Copper is released by decomposing biota in fall and winter.

### 2.3.5 LEAD

The transport of lead in the aquatic environment is influenced by the speciation of the ion. Lead exists mainly as the divalent cation in most unpolluted waters and becomes adsorbed into particulate phases. However, in polluted waters, organic complexation is most important. Volatilization of lead compounds is not an important transport process in most aquatic environments (U.S. EPA 1985).

Sorption processes exert a dominant effect on the distribution of lead in the environment. Adsorption to inorganic solids, organic materials, and hydrous iron and manganese oxides usually controls the mobility of lead and results in a strong partitioning of lead to the bed sediments in aquatic systems. The sorption mechanism most important in a particular



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system varies with geological setting, pH, Eh, availability of ligands, dissolved and particulate ion concentrations, salinity, and chemical composition (U.S. EPA 1985). Lead is strongly complexed to organic materials present in aquatic systems.

Aquatic organisms evidence a tendency towards bioaccumulation of lead. Biological activity may transform lead through biomethylation. Certain anaerobic bacteria metabolize lead, producing methylated forms such as tetraethyl lead. Methylated lead compounds are more mobile and volatile than the dissolved or sorbed forms of the metal. The ultimate sink of lead is probably the deep oceans.

### 2.3.6 MERCURY

Mercury exists in the environment in any one of three different oxidation states: 0, +1, and +2. In general, the mercurous (+1) salts are much less soluble than the more commonly found mercuric (+2) salts. The nature and solubility of the chemical species that occur in an environmental system depend on the redox potential and the pH of the environment (U.S. EPA 1985).

Mercury and certain of its compounds, including several inorganic species and dimethyl mercury, can volatilize to the atmosphere from aquatic sources. Adsorption onto suspended and bed sediments is probably the most important process determining the fate of mercury in the aquatic environment. Sorption is strongest onto organic materials. Under mildly reducing conditions and in the presence of sulfite, mercury will form a sulfite complex which readily precipitates. Mercury also forms complexes with organic amino and sulfhydryl groups. Complexation is dependent upon such factors as pH, temperature, and redox potential.

Biomethylation is a significant transformation process for mercury. Conditions which favor biomethylation of mercury include both concentrated mercury and bacterial populations, the absence of complexing agents, neutral pH, and a moderately aerobic environment.

Mercury is strongly bioaccumulated by most organisms and acquired through direct contact in water, sediment, and the food chain. Bacteria commonly found in natural waters are capable of converting many mercury compounds to methyl mercury. Methyl mercury is more readily accumulated and retained than inorganic mercury, and may become a hazard if environmental conditions favor biomethylation.

### 2.3.7 ZINC

In aqueous media, zinc exists primarily as a salt in the +2 valence state (U.S. EPA 1985) and can occur in both suspended and dissolved forms. Dissolved zinc may occur as the free (hydrated) zinc ion or as dissolved complexes and compounds with various degrees of stability. Suspended (undissolved) zinc may be dissolved following minor changes in water chemistry or may be sorbed to suspended matter. The predominant fate of zinc in aerobic aquatic systems is sorption of the divalent cation by hydrous iron and manganese oxides, clay minerals, and organic material. The efficiency of these materials in removing



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zinc from solution varies according to their composition and concentrations, the pH and salinity of the water, the concentrations of complexing ligands, and the concentration of zinc. Concentrations of zinc in suspended and bed sediments always exceed concentrations in ambient waters. Precipitation of zinc sulfide limits the mobility of zinc in reducing environments. However, under aerobic conditions, precipitation of zinc compounds is probably important only where zinc is present in high concentrations. Zinc tends to be more readily sorbed at higher pH than lower pH and tends to be desorbed from sediments as salinity increases. Compounds of zinc with the common ligands of surface waters are soluble in most neutral and acidic solutions, so that zinc is readily transported in most unpolluted, relatively organic-free waters.

Zinc is bioaccumulated by all organisms as an essential nutrient. Bioaccumulation of zinc can occur even when the aqueous concentration of zinc is low. Zinc does not appear to be biomagnified. However, organisms constitute a minor reservoir for zinc compared to aquatic sediments (U.S. EPA 1985). Since it is actively bioaccumulated, the environmental concentrations of zinc probably exhibit seasonal fluctuations.

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## Table U-1
## Environmental Fate Properties of COPECs for West Basin (Site 7)

| Compound | CAS Number | Properties[a] | | | | | |
|---|---|---|---|---|---|---|---|
| | | Vapor Pressure (torr) | Henry's Law Constant[b] (atm-m³/mol) | Log $K_{ow}$ | Log $K_d$ or Log $K_{oc}$[c] | Water Solubility (mg/L) | Surface Water Half-life[d] (days) |
| **Metals** | | | | | | | |
| Arsenic | 7440-38-2 | 1.00 | – | NA[e] | 2.23 | – | NA |
| Beryllium | 7440-41-7 | – | – | NA | – | – | NA |
| Chromium | 7440-47-3 | $1.00 \times 10^{-3}$ | – | NA | 4.30 | – | NA |
| Copper | 7440-50-8 | – | – | NA | 4.36 | $1.00 \times 10^{-6}$ | NA |
| Lead | 7439-92-1 | – | – | NA | 3.55 | – | NA |
| Mercury | 7439-97-6 | $1.30 \times 10^{-3}$ | $1.10 \times 10^{-2}$ | NA | 1.94 | $3.00 \times 10^{-4}$ | NA |
| Zinc | 7440-66-6 | – | – | NA | – | – | NA |
| Organotin[e] | – | $6.40 \times 10^{-7}$ | $3.66 \times 10^{-6}$ | 3.80 | 3.91 | 7.00 (20°C) | 13.0 |
| **Polynuclear Aromatic Hydrocarbons (PAH)** | | | | | | | |
| **HPAH (high molecular weight)** | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | $2.20 \times 10^{-8}$ (20°C) | $1.00 \times 10^{-6}$ | 5.61 | 5.30 | $5.70 \times 10^{-3}$ (20°C) | 0.125 |
| Benzo(b)fluoranthene | 205-99-2 | $5.00 \times 10^{-7}$ (20°C) | $1.22 \times 10^{-5}$ | 6.06 | 5.74 | $1.40 \times 10^{-3}$ (25°C) | 30.00 |
| Benzo(k)fluoranthene | 207-08-9 | $5.00 \times 10^{-7}$ (20°C) | $3.87 \times 10^{-6}$ | 6.06 | 5.74 | $4.30 \times 10^{-3}$ (25°C) | 20.79 |
| Benzo(g,h,i)perylene | 191-24-2 | $1.03 \times 10^{-10}$ (25°C) | $1.44 \times 10^{-7}$ | 6.51 | 6.20 | $2.60 \times 10^{-4}$ (25°C) | 650.0 |
| Benzo(a)pyrene | 50-32-8 | $5.60 \times 10^{-9}$ (25°C) | $4.90 \times 10^{-7}$ | 6.06 | 5.74 | $3.80 \times 10^{-3}$ (25°C) | 0.0498 |
| Chrysene | 218-01-9 | $6.30 \times 10^{-9}$ (25°C) | $1.05 \times 10^{-6}$ | 5.61 | 5.30 | $1.80 \times 10^{-3}$ (25°C) | 0.542 |
| Dibenz(a,h)anthracene | 53-70-3 | $1.00 \times 10^{-10}$ (20°C) | $7.30 \times 10^{-6}$ | 6.84 | 6.52 | $5.00 \times 10^{-4}$ (25°C) | 32.6 |
| Fluoranthene | 206-44-0 | $5.00 \times 10^{-6}$ (25°C) | $6.50 \times 10^{-6}$ | 4.90 | 4.58 | $2.60 \times 10^{-1}$ (25°C) | 2.60 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | $1.00 \times 10^{-10}$ (20°C) | $6.95 \times 10^{-6}$ | 6.51 | 6.20 | $5.30 \times 10^{-4}$ (25°C) | 250.0 |
| Pyrene | 129-00-0 | $2.30 \times 10^{-6}$ (25°C) | $5.10 \times 10^{-6}$ | 4.90 | 4.58 | $1.30 \times 10^{-1}$ (25°C) | 0.0830 |
| **LPAH (low molecular weight)** | | | | | | | |
| Acenaphthene | 83-32-9 | $1.55 \times 10^{-4}$ (25°C) | $9.10 \times 10^{-5}$ | 3.98 | 3.66 | 3.42 (25°C) | 12.5 |
| Acenaphthylene | 208-96-8 | $2.90 \times 10^{-3}$ (20°C) | $1.45 \times 10^{-5}$ | 3.72 | 3.40 | 3.93 (25°C) | 60.00 |
| Anthracene | 120-12-7 | $1.30 \times 10^{-4}$ (25°C) | $8.60 \times 10^{-5}$ | 4.45 | 4.15 | $4.50 \times 10^{-2}$ (25°C) | 0.0708 |
| Fluorene | 86-73-7 | $7.30 \times 10^{-4}$ | $6.40 \times 10^{-5}$ | 4.18 | 3.86 | 1.69 (25°C) | 60.00 |
| Phenanthrene | 850-10-8 | $9.60 \times 10^{-4}$ (25°C) | $2.26 \times 10^{-4}$ | 4.45 | 4.15 | 1.00 (25°C) | 1.04 |
| **PCBs** | | | | | | | |
| Arocior 1260 | 110-968-25 | $4.05 \times 10^{-5}$ (25°C) | $7.40 \times 10^{-4}$ | 7.15 | 6.83 | $2.70 \times 10^{-1}$ (25°C) | – |
| **Pesticides** | | | | | | | |
| Aldrin | 309-00-2 | $6.00 \times 10^{-5}$ (25°C) | $1.60 \times 10^{-3}$ | 5.30 | 4.98 | $1.80 \times 10^{-1}$ (25°C) | 584 |
| 4,4'-DDT | 50-29-3 | $1.90 \times 10^{-7}$ (25°C) | $1.58 \times 10^{-5}$ | 6.91 | 6.59 | $5.50 \times 10^{-3}$ (25°C) | 350.0 |
| Lindane | 58-89-9 | $1.00 \times 10^{-5}$ (20°C) | $7.80 \times 10^{-6}$ | 3.89 | 3.58 | 7.80 (25°C) | 240.0 |
| Phenol | 108-95-2 | $3.41 \times 10^{-1}$ (25°C) | $4.54 \times 10^{-7}$ | 1.48 | 1.15 | $9.3 \times 10^{4}$ (25°C) | 2.40 |

Notes:

[a] Values taken from U.S. EPA (1979) and U.S. EPA (1982)

[b] Henry's Law Constants calculated from vapor pressure and water solubility

[c] $K_d$ values for metals and $K_{oc}$ for organics

[d] Values taken from Howard et al. (1991) and are the high values of a range

[e] Physical and chemical characteristics reported in terms of bis(tributyltin)oxide. Values taken from SWRCB (1988)

[f] Not applicable



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## APPENDIX V

# LIFE HISTORY AND BIOLOGY OF CALIFORNIA HALIBUT AND WHITE CROAKER – A SYNOPSIS

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Appendix V

# LIFE HISTORY AND BIOLOGY OF CALIFORNIA HALIBUT AND WHITE CROAKER – A SYNOPSIS

This appendix provides a synopsis of the life history and biology of California halibut and white croaker.

## 1.0 CALIFORNIA HALIBUT

### 1.1 Spawning

The major spawning areas for the California halibut are unknown. In spring, halibut emigrate from relatively deep offshore waters to shallow coastal waters to spawn at depths of 5 to 18 m. California halibut spawn from February through July, peaking in May. The eggs are demersal. After spawning the adults return to water about 40 to 100 m deep.

### 1.2 Larval Stage

The larval and postlarval stages of the California halibut are pelagic for several months before the postlarvae settle to the bottom. In southern California, the planktonic larval stages, about 10 mm standard length, are pelagic and live in water 12 to 45 m deep and 1.9 to 5.4 km out from shore. Larger and older larvae live closer to shore, and most are suspected to live in embayments.

### 1.3 Juveniles

Juveniles begin to settle and assume bottom dwelling habits in June. They remain in shallow water and do not move extensively. Juvenile halibut begin to emigrate to deeper water when they are about 200 mm total length (TL).

### 1.4 Maturity and Life Span

Most halibut females are sexually mature at 430 mm TL or at the end of their third year of life. Most males mature when about 230 mm TL or at the end of their second year of life. Halibut are generally long-lived. Both males and females may live as long as 30 years, though generally the males do not grow as large or live as long as the females. Halibut are about 1,080 mm TL when they are 12 years old.

### 1.5 Feeding Habits

The larvae and young juveniles of the California halibut are planktivorous, but as they grow to adulthood they become piscivorous. Halibut has been described as a tertiary carnivore. Halibut 230 mm TL or longer feed heavily on fish (primarily during daylight) and, to a less extent, on shrimp. Juvenile and adult California halibut are especially adapted for catching and digesting fish because they are equipped with long heavily toothed gill rakers that aid in holding and swallowing, an intestine with a simple loop, and



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a brain with large optic lobes. This raptorial predator has sharp canine-like teeth and a large mouth. In one study the stomachs of halibut 12 to 510 mm TL contained 65% fish, 34% crustaceans, and 1% mollusks, though the diet of these fish changed as the fish grew. For example, halibut less than 55 mm TL ate mostly small fish (gobies) and small crustaceans such as amphipods, copepods and mysids. Fish from 55 to 230 mm TL ate larger prey. The northern anchovy is probably the most important prey of the California halibut.

## 1.6 Habitat Associations

Adults occur over sandy bottoms from the surf zone to 100 m. Most commercially caught fish are on the bottom at water depths of 6 to 40 m. Age I+ fish and II+ fish segregate by depth, with older juveniles and young adults occurring deeper than younger juveniles. Shallow bays and estuaries may be critical habitat for the survival and growth of larvae and young juveniles, and the shallow waters of the open coast almost surely serve as nursery grounds for California halibut.

## 1.7 Status

The California halibut supports a small but valuable sport and commercial fishery. A sharp reduction in California halibut landings from California in the late 1920's and declining landings in recent years have prompted scientists to determine the cause. To date little is known about its biology and life history.

# 2.0 WHITE CROAKER

## 2.1 Spawning

Spawning takes place close to shore though ripe males of Atlantic croaker have been taken in water as deep as 108 feet (18 fathoms). They spawn for the first time when 2-3 years old laying thousands of eggs at a time.

## 2.2 Larval and Juvenile Stage

Little is known about the larvae and juveniles of white croaker.

## 2.3 Maturity and Life Span

White croaker may live as long as 15 years. A typical large fish would be 14 inches long and weigh 1.5 pounds.

## 2.4 Feeding Habits

White croakers have mouths on their underside and feed on bottom dwelling organisms. They usually swim in loose schools and can be abundant in the surf zone and in shallow bays and lagoons. A study by Ware (1979) found that as the fish grew their diet changed



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from zooplanktonic to benthic species dominated by polycheates, pericardean crustaceans, pelecypods, and nematodes. His study took place in the outer Los Angeles harbor where he found 191 total taxa of benthic fauna of which white croaker were found to consume 132 taxa.

## 2.5 Habitat Associations

White croaker spend most of their time in offshore areas at depths of 10 to 100 feet and have even been found fairly abundantly at depths of 300 feet. They have been collected from Vancouver Island, British Columbia, to Magdalena Bay, Baja California, but are not very abundant north of San Francisco. They can be found in sandy bottom areas and in murky waters.

## 2.6 Status

The white croaker is one of the most abundant near-shore fishes in southern California.

## 3.0 REFERENCES

Fitch, J.E., and R.J. Lavenberg. 1975. *Tidepool and Nearshore Fishes of California*. Berkeley, California: University of California Press. 156 pp.

Kucas, S.T., and T.J. Hassler. 1986. Species profiles: Life histories and environmental requirements of coastal fishes and invertebrates (Pacific Southwest) – California halibut. U.S. Fish and Wildlife Service Biol. Rep. 82(11.44), pp. 8.

Ware, R.R. 1979. The food habits of the white croaker (*Genyonemus lineatus*) and an infaunal analysis near areas of waste discharge in outer Los Angeles Harbor. Master's Thesis. Long Beach, California: California State University. 164 pp.



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R0064126

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
Glendale, California
May 9, 1994
373rd Regular Meeting

ITEM: 2

SUBJECT: Approval of Minutes of the Regular Meeting held on April 4, 1994.

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Minutes of 372nd Regular Meeting
April 4, 1994
City Council Chambers
613 East Broadway
Glendale, California

INTRODUCTION

1. The meeting was called to order by Chairman Keston at 9:30 a.m.

Board Members Present

Jack J. Coe, Clark Drane, Michael Keston, John Siezak, Charles Vernon, Larry Zarian

Board Members Absent

None.

Staff Present

Robert P. Ghirelli, Richard Harris, Jorge Leon, Robyn Shipley, Dennis Dasker, Winnie D. Jesena, Michael Lyons, Joshua Workman, John L. Lewis, Debbie Smith, Carlos Urrunaga, Morag Logan, Xavier Swamikannu, Rebecca Chou, Shirley Burosik, Mark Pumford, Rod Nelson, Blythe Ponek-Becharowski, David Hung, David Becharowski, Ana Conde, Wen Yang, Daniel Scherer, Toby Moore

Others Present

Terry L. Dipple, Los Angeles Regional Board Member
Jane M. Bray, Bray Consulting
Roger Dorke, Heal the Bay
Mark Gold, Heal the Bay
Ray Khojasteh, Los Angeles County Department of Public Works
Nicholas Agbolsu, Los Angeles County Department of Public Works
Steve Tsumura, El Segundo Fire Department
Jeff Kightlinger, City of El Segundo
L.D. Vivian, City of El Segundo
Louis A. Wurst, Libbey Glass Inc.
Dow W. Zylstra, Texaco RMI
R. William Potter, Chevron Chemical Company
Larry Smith, Los Angeles Harbor Department
John Hunter, John L. Hunter & Associates
Mary McMaster, City of Hermosa Beach
Amy Amiran, City of Hermosa Beach
Homayow Behbondi, City of Hermosa Beach
Phil Phillips, Pepperdine University



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Minutes
April 4, 1994

Ted Peng, Tetra Tech, Inc
Mitch Bernard, Natural Resources Defense Council
Marc D Kirshbaum, City of Beverly Hills
E Notsuka, City of Beverly Hills
Jim Truran, City of Beverly Hills
Richard Sun nt, Kaiser Marquardt
Allen Stein, Kaiser Marquardt

2. Approval of Minutes of the Regular Meeting held on February 28, 1994.

There was a motion to adopt the minutes.

MOTION: By Mr. Zarian, seconded by Mr. Drane and approved on a unanimous voice vote

Chairman Keston introduced the newly appointed Board Member Mr. Terry Dipple.

UNCONTESTED ITEMS

3. The Board removed items 7.3, 7.4 and 8 and approved the following items on the Uncontested Items Calendar:

MOTION: By Mr. Zarian, seconded by Mr. Drane and approved on a unanimous voice vote.

**NPDES Requirements**

RENEWAL

| | | |
|---|---|---|
| 6.1 | Southern California Edison Company (Dominguez Hills Fuel Oil Facility), Compton | CA0052949 |
| 6.2 | Kaiser Marquardt, Inc., Van Nuys | CA0003344 |
| 6.3 | Texaco Refining & Marketing Inc. (Sulfur Recovery Plant), Carson | CA0002020 |
| 6.4 | Libbey Glass Inc., City of Industry | CA0001821 |
| 6.5 | The Dial Corporation (South Gate Plant), South Gate | CA0000906 |
| 6.6 | County of Los Angeles Department of Public Works, (Malibu Mesa Wastewater Treatment Plant), Malibu | CA0059099 |
| 6.7 | Stocker Resources, Inc., Baldwin Hills | CA0057827 |



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Non-NPDES Requirements

NEW

7.1 Port of Los Angeles (Stage I Pier 400 Dredging) 93-84

Following adoption, Roger Gorke, Heal the Bay, commented on the permit. The Board directed staff to meet with Mr. Gorke to discuss his comments.

7.2 Port of Los Angeles (Berths 79 & 206-209 Maintenance Dredging) 93-04

PUBLIC FORUM

4. Public Forum

New staff members were introduced.

Robert Ghirelli presented staff member Blythe Ponek-Bacharowski with the 1994 Sustained Superior Accomplishment Award. This award is presented annually to a Regional Board employee who has made a significant contribution to the Board by virtue of their exceptional performance over a period of not less than 24 months.

**Non-NPDES Waste Discharge Requirements**

NEW

7.3 H. Kramer & Company and Harshaw Chemical Company and its Successor Companies, El Segundo 92-57

MOTION: By Mr. Coe, seconded by Mr. Drane and approved on a unanimous voice vote. The permit was adopted as proposed with an amendment to page T-2, Section III A. (change the word *professional* to *civil*).

REVISED

7.4 Ventura Regional Sanitation District (Saticoy Sanitary District Sewage Treatment Facility), Saticoy 54-008

MOTION: By Mr. Coe, seconded by Mr. Drane and approved on a unanimous voice vote. The permit was adopted as proposed with an amendment to page T-2, Groundwater Monitoring Section, last line (add *or Registered Civil Engineer*).

8. Consideration of a Resolution for proposed 1995 State Revolving Fund (SRF) Loan Program Priority List



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for Fiscal Years 1994-95 through 1998-99.

MOTION By Mr Coe, seconded by Mr Drane, with Mr Slezak abstaining The Resolution was adopted on a unanimous vote with the understanding that it will reflect the following addition Page 1, Therefore be it Resolved that the attached lists of projects (add *and attached additional proposed projects*).

5. Board Member Communications.

INFORMATION ITEM

9. Staff Report on the Natural Resources Defense Council Lawsuits Against Beverly Hills, El Segundo, and Hermosa Beach.

Staff member Mark Pumford of the Stormwater Unit provided a compliance evaluation of the three cities in Phase I of the Los Angeles County Municipal Stormwater/Urban Runoff Permit Mitch Bernard of Natural Resources Defense Council, Marc D Kirshbaum representing City of Beverly Hills, John Hunter representing City of Hermosa Beach, and Jeff Kightlinger representing City of El Segundo presented their statements to the Board.

10. Executive Officer's Report.

CLOSED SESSION

11. There was a Closed Session.

ADJOURNMENT

12. Adjournment to Regular Meeting of May 9, 1994 at 9:30 a.m., 613 E. Broadway, Glendale, California.

The meeting was adjourned at 12:05 p.m.



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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
San Buenaventura, California
August 22, 1994
376th Regular Meeting

ITEM: 2

SUBJECT: Approval of Minutes of the Regular Meeting held on July 18, 1994.

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Minutes of 375th Regular Meeting
July 18, 1994
City Council Chambers
613 East Broadway
Glendale, California

INTRODUCTION

1. The meeting was called to order by Chairman Keston at 9.35 a.m.

Board Members Present

Jack J. Coe, Charlotte Craven, Terry Dipple, Clark Drane, Michael Keston, Bob Rogers, John Slezak, Charles Vernon, Larry Zarian

Board Members Absent

None.

Staff Present

Robert P. Ghirelli, Richard A. Harris, Jorge Leon, Robyn Shipley, James Ross, Winnie D. Jesena, Keith Elliott, Gary Schultz, Mazhar Ali

Others Present

Mary Jane Forster, State Board Member
Jane M. Bray, Bray Consulting
Carmen Valencia, Bureau of National Affairs
Mark Gold, Heal the Bay
Sam Furuta, LA County Bureau of Sanitation
Y.Z. Shao, City of Los Angeles
Charles B. Turbollow, City of Los Angeles
John Green, LA County Department of Public Works
Erik Updyke, LA County Department of Public Works
Roy Thun, ARCO
Gary H. Kepes, Leighton & Associates
Hedy Abedi, Leighton & Associates
Bill Hutton, Browning-Ferris Industries
Burton Gindler, Main San Gabriel Basin Watermaster
Royall K. Brown, West Covina Coalition of Homeowners
Darlene Ruiz, Small Business Environmental Coalition
Dorothy & Robert Bozung, J.A.B. Holdings, Inc.
Deborah Boadway, LA County Sanitation District
Ed Zarythiewicz, Tidelands Oil Production Company



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Karen Wigand, JMM/City of Avalon
Meg George, Unocal L A Refinery
Kurt Erikson, Glendale
Michelle Levesque, Lockheed
Steven L Samaniego, City of West Covina
Dennis Vogel, GATX
Eric Conard, GATX
Dorothy Sperry, MTA
Ricardo Gonzales, MTA
Sri Krishnamachari, ES/PD
Shala Craig, ES/PD
Kurt Kroner, ES/PD
Bruce Rollo, LA City Bureau of Engineering
Ron Olive, LA City Bureau of Engineering
Annabelle Troia, Ultramar
Ken Ludwig, City of LA Bureau of Sanitation
Lisa Anderson, Metropolitan Water District
Victor Glenn, Metropolitan Water District

Chairman Keston introduced State Board Member Mary Jane Forster and congratulated her on her State Senate Confirmation.

2. Approval of Minutes of the Regular Meeting held on June 18, 1994.

There was a motion to adopt the minutes with a revision requested by Mr. Siezak

Page 6, Item 11 add *"and not participating"*.

MOTION: By Mr. Zarian, seconded by Mr. Coe and approved on a unanimous voice vote.

UNCONTESTED ITEMS

3. The Board continued item 4.2. Item 6.1 was removed from the Consent Calendar, and heard separately.

The Board approved the following items on the Uncontested Items Calendar.

NPDES Requirements

NEW

| | | |
|---|---|---|
| 4.1 | J.A.B. Holdings, Inc., El Monte | CA0063321 |
| 4.2 | Berg Lacquer Company (dba Ellis Paint Company), Los Angeles | CA0062006 |
| 4.3 | Arco Products Company (Gasoline Service Station #1235), Torrance | CA0063291 |



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RENEWAL

| | | |
|---|---|---|
| 4.4 | GATX Tank Storage Terminal Corporation, Carson | CA0056863 |
| 4.5 | Tidelands Oil Production Company, Wilmington | CA0001813 |
| 4.6 | Ultramar Inc (Marine Terminal), Wilmington | CA0055719 |
| 4.7 | GNS Development Corporation (dba Golf N' Stuff), Norwalk | CA0058823 |
| 4.8 | ARCO Western Pipe Line Company, (Long Beach Marine Terminal 1, Berth 121), Long Beach | CA0059285 |
| 4.9 | Glendale Federal Bank (201 W Lexington Dr.), Glendale | CA0058874 |
| 4.10 | Federal Employees Distributing Company, Los Angeles | CA0052710 |
| 4.11 | City of Avalon (Avalon Wastewater Treatment Facility), Avalon | CA0054372 |
| 4.12 | Harbor Associates (Harbor Building), Los Angeles | CA0054861 |
| 4.13 | Bank of America National Trust & Saving Association (Data Processing Center), Los Angeles | CA0057690 |

**NPDES Requirements - Rescission**

| | | |
|---|---|---|
| 5.1 | Lockheed Environmental Systems, Burbank | CA0060534 |

**Non-NPDES Requirements**

NEW

| | | |
|---|---|---|
| 6.2 | Union Oil Company of California - Los Angeles Refinery, Wilmington | 85-8 |

**Non-NPDES Requirements - Rescission**

| | | |
|---|---|---|
| 7.1 | Lockheed Environmental Systems, Burbank | 88-043 |
| 7.2 | Limoneira Association, Ventura | 59-134 |

9. Consideration of a Resolution of Appreciation for David Gildersleeve.

MOTION: By Mr Zarian, seconded by Mr. Coe and approved on a voice vote, with Mr. Slezak abstaining on Item 7.2.

6.1 The Los Angeles County Department of Public Works (Sepulveda Storm Drain Project), Carson 92-22

(Mr Drane joined the meeting during this discussion.)

Roy Thun of ARCO addressed the Board and recommended the proposed project not include soil treatment but endorsed vapor extraction. His concern is the cost effectiveness of cleaning up soil and then putting it back again to get recontaminated. He stated other areas are in the process of being cleaned up. Staff member Keith Elliott addressed the Board stating that ARCO is the potentially responsible party for the problem in Sepulveda Blvd. He also said that staff and ARCO have worked very closely together to resolve this matter. The normal process of the Regional Board is to have the responsible party clean up the soil using the options available to them. Staff member James Ross stated that the soil will be treated and there should be no threat to the groundwater with the cost being at a minimum.



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*Following discussion among staff and the Board members, staff suggested that the matter be discussed further with interested parties and brought back to the Board at a subsequent meeting.*

MOTION By Mr Zarian, seconded by Mr Vernon, and carried on a unanimous voice vote to continue this item until further information was received.

**ENFORCEMENT**

8. Consideration of an Order Rescinding Cease and Desist Order Nos 86-2 and 87-94 issued to the City of Los Angeles.

Staff member Gary Schultz presented this Item to the Board Sam Furuta of the City of Los Angeles Bureau of Sanitation stated that one half of the North Outfall Sewer has been cleaned and that the North Outfall Relief Sewer has at the moment and for the near future the capacity to prevent any wet weather overflows while the remainder is being seen to The City has future plans to construct the East Valley Interceptor Sewer . He also said that out of the seven tasks originally required, the other six have already been completed.

MOTION By Mr. Drane, seconded by Mr. Dipple, with Mr Zarian abstaining and adopted on a voice vote.

**OTHER BUSINESS**

10. Discussion of the Basin Plan Amendment Regarding Landfills in Sand and Gravel Pits.

Dr. Ghirelli presented this matter to the Board He said that the External Program Review Committee recommended Chapter 15 be followed and to let the issue run its course Staff will continue to work with State Board staff and wait until they have completed their work Mr Vernon stated that when the Board approved the ALR expansion it was in full compliance with Chapter 15 Later, the Tanner Bill was enacted and did not cover all basins in the State.

Chairman Keston asked if there would be a risk involved on waiting approximately four months until the State Board has made their determination. Dr. Ghirelli said that, at present, there are no issues being raised that would constitute a risk.

Burton Gindler of the Main San Gabriel Basin Watermaster representing Azusa Landfill Task Force addressed the Board with his concerns. He stated that this issue has "dragged on" for too long and suggested that the Board make a strong stand to eliminate a variance procedure.

*The Board directed staff to keep close contact with this matter, monitor the progress of Chapter 15 regulations and report back to the Board periodically on any revisions that may occur. They also directed staff to wait for a decision from the State Board if one was to be forthcoming in a reasonable time.*

11. Status Report on Compliance by the City of Los Angeles (Terminal Island Treatment Plant) with the time schedule to obtain an exception from the Bays and Estuaries Policy prohibition or to contract with the County Sanitation Districts of Los Angeles County (CA0053856).

Staff member Mazhar Ali gave a presentation to the Board Sam Furuta of the City of Los Angeles Bureau of Sanitation addressed the Board and stated that after extensive studies, it is concluded that the best alternative for the City is the water reclamation alternative. Action would most likely occur from the City Council at their



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meeting on July 19, 1994. Even if they could accelerate their schedule, it will take 4-6 months. At present, the project has a June 1995 deadline. Bids will be taken August 26, 1994, and a decision on those bids will be October 21, 1994.

In the last 14 months, they have only had one violation and that was because the pH balance was too low, and they are in the process of upgrading equipment to prevent recurrences. The City is requesting that the deadline of the NPDES permit be extended to allow the water reclamation progress to concur.

Mark Gold of Heal the Bay addressed the Board with his concerns once again on the City of Los Angeles and their lack of commitment to this project. He stated that we need to "pull together" to get Terminal Island Treatment Plant to get tertiary treatment, including reverse osmosis, as soon as possible and resolve the dilution factor.

*State Board member Mary Jane Forster suggested that the Board write a letter to the State Board asking them to proceed immediately for the Bays and Estuaries Policy prohibition to be put on the Agenda. A letter would insure that this matter remain narrow and focused. Dr. Ghirelli assured that a staff member will be assigned this task and the matter will be a priority issue.*

*There was agreement among presenters that such a letter is essential. Mr. Slezak recommended that a formal resolution endorsing an amendment be presented for the Board's consideration at a future board meeting.*

## INFORMATION ITEM

12 Staff Report on the Los Angeles County Metropolitan Transportation Authority Ground Water Reuse Study for Segment 2 of Metro Red Line.

Mr. Coe asked staff what would be considered a "large" discharge of water. Staff member Winnie Jessen answered that any discharge over 50,000 or 100,000 gpd would fall in that category.

13. Executive Officer's Report.

Dr. Ghirelli reminded the Board of the San Gabriel Valley Superfund briefing scheduled on July 27, 1994. He informed the Board that the External Program Review report was submitted to the State Board. He was informed at the ECC meeting in Sacramento that our Budget did not suffer any "major" cuts.

## PUBLIC FORUM

14. Public Forum.

Royall Brown, representing the West Carmina Coalition of Homeowners, addressed the Board on his concerns about the BKK Landfill. He suggested that the Board should hold a workshop about the site and see what steps BKK, staff, and EPA will take to clean up the groundwater. He stated that BKK has a problem with vinyl chloride escaping to the air and the water. He believes the public have a right to obtain annual data reports on the studies done at the site.

Mark Gold of Heal the Bay addressed the Board on the National Resource Defense Council's Notice of Intent Letter to Los Angeles County Department of Public Works regarding the stormwater permit. He suggested that the Board set up a Municipal Stormwater Permit work group including the City of Los Angeles, NRDC, Heal the Bay, and others involved.



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Darlene Ruiz, representing the Small Business Environmental Coalition, introduced herself and the 9-month old coalition. She stated that she only represents small businesses and will look forward to future input and policy direction from the Board. She also looks forward to working with the Board in future matters.

15. Board Member Communications

Chairman Keston reported on the Chairs' meeting and the Cal/EPA meeting in Sacramento on July 12, 1994.

CLOSED SESSION

14. There was no closed session.

ADJOURNMENT

15. Adjournment to Regular Meeting of August 22, 1994, at 9:30 a.m., 501 Poli Street, Council Chambers, San Buenaventura, California.

The meeting was adjourned at 12:35 p.m.



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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
Glendale, California
October 31, 1994
378th Regular Meeting

ITEM: 2

SUBJECT: Approval of Minutes of the Regular Meeting held on September 26, 1994.

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Minutes of 377th Regular Meeting
September 26, 1994
City Council Chambers
613 East Broadway
Glendale, California

INTRODUCTION

1. The meeting was called to order by Chairman Keston at 9:35 a.m.

Board Members Present

Jack J. Coe, Charlotte Craven, Terry Dipple, Clark Drane, Michael Keston, Beth Rogers, John Slezak, Charles Vernon, Larry Zarian

Board Members Absent

None

Staff Present

Robert P. Ghirelli, Richard A. Harris, Catherine Tyrrell, Jorge León, Robyn Shipley, John L. Lewis, Mark Pumford, Dennis Dasker, Blythe Ponek-Bacharowski, Xavier Swamikannu

Others Present

Mary Jane Forster, State Board Member
Jane M. Bray, Bray Consulting
Steve Maguin, Los Angeles County Sanitation District
Ed Otsuka, City of Beverly Hills
R.B. Conyers, Hacienda Heights Improvement Association
Barbara Fish, Hacienda Heights Improvement Association
Dave Johns, Hacienda Heights Improvement Association
Royall Brown, Coalition of West Covina Homeowners
R.L. Venable, Jr. Coalition of West Covina Homeowners
Elizabeth Ann Robbins, Environmental Science & Engineering
Greg Soulup, Dominguez Energy
Kenneth V. Johnson, CalTrans
Doug Thompson, Paramount Petroleum
Dan Wellman, Woodward-Clyde
Marlene A. Fox, RR&C Development Co.
Gary Hildebrand, Los Angeles County Department Public Works
James Noyes, Los Angeles County Department Public Works
Erik Updyke, Los Angeles County Department Public Works
Brian Hooper, Los Angeles County Department Public Works
David Yamahara, Los Angeles County Department Public Works
Daniel V. Hyde, Knapp, Marsh, et al



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Dr Dennis Williams, RR&C Development Company
Garry H Kepes, Leighton & Associates
Hedy Abedi, Leighton & Associates
Jeff Kightlinger, Burke, Williams, et al
Yvette Lindgren, National Resource Defense Council
Wayne Ishimoto, Chevon Companies
Tom Hascup, Chevron Companies
Gwen Tellgen, Brea Canon Oil Company
Gary Schussolin, City of Los Angeles Recreation and Parks
Mitchell E Abbott, Richards Watson
Mark Gold, Heal the Bay
Judy Chin, City of Arcadia
R Gonzales, City of Arcadia
Charles Sihler, City of Pomona
Reinaldo Rodriguez, Upper San Gabriel Valley Municipal Water District
Judith Fries, County of Los Angeles
John Wisz, City of Carson
Dean S Kirk, ARCO
Ralph Moran, ARCO
Michael Catlon, Sterling Environmental Group

2. Approval of Minutes of the Regular Meeting held on August 22, 1994.

There was a motion to adopt the minutes.

MOTION: By Mr. Dipple, seconded by Mr Zarian, and approved on a unanimous voice vote.

UNCONTESTED ITEMS

3. The Board continued items 4.1, 4.3 and 6.3.

The Board approved the following items on the Uncontested Items Calendar.

MOTION By Mr Zarian, seconded by Mr Slezak, and approved on a unanimous voice vote.

NPDES Requirements

NEW

4.2 City of Los Angeles, Department of Recreation and Parks (Hollenbeck Park Lake) CA0062341



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RENEWAL

| | | |
|---|---|---|
| 4.4 | Rhone-Poulenc Basic Chemicals Company | CA0058629 |
| 4.5 | Paramount Petroleum Corporation | CA0056065 |
| 4.6 | Los Angeles County Department of Public Works | CA0063371 |
| 4.7 | Castrol, Inc., Specialty Product Division | CA0059081 |
| 4.8 | State Farm Mutual Automobile Insurance Company | CA0053112 |

REVISION

| | | |
|---|---|---|
| 4.9 | Chevron U.S.A., Inc. (El Segundo Refinery) | CA0000337 |

**NPDES Requirements - Rescission**

| | | |
|---|---|---|
| 5.1 | Lockheed-California Company | CA0000388 |
| 5.2 | City of Inglewood (Centinela Park Swimming Pool) | CA0058602 |
| 5.3 | Hermosa Beach Investment Company | CA0062146 |

**Non-NPDES Requirements**

NEW

| | | |
|---|---|---|
| 6.1 | Dominguez Energy, L.P. (Dominguez Oil Field Reyes Lease Treatment of Petroleum Hydrocarbon Contaminated Soils) | 86-75 |
| 6.2 | County of Los Angeles Department of Public Works (Sepulveda Storm Drain Project) | 92-22 |

REVISION

| | | |
|---|---|---|
| 6.5 | Los Angeles County Probation Department (Munz-Mendenhall Boys Camp Wastewater Treatment Plant) | 64-070 |

ENFORCEMENT

7. Consideration of a Cease and Desist Order Requiring the City of Azusa to Cease and Desist Discharges of Storm Water/Urban Runoff in Violation of Board Order No. 90-079

6.4 County Sanitation Districts of Los Angeles County (Puente Hills Landfill-Eastern Canyons Expansion) Unincorporated, Los Angeles County

*Chairman Keston opened the hearing with a general statement regarding the staff report. Staff member Blythe Ponek-Bocharowski made a presentation to the board recommending the board adopt the revisions as set forth in the tentative order.*



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Barbara Fish, representing HHIA, addressed the board about her concerns of the review of well data collected and the unlined area of the landfill. She is concerned with documented findings in the Stetson report and recommended the board not reissue the permit.

Marlene Fox, representing RR&C Development Company, addressed the board with her concerns on reissuing the permit and stated she did not believe the Environmental Impact Report to be satisfactory.

Dr. Dennis Williams of RR&C Development Company made a presentation to the board using several graphs and charts. He stated that 75% of the landfill barrier is not monitored and should be. He also stated that the contaminated portions of the landfill have not been taken care of and are in continuity with the groundwater. He expressed his concerns with the insufficient bedrock and monitoring data collected. He suggested additional monitoring be done.

Dave Johns of the Hacienda Heights Improvement Association addressed the board about his concerns regarding the solid waste landfill and the reactivated spring in the fault. He believes the landfill barriers are leaking and suggests full monitoring be done and that data collected should meet federal requirements. The date also needs to be tabulated and available to the public.

Reinaldo Rodriguez of the Upper San Gabriel Valley Municipal Water District expressed his concerns about the landfill and presented a written statement. He suggested a committee be formed to deal with this and other future landfill issues.

*Staff member Blythe Ponek-Bacharowski requested the opportunity to clarify and separate the "old" waste discharge requirement from the "present" waste discharge requirement. She informed the board that, at present, several different tests are being performed at the site such as packer tests, tow inspections, and drilling. She also stated additional monitoring can be done if necessary. She ensured that staffs' records are, and have always been of public record.*

*After discussion from the board, Chairman Keston closed the public hearing. He asked Dr. Ghirelli to voice his opinion on forming a new committee to address the concerns set forth. Dr. Ghirelli stated that new information will always be welcome to staff, but believes staff should continue to make decisions, and that a new committee is not necessary at this time.*

MOTION By Mr. Zarian, seconded by Mr. Drane, and approved on a unanimous voice vote.

Item 6.3 Dr. Ghirelli stated that item 6.3 was inadvertently continued and requested it be "put back on" the consent calendar and voted on at this time.

MOTION By Ms. Craven, seconded by Mr. Dipple, and approved on a unanimous voice vote that the tentative requirements be adopted.

8. Consideration of a Cease and Desist Order Requiring Los Angeles County Department of Public Works (Los Angeles County) to Implement a Storm Water/Urban Runoff Monitoring Program and Cease and Desist Discharges in Violation of Board Order No. 90-079.

Mark Gold of Heal the Bay addressed the board with his concerns whether the County will do all required by them. He suggested that pathogen-nutrient matters be taken into consideration and toxicant monitoring also be done. He wants to see that all regulation requirements are enforced and met, and an investigative plan be put into place regarding stormdrains.



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*Dr. Ghirelli informed the board that a meeting was held with County of Los Angeles Department of Public Works and staff on September 19, 1994, to discuss permit compliance. A mutual agreement on the actions necessary to comply with the permit and applicable timeframes was reached. The County committed to completing the actions within the time frame stated and monthly progress reports will be submitted.*

A motion was made to withdraw the Cease and Desist Order.

MOTION: By Mr. Drane, seconded by Mr. Slezak, and approved on a unanimous voice vote.

PUBLIC FORUM

10 Executive Officer's Report.

CLOSED SESSION

11. None.

ADJOURNMENT

12 Adjournment to Regular Meeting of October 31, 1994, at 9:30 a.m., 633 East Broadway, Council Chambers, Glendale, California.

The meeting was adjourned at 11:35 a.m.



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R0064144

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
Glendale, California
February 27, 1995
381st Regular Meeting

ITEM: 2

SUBJECT: roval of Minutes of the Regular Meeting held on uary 23, 1995.

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Minutes of 380th Regular Meeting
January 23, 1995
City Council Chambers
613 East Broadway
Glendale, California

INTRODUCTION

1. The meeting was called to order by Chairman Keston at 9:35 a.m.

Board Members Present

Jack J. Coe, Charlotte Craven, Terry Dipple, Clark Drane, Michael Keston, John Slezak, Charles Vernon, Larry Zarian

Board Members Absent

None

Staff Present

Robert P. Ghirelli, Richard A. Harris, Catherine Tyrrell, Jorge León, Robyn Shipley, John L. Lewis, Roy R. Sakaida, Hank Yacoub, Arthur Heath

Others Present

Jane M. Bray, Bray Consulting
Roger Gorke, Heal the Bay
Mark Gold, Heal the Bay
Grant Adamson, Serra Canyon Company
Thomas D. McMahon, Southern California Gas Company
Paul Farmanian, Parsons Engineering-Science
Jim Menees, Petro-Diamond Terminal Co.
Ed Kim, Petro-Diamond Inc.
Steven Kummerfeldt, IT Corporation
Virginia Grebbien, West Basin Municipal Water District
Terry Foreman, CHZM Hill
Susan Damron, Los Angeles Department Water & Power
Fazi Mofidi, Los Angeles Department Water & Power
Feroze Kangin, Department of Water Resources
Patrick Kanes, Lubricating Specialties Co.
Ralph Moran, ARCO
Rosemary Woodlock, North Valley Coalition
Gary Yamamoto, California Department of Heath Services
Kirk Thomson, Environmental Support Tech
Michael Tye, Environmental Support Tech

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Donald Marcus, EMCON
Walt Levine, Rand Corporation

2. Election of Officers.

*Mr. Zarian arrived during the Election of Officers.*

The Nominating Committee recommended Mr. Michael Keston for Chair and Mr. John Slezak for Vice-Chair for 1995.

MOTION: By Mr. Zarian, seconded by Mr. Drane, and approved on a unanimous vote.

Mr. Slezak presented Chairman Keston with an outstanding service award for his dedication as Chair for 1994, and Chairman Keston presented Mr. Vernon with an outstanding service award for his dedication as Vice-Chair for 1994.

3. Approval of Minutes of the Regular Meeting held on December 5, 1994.

There was a motion to adopt the minutes with the following addition to Item 9 (Board Member Communications):

*Chairman Keston requested staff prepare a letter from him to Felicia Marcus, USEPA Regional Administrator, urging that a Joint "No Further Action" letter be drafted from the Regional Board and USEPA to Potentially Responsible Parties.*

MOTION: By Mr. Zarian, seconded by Ms. Craven, and approved on a unaninous voice vote.

UNCONTESTED ITEMS

Mark Gold of Heal the Bay addressed the Board on item 5.13 (City of Los Angeles, Department of Water and Power, Scattergood Generating Station) and his concerns regarding the residual chlorine objective variances. He suggested staff change the language of the permit to supply more information.

Susan Damron of Los Angeles Department of Water and Power answered questions asked from the Board. She confirmed that LADWP would not suffer any hardships if their permits were continued for 30 days to 60 days.

Grant Adamson of Serra Canyon Company Limited addressed the Board requesting a language change in the permit regarding the sewer hookup requirement. The Board directed staff to change the language in the permit.

*Member Rogers arrived during Mark Gold's presentation.*

4. A motion was made to continue items 5.11 - 5.13 and modify language of item 7.7.

MOTION: By Mr. Vernon, seconded by Mr. Coe, and approved on a unanimous voice vote.

The Board approved the following items on the Uncontested Items Calendar.

MOTION: By Mr. Zarian, seconded by Mr. Vernon, and approved on a unanimous voice vote.



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Minutes
January 23, 1995

**NPDES Requirements**

NEW

| | | |
|---|---|---|
| 5.1 | Jet Propulsion Laboratory, Pasadena | CA0063444 |
| 5.2 | La Mirada Products Company, La Mirada | CA0063461 |
| 5.3 | 3M Pharmaceuticals, Northridge | CA0063312 |

RENEWAL

| | | |
|---|---|---|
| 5.4 | Glendale Memorial Hospital and Health Center, Glendale | CA0061174 |
| 5.5 | The Talley Corporation, Newbury Park | CA0059609 |
| 5.6 | Edgington Oil Company, Long Beach | CA0057363 |
| 5.7 | Lubricating Specialties Company, Vernon | CA0059978 |
| 5.8 | Southern California Edison Company (Port Hueneme Fuel Oil Supply Facility), Port Hueneme | CA0057932 |
| 5.9 | Petro-Diamond Terminal Company, Long Beach | CA0058556 |
| 5.10 | Southern California Marine Institute, Terminal Island | CA0058556 |

**NPDES Requirements - Rescission**

| | | |
|---|---|---|
| 6.1 | Franciscan Promenade, Los Angeles | CA0061972 |
| 6.2 | The McGregor Company, Los Angeles | CA0061883 |
| 6.3 | Third and Fairfax Plaza Associates, Los Angeles | CA0060411 |

**Non-NPDES Requirements**

NEW

| | | |
|---|---|---|
| 7.1 | Hughes Missile Systems Company, Canoga Park | 94-45 |
| 7.2 | Naval Construction Battalion Center Port Hueneme Navy Exchange Gasoline Station (Building 797), Port Hueneme | 94-73 |
| 7.3 | West Basin Municipal Water District and Los Angeles County Department of Public Works (West Coast Basin Barrier Project), El Segundo | 93-009 |
| 7.4 | Port of Los Angeles (Berths 136-139 Maintenance Dredging), Los Angeles | 94-51 |
| 7.5 | Port of Los Angeles (Berths 145-146 Maintenance Dredging), Los Angeles | 94-52 |



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Minutes
January 23, 1995

REVISION

| | | |
|---|---|---|
| 7.6 | Tivoli Cove Homeowners Association (Wastewater Treatment Plant), Malibu | 71-057 |
| 7.7 | Serra Canyon Company Limited and Malibu Beach R.V. Park (Subsurface Sewage Disposal System), Malibu | 73-073 |

PUBLIC FORUM

8. Public Forum

Rosemary Dealey Woodlock representing North Valley Coalition of Concerned Citizens addressed the board with her concerns regarding Sunshine Canyon Landfill. She asked the board to consider her request to involve a 3rd party in reviewing the final report from Geosyntec. She thanked the board for "halting" the process, and informed the board that she will bring this matter to the State Board counsel.

*Chairman Keston thanked her for her presentation.*

9. Consideration of Resolution of Appreciation for Rand Corporation.

The board adopted a Resolution of Appreciation thanking the Rand Corporation for their contribution to the Los Angeles County Storm Water Program.

MOTION: By Mr. Vernon, seconded by Ms. Siezak and approved on a unanimous voice vote.

10. Board Member Communications.

*Member Dipple discussed his concerns with the City of Claremont's sewer hookups and septic tanks. He suggested the board consider proposing a policy statement to address the concerns of the city.*

*Member Craven agreed with member Dipple and said that the board needs to look at these requirements. Chairman Keston asked Assistant Executive Officer Dick Harris to draw up a policy statement.*

*Member Coe, in his December 15 memorandum to the board, asked for a list of suggested topics for the upcoming Water Quality Coordinating Committee meeting. The Board discussed the upcoming meeting priorities list. Dr. Ghirelli informed them that the State Board asked for a response by February 1. Chairman Keston suggested that before determining the list, we ask the State Board for a list of their priorities.*

11. Interim Site Assessment and Cleanup Guidebook and Interim Guidance for Remediation of Petroleum and Volatile Organic Compound (VOC) Impacted Sites.

*Dr. Ghirelli made the presentation and answered questions from the Board. He informed the board that he was not asking for formal board approval of the guidebook at this time, but rather their concurrence to allow the guidebook to be distributed to the public. Within 6 - 12 months, however, staff intends to bring it in front of the board for final approval.*



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*Staff member Roy Sakaida made a brief presentation to the board on this item.*

*The board gave their verbal approval to distribute the guidebook to the public.*

12. Report of Significant Accomplishments in 1994.

*Dr Ghirelli gave a presentation summarizing the major accomplishments of the board in 1994. The report will be sent to legislators who reside in our region along with Cal EPA and the State Board.*

13. Executive Officer's Report.

14. Consideration of Regional Board Management Priorities for 1995.

Dr. Ghirelli presented the list of management priorities and asked the board for policy direction. After discussion of the board, the following priorities were suggested:

Jack Coe:

1. Staff prepare guidelines for evaluating the need for feasibility and reuse of a waste discharge. Priority should be given to pumped groundwater discharges. The guidelines should also define the board's role in implementing such reuse.

2. Extend prohibition against new landfills in sand and gravel pits, which now applies to the Main San Gabriel Basin through the Mountjoy and Tanner legislation, to remainder of the Los Angeles Region (i e , remove the authority of the Regional Board to approve by granting waiver). This could be accomplished by Basin Plan Amendment, revision to Chapter 15, legislation, or other means.

Larry Zarlan

1. Regional Board Chair bring the Water Quality Task Force together one time a year.
2. Underground Storage Tank Issues.
3. Septic Tank Issues -- (Where does the jurisdiction stop?)
4. Superfund Program -- (What exactly is our role?) -- (Can we intervene?)

Terry Dinak

1. Sand/Gravel Pit issues
2. Septic Tank issues

Charles Vernon

1. In agreement with member Coe to separate into two categories 1) Policy; and 2) Management.

John Slezak

1. In agreement with other members, especially the reuse of waste discharged water.
2. Make 401 Certification fit well with watershed management approach --broader management approach.
3. Facilitate the removal of dams to enhance riparian habitat.



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Clark Drane

1. Lockheed should be monitored more closely.
2. Let State Board handle landfills.
3. Create a simple, easier way for cleanups.

Beth Rogers

1. Create a handbook of policy procedures for the board members.
2. Cost effectiveness issues.

Charlotte Craven

In agreement with all the above members' priorities.

*Dr. Ghirelli informed the board that he will firm up the list of goals and priorities and prepare another version for the board's review.*

CLOSED SESSION

15. None.

ADJOURNMENT

16. Adjournment to Regular Meeting of February 27, 1995, at 9:30 a.m., 623 East Broadway, Council Chambers, Glendale, California.

The meeting was adjourned at 12:24 p.m.



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R0064151

STATE OF CALIFORNIA

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500

# AGENDA

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

392nd Regular Meeting
Monday, April 1, 1996 - 9:00 A.M.

CITY COUNCIL CHAMBERS
613 EAST BROADWAY
GLENDALE, CALIFORNIA

***STORM WATER PERMIT STUDY SESSION***

*After the regular meeting adjourns, there will be an informal discussion among Board Members and staff regarding the Municipal Storm Water Permit for Los Angeles County. There will be no voting or formal action taken by the board during the study session.*

## INTRODUCTION

1. Roll Call.

2. Approval of Minutes of the Regular Meeting held on February 26, 1996.

## UNCONTESTED ITEMS

3. Uncontested Items Calendar. *(Items marked with an asterisk are expected to be routine and noncontroversial. The Board will be asked to approve these items at one time without discussion. If any interested party, Board Member, or staff person requests that an item be removed from the calendar, it will be taken up in the regular agenda order.)*

## WASTE DISCHARGE REQUIREMENTS

4. Consideration of NPDES Requirements - New and Renewal. *(The Board will be asked, during a public hearing, to adopt the proposed permits for the following facilities:)*

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NEW

| | | |
|---|---|---|
| *4.1 | Anacapa Marina Services, Oxnard (A. Zaszkodina) | CA0063886 |
| *4.2 | McWhorter Technologies, Inc., Lynwood (J. Tang) | CA0063908 |

RENEWAL

| | | |
|---|---|---|
| *4.3 | Chevron U.S.A., Inc. (Van Nuys Terminal), Van Nuys (J. Tang) | CA0058629 |

5. Consideration of NPDES Requirements - Rescission (J. Lewis) *(The Board will be asked to rescind the requirements for the following facilities).*

| | | |
|---|---|---|
| *5.1 | W & M Partners Development Corporation, Los Angeles | CA0061531 |
| *5.2 | Abraham Moradzadeh & Sam Shaou, West Hollywood | CA0061221 |
| *5.3 | Douglas, Emmet Joint Venture Village on Canon, Beverly Hills | CA0060097 |
| *5.4 | American Home Mortgage Corporation (Former Gasoline Service Station), Los Angeles | CA0060771 |
| *5.5 | Hallwood, Inc dba Chase Brothers Dairy | CA0062545 |
| *5.6 | Elmer George Friend Estate, Ojai | CA0060379 |

6. Consideration of Non-NPDES Requirements - New and Revision. *(The Board will be asked, during a public meeting, to adopt the proposed requirements for the following facilities).*

NEW

| | | |
|---|---|---|
| *6.1 | Hugo Neu-Proler Company, Terminal Island (R. Chou) | 90-047 |

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| | | |
|---|---|---|
| *6.2 | Social Model Recovery Systems, Inc. (River Community Sewage Treatment Plant), Azusa (A. Lamas) | 71-047 |
| *6.3 | TCL Consent Order Study Area, Wilmington (D. Peterson) | 65-121 |
| *6.4 | S.L.S & N., Inc. (Peck Road Gravel Pit Landfill), Monrovia (D. Peterson) | 82-017 |

7. Consideration of Non-NPDES Requirements- Rescission (J.L. Lewis) *(The Board will be asked to adopt the proposed order rescinding requirements for the following facilities.)*

| | | |
|---|---|---|
| *7.1 | Mobil Oil Corporation, Torrance | 85-007 |
| *7.2 | Freight Terminals, Inc. (Heritage Park), Commerce | 87-011 |
| *7.3 | Unocal Torrance Tank Farm, Torrance | 100.315 |
| *7.4 | Cusenza Partnership, Woodland Hills | 91-001 |
| *7.5 | Michael D. Joseph, et al., Northern Trust of California (Former Texaco Service Station), Reseda | 92-049 |
| *7.6 | Los Angeles County Fire Department Camp No. 9, Angeles National Forest | 55-166 |
| *7.7 | Department of Water Resources (Pyramid Lake Powerplant), Castaic | 79-021 |

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OTHER BUSINESS

*8 Consideration of Proposed 1997 State Revolving Fund (SRF) Loan Program Priority List for Fiscal Years 1996-1997 Through 2000-2001. (J. Lewis) *(The Board will be asked to adopt the tentative Resolution approving the priority list.)*

PUBLIC FORUM

9. Public Forum *(Any member of the public may address the Board regarding any matter within the Board's jurisdiction. This need not be related to any item on the agenda.) Remarks will be limited to 3 minutes.*

INFORMATION ITEMS *(Please note that these items are for information only. There will be no voting or formal action taken by the Board on these items.)*

10. Staff Report on Closure Criteria for Low Risk Fuel Contamination Sites. (A. Saffell) *(Staff will report on proposed closure criteria for low risk fuel contamination cases in the Underground Tanks Program.)*

11. Staff Report on the Revised Interim Site Assessment and Cleanup Guidebook. (A. Heath) *(Staff will report on the status of the Guidebook.)*

12. Board Member Communications. *(The Board Members may discuss communications, correspondence, or other items of general interest relating to matters within the Board's jurisdiction.)*

13. Executive Officer's Report.

CLOSED SESSION

14. Closed Session. *(Please note that this item is not open to the public).*

At any time during the regular session, the Board may adjourn to a closed session to consider litigation, personnel matters, or to deliberate on a decision to be reached based upon evidence introduced in a hearing. Discussion of litigation is within the attorney-client privilege and may be held in closed session. Authority: Government Code Section 11126(a)(d)(q).

ADJOURNMENT

15. Adjournment to Regular Meeting of May 6, 1996 at 9:00 a.m., City Council Chambers, City of Glendale, 613 East Broadway, Glendale.

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*A copy of the Agenda is available for examination by the public at the office of the Board during regular working hours. Please call the Executive Office at (213) 266-7514 for general information about the Agenda. Questions about specific items on the Agenda should be directed to the staff person whose name is listed with the item.*

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*Material presented to the Board as part of testimony that is to be made part of the record must be left with the Board. This includes photographs, slides, charts, diagrams, etc. All Board files pertaining to the items on this Agenda are hereby made a part of the record submitted to the Regional Board by staff for its consideration prior to action on the related items.*

•••••

*A Bulletin Board Service is available to the public that provides ready access to information about various Regional Board programs. The bulletin board telephone number is 213-266-7663 and is accessible with a computer and modem 24 hours a day, seven days a week. Currently, the bulletin board contains agenda notices, agenda minutes, executive officer's reports, a stormwater data base, a list of Regional Board staff phone numbers, and the text of the Porter-Cologne Water Quality Control Act. It also functions as a message service.*

••••••

*The Regional Board's Business Assistance Office offers help to business owners and others seeking information about discharge permits, cleanup requirements, and other water-related issues. Callers can reach the Office by dialing 1-800-300-8008, or in the Los Angeles area at 213-266-7671. The Office is open Mondays through Fridays from 8:00 a.m. to 4:00 p.m. Staff are available to answer general questions, help callers prepare permit applications, and address other concerns relating to the permitting process.*

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*A listing of pending applications for water quality certification pursuant to Section 401 of the Federal Clean Water Act may be obtained by calling Lauma Jurkevics at (213)266-7609. Alternatively, if you have a computer with a modem, you may obtain this information by calling in to our Bulletin Board at (213)266-7663. This information will be updated every week and also as new applications are received.*

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# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
# LOS ANGELES REGION

## BOARD STAFF

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Monterey Park, CA 91754-2156

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| BOARD MEMBERS | CITY OF RESIDENCE | APPOINTMENT CATEGORY |
|---|---|---|
| Michael Kenton, Chair | Los Angeles | Industrial Water Use |
| John A. Slezak, Vice Chair | Westlake Village | Recreation, Fish, and Wildlife |
| Jack J. Coe, Ph.D., P.E. | La Puente | Water Supply |
| Charlotte Craven | Camarillo | Public Member |
| Vacant | | County Government |
| Clark Drane | Tujunga | Water Quality |
| Beth Rogers, Ph.D. | Camarillo | Water Quality |
| Charles C. Vernon | La Mirada | Irrigated Agriculture |
| Larry Zarian | Glendale | Municipal Government |

**Executive Office**
Robert P. Ghirelli, D.Env., *Executive Officer*
Richard A. Harris, *Assistant Executive Officer—Groundwater Programs, Ombudsman*
Catherine Tyrrell, *Assistant Executive Officer—Surface Water Programs*
Robyn L. Shipley, *Executive Secretary*
Guokas, *Administrative Officer*
Jorge Leon, *Senior Staff Counsel, State Water Resources Control Board, 901 P Street, Sacramento, CA 95814*

**Surface Water Regulatory**
Dennis Dasker, *Chief*
Winnie D. Jesena, *Los Angeles Coastal*
Joshua M. Workman, *Los Angeles Inland*
Mark Pumford, *Ventura Coastal*
J.T. Liu, *Revitalize L.A.*

**Santa Monica Bay Restoration Project**
Marianne Yamaguchi, *Program Manager*

**San Gabriel/San Fernando Cleanup Program**
Hank H. Yacoub, *Chief*
Jonathan S. Bishop, *Cleanup Programs/Network*
Arthur G. Heath, Ph.D., *SGV Cleanup Program*
Eric Nupen, *SFV Cleanup Program*

**Regional Programs**
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J. Michael Lyons, *Surveillance*
John L. Lewis, *Technical Support*
Wendy Phillips, *Planning*

**Groundwater Protection**
Roy R. Sakaida, Ph.D., *Chief*
Hubert H. Kang, *Subsurface Investigation*
Rod Nelson, *Landfills*
James E. Ross, *Site Cleanup*

**Underground Tanks**
Anne Saffell-*Chief*
Al Novak, UST I-*Program Support*
Gregg Kwey, UST II-*Closure Unit*
David Bacharowski, *UST III-Ventura Co./LIA*

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Twila Willis
Jimmie Woo
Wen Yang, Ph.D.
King Yu
Aniela Zaskodna

## GENERAL STATEMENT

*The primary duty of the Regional Water Quality Control Board (Regional Board) is to protect the quality of the waters within the region for all beneficial uses. This is accomplished by formulating and adopting water quality control plans for specific ground or surface water basins and discharges. Specific responsibilities and procedures of the Regional Board and the State Water Resources Control Board (State Board) are outlined in the Porter-Cologne Water Quality Control Act.*

*The purpose of the meeting is for the Board to obtain testimony and information from concerned and affected parties and make decisions after considering the recommendations made by the Executive Officer.*

*The Board and the Staff welcome information on pertinent problems, but comments at the meeting should be brief and directed to specifics of the case to enable the Board to take appropriate action. Whenever possible, lengthy testimony should be presented to the Board in writing and only a summary of pertinent points presented verbally. If you wish to make a statement, please fill out one of the cards on the table at the back of the room, indicate the agenda number or name of the item you wish to comment on, and turn the card in to a member of the Board's staff. The Board would appreciate written testimony (14 copies) being provided to the Board's Executive Assistant for distribution at or before the beginning of the meeting.*

*Any person affected adversely by a decision of the Regional Board, Los Angeles Region, may petition the State Board to review the decision. The petition must be received by the State Board within 30 days of the Regional Board's meeting at which the adverse action was taken. Copies of the law and regulations applicable to filing petitions will be provided upon request.*

## DISCLOSURE STATEMENT

*All persons who actively support or oppose the adoption of waste discharge requirements or an NPDES permit pending before Regional Board must submit a statement to the Board disclosing any contribution of $250 or more to be used in a federal, state, or local election, made by the action supporter or opponent, or his or her agent within the last 12 months to any Regional Board Member.*

*Also, all permit applicants and all persons who actively support or oppose adoption of a set of waste discharge requirements or an NPDES permit pending before the Regional Board are prohibited from making a contribution of $250 or more to any Board Member for 3 months following a Regional Board decision on the permit application.*

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4/1/96 RWQCB Overhead Presentation. Catherine Tyrell

NOTES: LA STORMWATER (ENVIRONMENTAL IMPACTS OF URBAN RUNOFF)

**1. Rivers are not meeting State Standards (beneficial uses)**

Figure 1 is a map of selected waterbodies within the LA River and San Gabriel River Watersheds that are not meeting State standards due to urban runoff.

In the LA River watershed we have identified problems with lead, copper, ammonia, coliform.

In the San Gabriel River watershed we have identified problems with lead, copper, ammonia, coliform.

**2. Stormwater loadings appear to be comparable to loadings from POTW's**

Figure 2 is a comparison of estimated annual loadings of metals from the three largest rivers (LA River, San Gabriel River, and Ballona Creek) in these two watersheds compared to an estimate of metals loadings from the two largest sewage treatment plants discharging into the ocean (Hyperion and LA County).

Figure 2a shows how metals loadings from POTWs have decreased dramatically over time. Estimates of loadings from rivers are comparable to POTWs.

Figure 2b indicates loadings of cadmium, chromium, copper and lead from the rivers are comparable to POTWs.

Figure 2c provides a comparison of POTW loadings (Hyperion and LA County) to LA Counties estimate for the Santa Monica Watershed. These data suggest the loadings are comparable.

Data Sources and Caveats:

Estimates of metal loadings from POTWs are from SCCWRP Reports (1990, 1991, 1992, 1993). We have a high degree of confidence in these numbers.

Estimates of stormwater loadings for Ballona, Los Angeles River and San Gabriel River are from SCCWRP,1990. These should be considered as ballpark estimates (i.e. within an order of magnitude estimates). These estimates are based on a limited number of samples collected in 1986 and 1987. The data was collected during years that were not particularly wet years. For instance 1986 was a drought year and in 1987 flows were about average. Loadings could be higher during wet years with above average flows.

Estimates of stormwater loadings from the Santa Monica Bay Watersheds are from the LA County Stormwater Monitoring Report.

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3. Concentrations of metals and bacteria in stormwater channels often exceed criteria.

Data from the LA County stormwater monitoring program (1990 - 1994)was graphed and compared to EPA water quality criteria.

Cadmium (Fig. 3a) was rarely detected in dry-weather flows from LA River and San Gabriel River and not detected in any of the wet-weather samples from either. However, the County's detection limits (10 ppb) are well above both chronic and acute criteria.

Copper (Fig. 3b)was detected at concentrations exceeding criteria in both the LA River and San Gabriel River in dry-weather. Copper occasionally exceeded criteria during wet-weather flows. Note that the County's detection limit for copper (10 ppb) is near the chronic criteria of 11 ppb.

Lead (Fig. 3c) concentrations from dry-weather samples exceeded chronic and acute criteria in both LA River and San Gabriel River. Wet-weather flows also indicate occasional exceedances in both rivers. Note that the detection limit of 10 ppb is above the chronic criteria of 2.5 ppb.

Fecal coliform (Fig. 4c) concentrations were very high in wet-weather samples from both rivers. Dry-weather concentrations were lower but still very high when compared to standards.

**Conclusions.**

Urban runoff has been implicated in reducing water quality in several rivers and lakes within the LA River and San Gabriel River Watershed Management Area.

The concentrations of metals and bacteria in stormwater often exceed EPA criteria.

Loadings to the ocean are comparable to those discharged from large POTWs.

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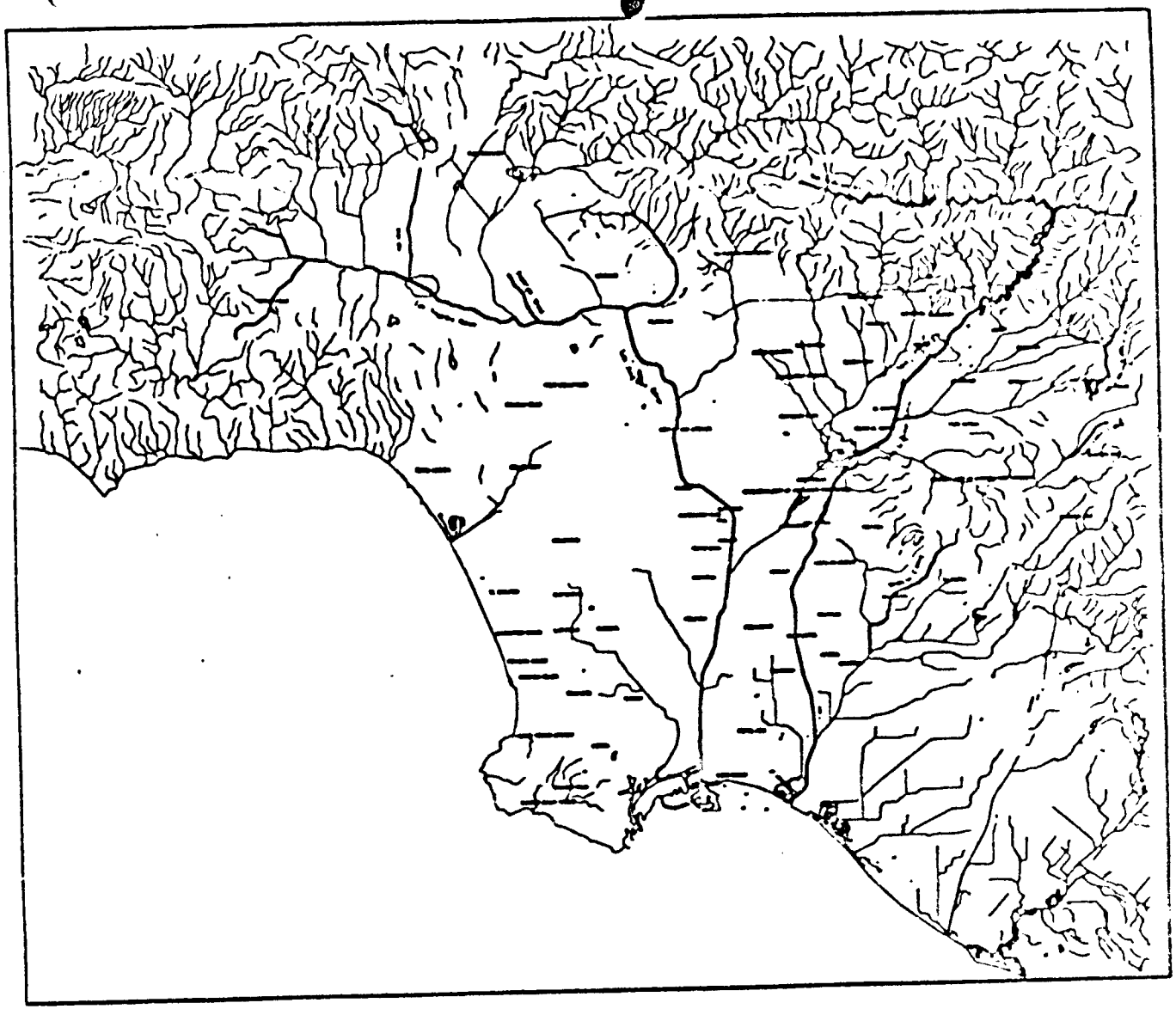

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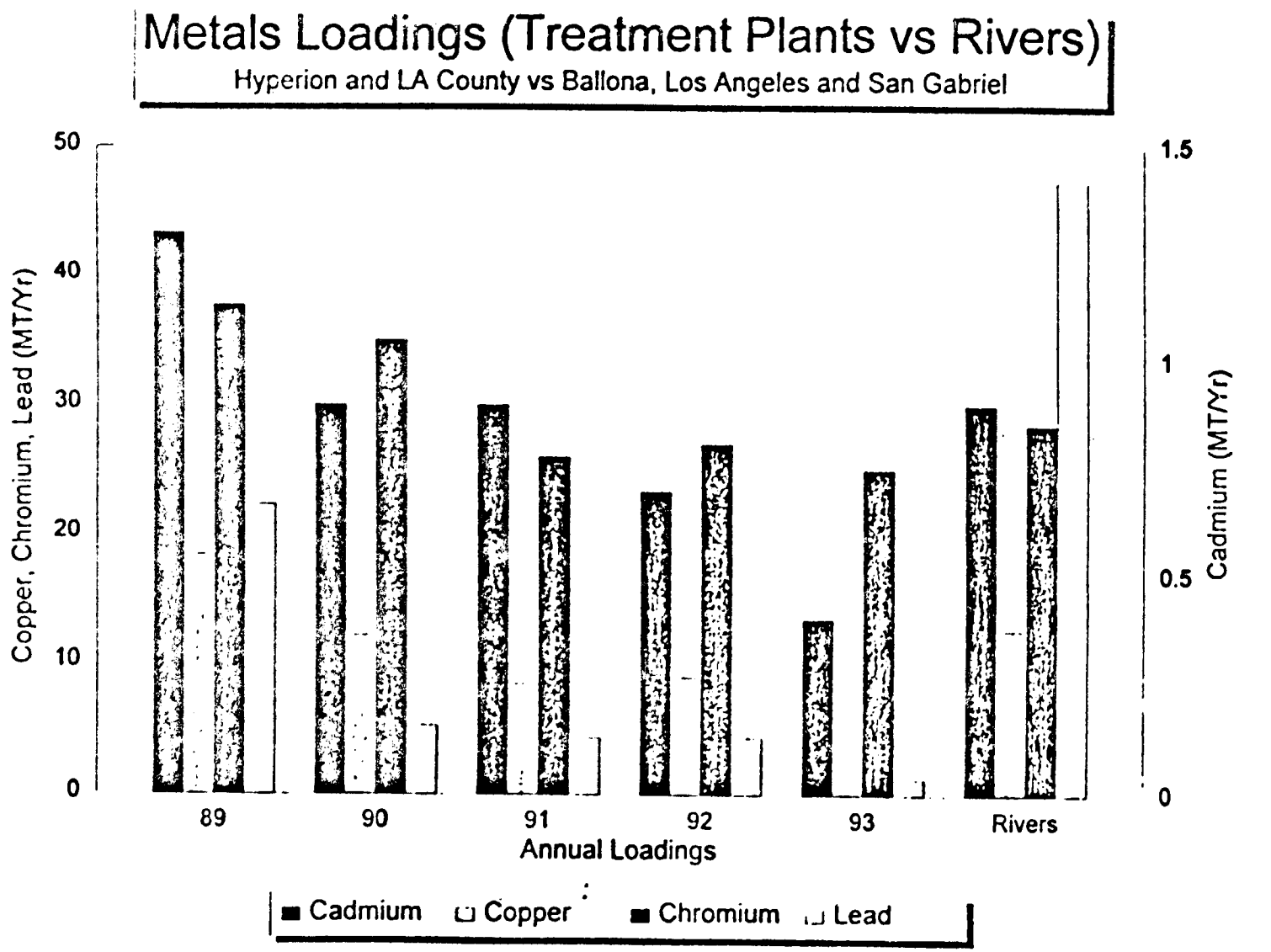
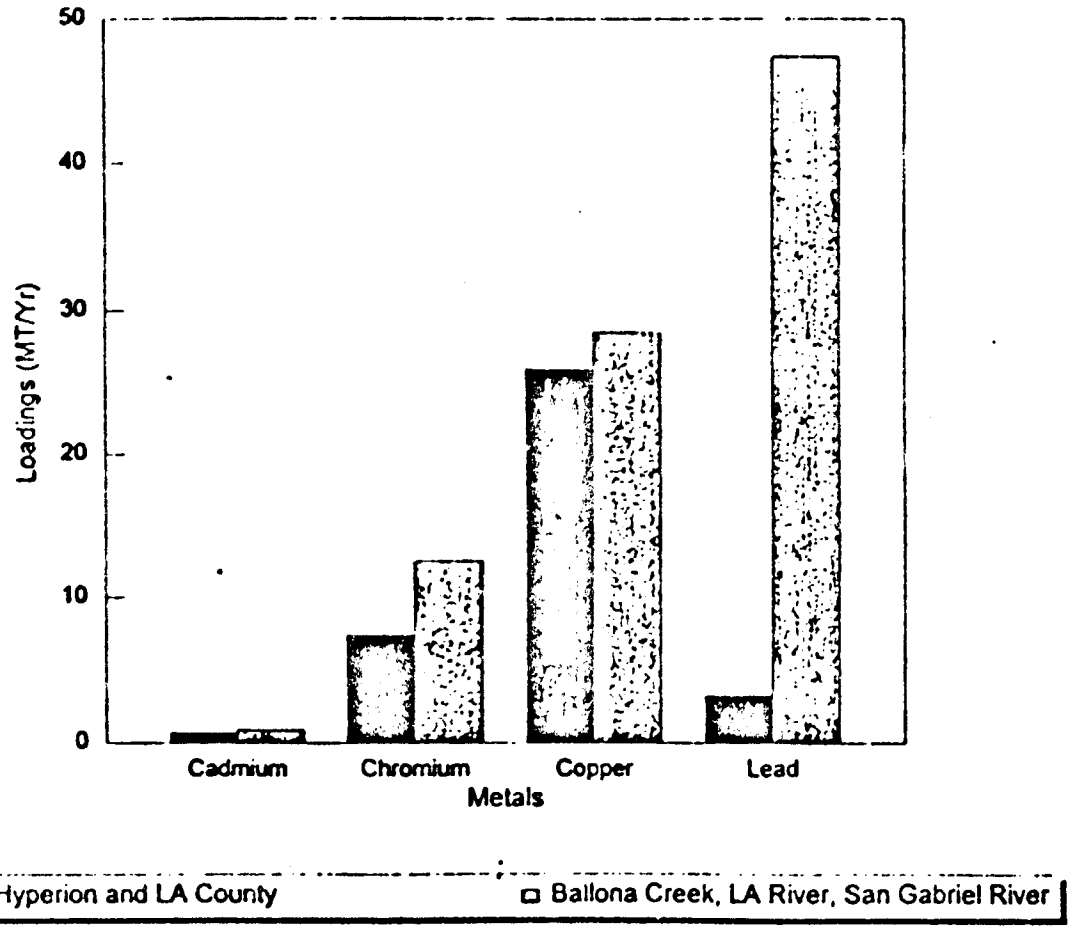

Metals Loadings (Treatment Plants vs Rivers)
Hyperion and LA County vs Ballona, Los Angeles and San Gabriel
Copper, Chromium, Lead (MT/Yr)
50
40
30
20
10
0
1.5
1
0.5
0
Cadmium (MT/Yr)
89
90
91
92
93
Rivers
Annual Loadings
Cadmium
Copper
Chromium
Lead

Figure 2b

# Metals Loadings (Treatment Plants vs Rivers)

Hyperion and LA County vs. Ballona, Los Angeles and San Gabriel Rivers

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## Metals Loadings (Treatment Plants vs Santa Monica Watersheds)

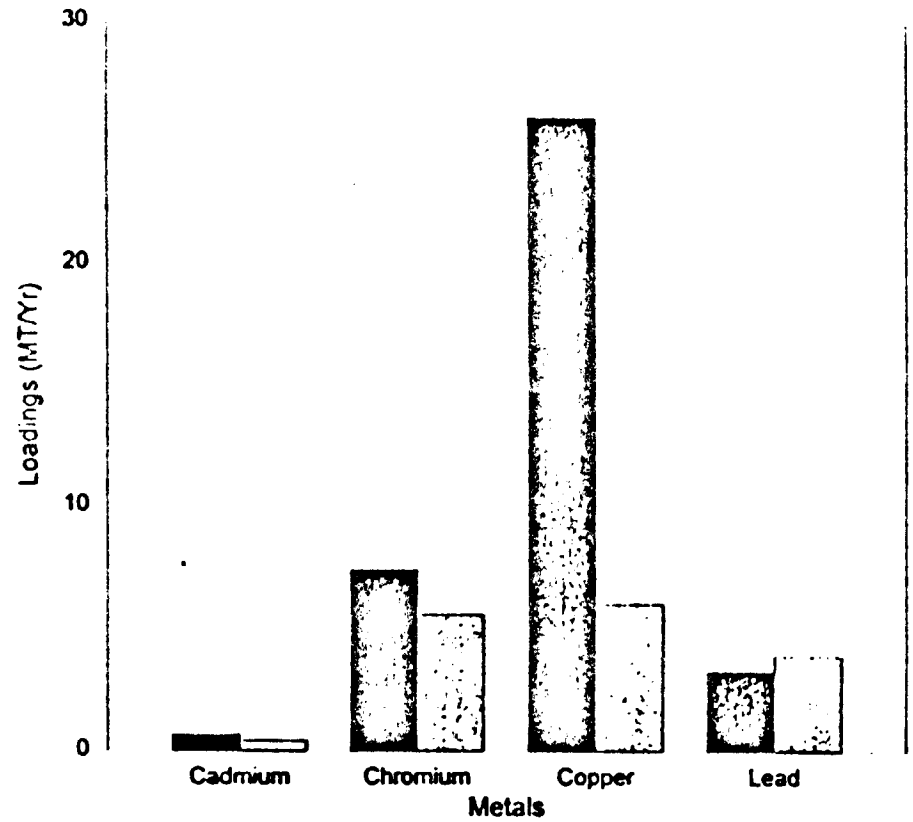
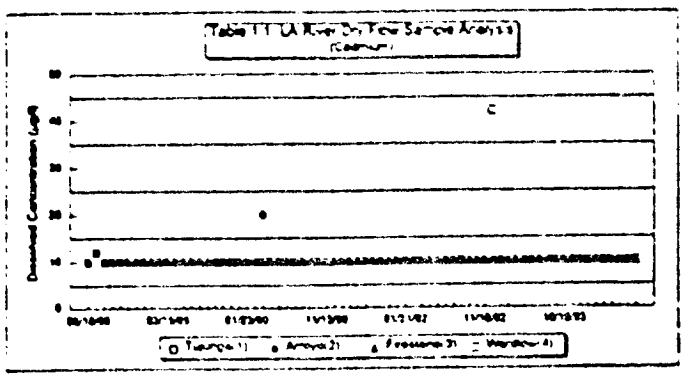
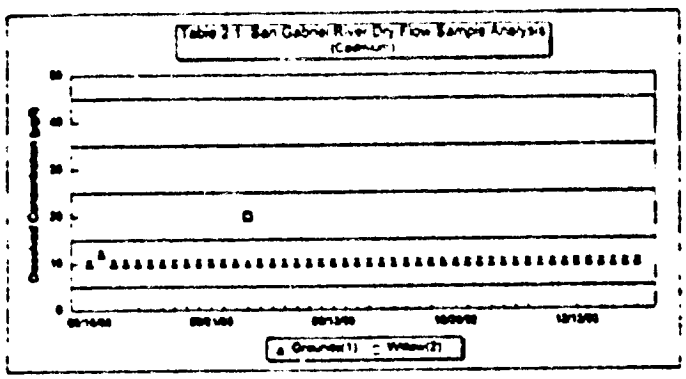
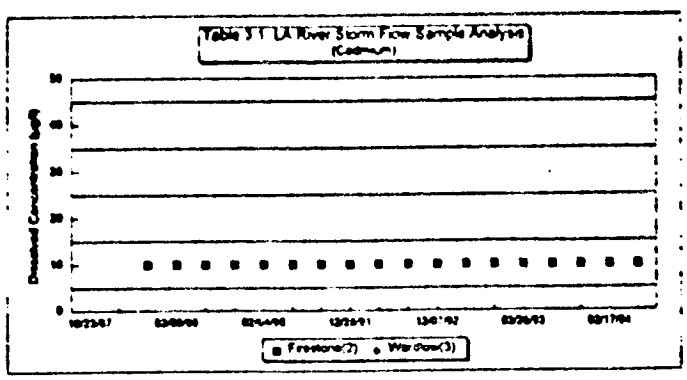


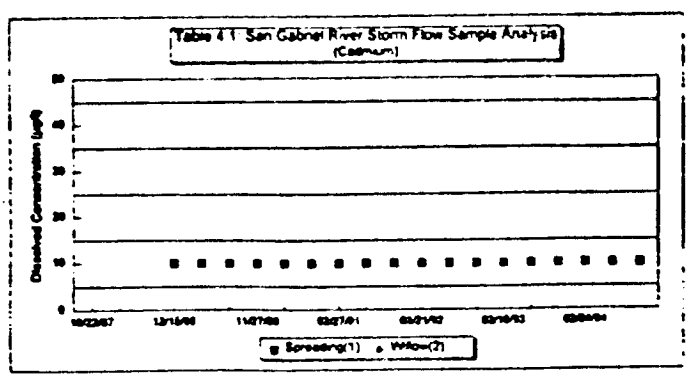
Fig 3a Cadmium

Detection Limit
10 ug/L




Criteria

Chronic 1 ug/L

Acute 3.7 ug/L

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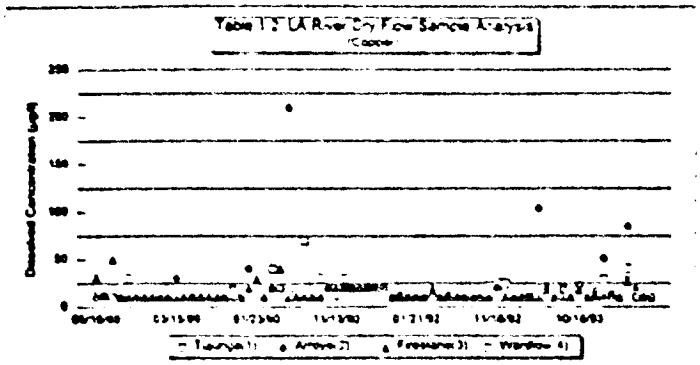
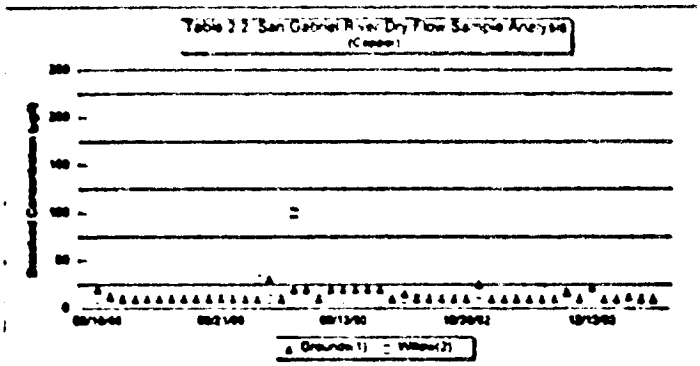
Figure 3b Copper

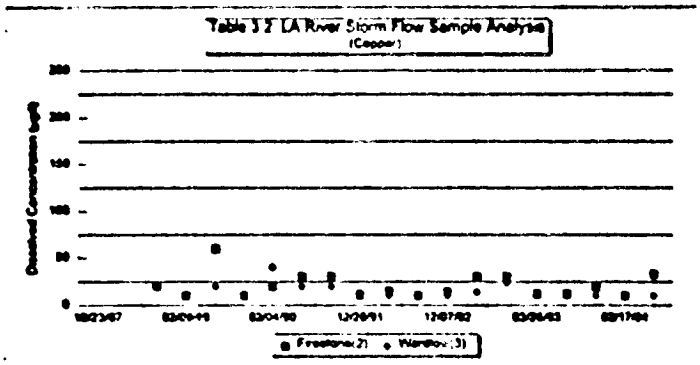
Criteria

Chrome 11 ug/l

dome 17 ug/l



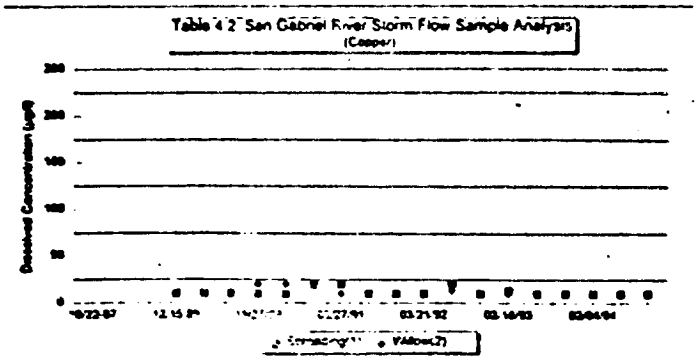




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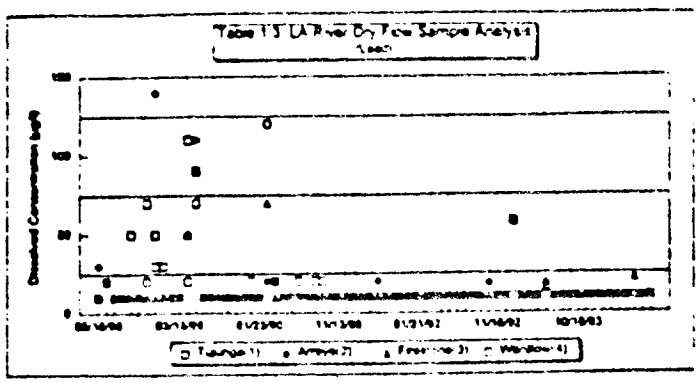
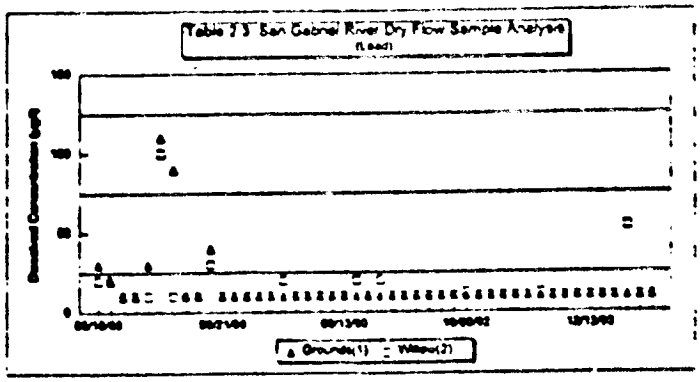
Figure 3c Lead

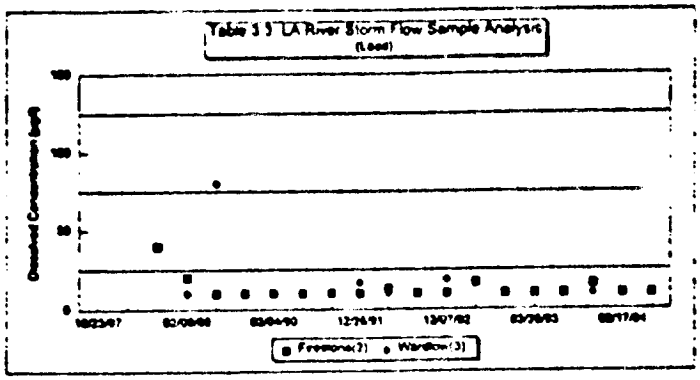
Detection Limit
10 ug/l

Criteria

Chronic 2.5 ug/l
Acute 65 ug/l



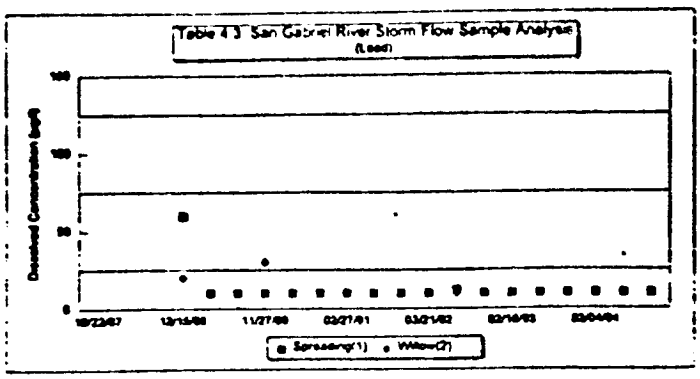




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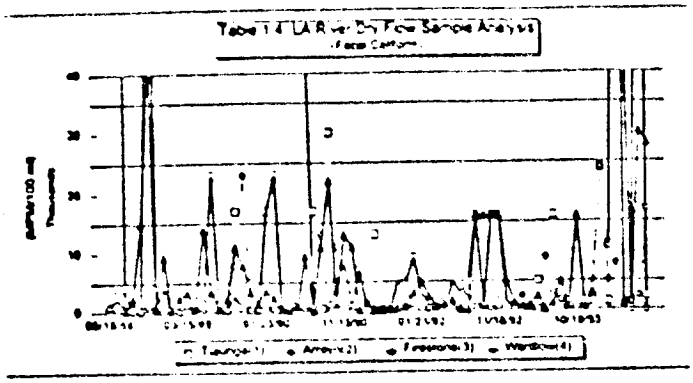
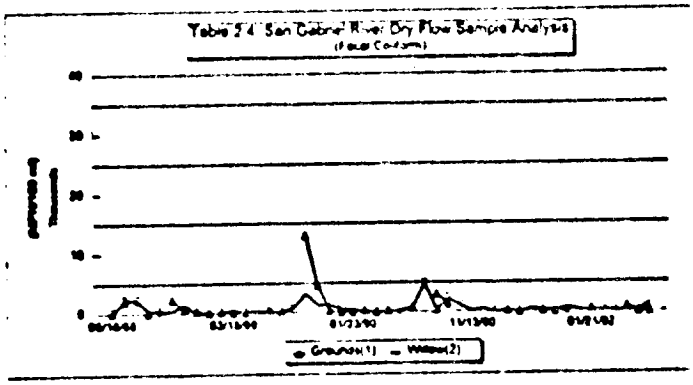
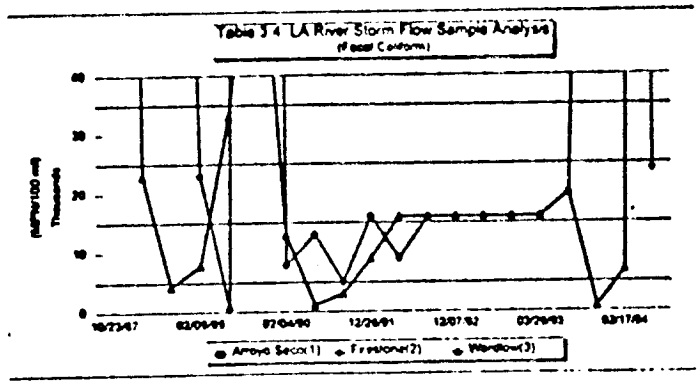
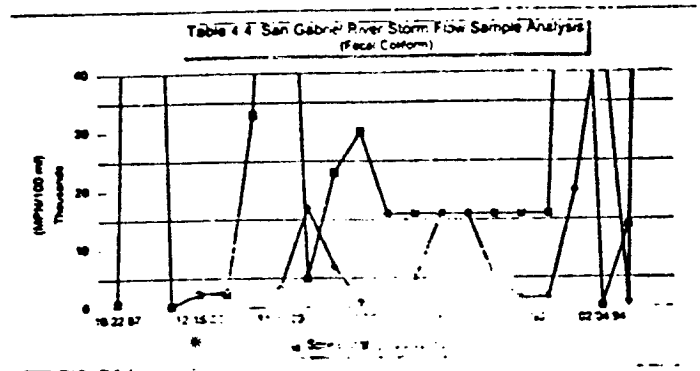
Figure 3d Fecal Coliform

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March 25, 1996

COMPARISON OF LOS ANGELES COUNTY DRAFT STORM WATER PERMIT WITH SIMILAR PERMITS IN ORANGE AND SANTA CLARA COUNTIES
EPA, Region 9

The California Regional Water Quality Control Boards (RWQCBs) are in the process of reissuing the "early" municipal storm water permits which were originally issued in 1990. The permits are considered "early" because they were issued prior to the final EPA storm water regulations of November, 1990. "Early" permit were issued in San Diego, Orange, Riverside, San Bernardino, Los Angeles, Santa Clara and Sacramento Counties. Final permits have now been reissued for Santa Clara, Orange, Riverside and San Bernardino Counties. Draft permits have been prepared for Los Angeles, San Diego and Sacramento Counties.

Los Angeles County and many of its 86 co-permittees have argued that the draft permit which has been prepared by the Los Angeles RWQCB is too detailed and contains excessive requirements. To evaluate this claim, EPA, Region 9 has prepared this comparison of the more controversial requirements of the Los Angeles County permit with the corresponding requirements of the Santa Clara County and Orange County permits. The Santa Clara County program is an outstanding program and was the winner of EPA's 1993 national award for excellence in storm water quality management. The Orange County program would be considered at least a representative, if not above average program.

Table 1 summarizes the principal requirements of concern in the Los Angeles County permit in comparison with the permits for Santa Clara County and Orange County. Appendix 1 discusses these requirements in more detail. Appendix 2 highlights principal areas where the Los Angeles County permit appears to be more stringent or more detailed than one or the other of the Santa Clara County or Orange County permits. The differences do not seem to be especially significant in most cases, however.

It should also be noted that the Los Angeles County permit does not reference the storm water program proposals in the permit applications as is done for the permits for Santa Clara County and Orange County. The Los Angeles RWQCB found the Los Angeles County permit application deficient in many respects and elected to write all the requirements into the permit. This factor contributes substantially to the length and detail of the Los Angeles County permit as compared to the other two permits.

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TABLE 1 - SUMMARY PERMIT COMPARISON

| Permit Requirements | Los Angeles | Santa Clara | Orange County |
|---|---|---|---|
| Receiving Water Limitations | Compliance Via BMPs | Compliance Via BMPs | Compliance Via BMPs[1] |
| Program Management | Implement Permittee Proposal[2] | Implement Permittee Proposal | Implement Permittee Proposal |
| Illicit Discharges | Inspection Schedule Developed By Permittees | Inspection Schedule Developed By Permittees | Inspection Schedule Developed By Permittees |
| | BMPs Required For Street and Sidewalk Washing | BMPs Required For Street and Sidewalk Washing Plus Review of 12 Other Discharges | |
| Industrial/ Commercial | | | |
| a) Inspections[3] | Specifies Inspection Schedule Plus Types Of Facilities To Be Inspected | Inspection Schedule Proposed By Permittees | Inspection Schedule Based On Other Insp. Programs |
| b) Specific BMPs | Includes Specific BMPs | Developed By Permittees | Developed By Permittees |
| New Developments[4] | Storm Water BMPs Required | Storm Water BMPs Required | Storm Water BMPs Required |
| Monitoring Requirements | Basic Program Plus Critical Source Monitoring | Basic Program Plus Pilot Projects | Basic Program Plus Upgrades To Meet Permit Goals |
| Street Sweeping | Once/Month Or More | Once/Month Or More | Once/Month Or More |

[1] Includes provision that permittees would not be violation of receiving water limitations if they implement required BMPs.

[2] More complicated due to 6 watersheds; an overall Executive Advisory Committee and individual Watershed Management Committees are required. Los Angeles RWQCB would delete proposed membership requirement.

[3] Inspections slightly more frequent in the Los Angeles County permit than in a proposal from the Santa Clara County permittees. For Orange County, the inspection frequency of the other programs (e.g. hazardous wastes) is slightly greater than the requirements of the Los Angeles permit. However, Orange County is still in the process of incorporating storm water into the other inspection programs and no specific schedule is included in the permit for this task.

[4] Slightly differing requirements on applicability and BMPs.

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APPENDIX 1 - COMPARISON OF PERMIT CONDITIONS OF PRINCIPAL CONCERN

1) Receiving Water Limitations:

The RWQCBs are attempting to standardize the language in all the State's municipal storm water permits concerning receiving water limitations. A workgroup was formed and model permit language was developed which appears to be close to being acceptable to all municipalities.

The model permit language essentially requires compliance with receiving water limitations via implementation of storm water BMPs. Storm water monitoring is required with additional BMPs as necessary to ensure compliance with the receiving water limitations. The model language also states that permittees will not be in violation of the permit provision requiring compliance with the receiving water limitations as long as they implement the required BMPs.

The model language was incorporated into the final permit for Orange County which was issued on March 8, 1996 by the Santa Ana RWQCB. The Santa Clara County permit and the draft Los Angeles County permit include similar language without, however, the provision that the permittees would be in compliance with the receiving water limitations if they implement the required BMPs. The Orange County permittees appear to be generally comfortable with the language in their permit.

EPA's National Urban Wet Weather Flows Advisory Committee met in March, 1996 to discuss a draft policy developed by EPA that addresses storm water permits and receiving water limitations. Under the draft policy, permittees would be presumed to comply with receiving water limitations as long as they implement required BMPs (provided this appears reasonable to the permitting authority). EPA is redrafting this policy in response to comments received in March from the State of California and others. EPA's Office of Water expects to provide its revised dr ft to interested persons by April 3, 1996. The redraft will likely include revised statements related to BMPs and presumptions regarding compliance with receiving water limitations. The Advisory Committee will consider the redrafted policy in April and May, after which EPA's Office of Water expects to issue its final policy.

2) Program Management

Several Los Angeles County co-permittees have objected to the permit requirements for program management and coordination. In particular, the draft permit requires the establishment of an

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Executive Advisory Committee (EAC) and also specifies the membership. In addition, Watershed Management Committees (WMCs) are mandated by the permit. A couple of co-permittees have argued that the EAC should not be required and that they should be allowed to choose their own organizational structure. A more common complaint pertains to the specification of the membership on the EAC.

The permit application submitted by Los Angeles County on behalf of the co-permittees proposed the same basic program management requirements as in the draft permit, including the establishment of the EAC and the WMCs. As such, it is not clear why any co-permittees would object to this structure, and it would seem likely that this issue would be easily resolvable. The draft permit does require, however, that each WMC's representative on the EAC come from the co-permittee with the largest population. This was not in the County's proposal and co-permittees feel that they should be allowed to select their own representatives. The Los Angeles RWQCB has agreed to this minor change.

Both the Santa Clara County and Orange County co-permittees voluntarily developed suitable implementation agreements to coordinate the individual storm water programs of the various permittees. The permits for these Counties simply require that the permittees follow through with their own proposals. With the above change, the Los Angeles County permit would in effect be comparable to the Santa Clara County and Orange County permits since all co-permittees would basically be implementing their own proposals.

In response to those co-permittees who have argued that the requirement for the EAC is illegal and not mandated by the CWA, we would point to NPDES regulations at 40 CFR 122.26(d)(2)(iv) which require "where necessary intergovernmental coordination" in developing and implementing a storm water management program. The EAC could be considered an appropriate means of ensuring the necessary coordination.

3) Illicit Discharges

The Los Angeles, Santa Clara and Orange County permits all require programs to prevent illicit discharges which are based on the requirements of the EPA regulations. The Santa Clara County permit requires that the co-permittees develop performance standards to set forth the level of activity (e.g., number of inspections) of the program. The Orange County permit requires submittal of a schedule for periodic inspections to be approved

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by the Santa Ana RWQCB. The Los Angeles County permit requires the development of a program which presumably would be similar to those developed in Santa Clara County and Orange County.

The Los Angeles County permit does go beyond the Orange County permit in the area of non-storm water discharges. The Los Angeles County permit specifically requires that BMPs must be developed for street and sidewalk washing. The Orange County permit provides that the permittees need not prohibit these discharges unless they are determined to be a source of pollutants.

The Santa Clara County permit also requires that BMPs be developed and implemented to reduce pollutants from street and sidewalk washing operations. In addition, the Santa Clara County permit requires that permittees evaluate a list of 12 other non-storm water discharges and consider the need for additional BMPs. Overall, in the area of illicit discharges, the Los Angeles County permit would seem to be midway in stringency between the Orange County and Santa Clara County permits.

4) Controls for Industrial/Commercial Sources

a) Inspections

The Los Angeles County permit sets forth the specific types of facilities which must be inspected and the inspection frequencies. In this regard the permit goes beyond the requirements of both the Orange County and Santa Clara County permits. The Santa Clara County permit requires that the co-permittees develop a performance standard for the industrial/commercial runoff control program including an appropriate inspection program. The Orange County permit requires that co-permittees incorporate storm water inspections into previously existing inspection programs (e.g., hazardous waste, pretreatment), and thus the inspection frequency and types of facilities which are inspected depend on the nature of these other inspection programs.

The Santa Clara County permittees have submitted their proposal for a performance standard for inspections to the San Francisco Bay RWQCB. The types of facilities which would be inspected are similar to the requirements of the Los Angeles County permit; however, the proposed inspections are slightly less frequent. For example:

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| Facility Type | Santa Clara | Los Angeles |
|---|---|---|
| Vehicle Repair Facility | once/2 years | three/5 years |
| Restaurants | once/3 years | twice/5 years |
| Facility with Pretreatment Permit | once/2 years | once/year |

As noted above, the types of facilities to be inspected in the Orange County program depend on the types already being inspected under the existing inspection programs. However, these types of facilities are similar to the facilities which would be inspected in the other Counties. The number of inspections conducted annually by the Orange County Health Care Agency is 5,500; another 7,000 inspections are conducted annually by Orange County fire departments. The City of Los Angeles has estimated that 12,000 inspections would be required per year under the proposed permit for the City alone. Given that the population of the City of Los Angeles is about 3.5 million (vs. 2.6 million for Orange County), the inspection frequency in the proposed Los Angeles County permit is slightly less than the Orange County permit. It should also be noted, however, that Orange County is still in process of incorporating storm water into the other inspection programs. No specific schedule is included in the Orange County permit to complete this task.

b) Specific BMPs

Many Los Angeles County co-permittees have objected to the highly specific BMPs which the draft permit requires for industrial and commercial facilities. Examples cited by the City of Long Beach include the requirement for regular sweeping of parking lots with more than 25 spaces, and the prohibition on the repair of machinery or vehicles in areas exposed to storm water, if they are visibly leaking oil or other fluids.

The Santa Clara County program is currently conducting a study of parking lot runoff, and the co-permittees have committed to consider appropriate parking lot BMPs after the study has been completed. The nature of the BMPs and the size of the affected facilities remain to be determined. The Orange County permit requires inspections of commercial and industrial facilities and general pollution prevention would be required (which could include regular sweeping). In addition, for new developments with a property owners association, sweeping of parking lots is required prior to the wet season.

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With regards to the other issue involving the repair of machinery or vehicles, the Santa Clara County and Orange County permits are less precise than the Los Angeles County permit. The Santa Clara County permit requires a performance standard for industrial/commercial runoff control. The draft performance standard which has been submitted by the co-permittees would not necessarily prohibit outdoor repairs, but would require appropriate BMPs for such activities. The Orange County permit would essentially require BMPs based on the judgment of the co-permittees. Overall, the Orange County and Santa Clara County permits are less specific than the Los Angeles permit.

5) Controls for New Developments

The Los Angeles County co-permittees have expressed various concerns regarding the proposed requirements for storm water controls for new developments. In particular, co-permittees object to the classification scheme for prioritizing projects. Projects are classified as high priority, priority or limited priority depending on detailed criteria in the permit. In addition, objections have been raised regarding the requirement for a storm water mitigation plan for priority and high priority projects.

The requirement for a storm water mitigation plan does not seem to be excessive considering the requirements of the Santa Clara County and Orange County permits. The Santa Clara County permit requires the development of a performance standard by co-permittees by September 1, 1996. Co-permittees would develop and then require specific BMPs to be included in development projects which are proposed. The equivalent of a storm water mitigation plan would be required to be submitted by a developer for review by the appropriate municipality. The specific BMPs remain to be developed, but would be based on a 1994 guidance memorandum from the San Francisco Bay RWQCB. In as in the proposed Los Angeles County permit, the guidance includes a 3-tier scheme for project prioritization.

The Orange County permit also requires the equivalent of a storm water mitigation plan to be submitted by developers for review. Orange County has also developed detailed guidance for developers regarding appropriate storm water BMPs. BMPs are required "in keeping the size and type of development."

Overall, the Los Angeles County permit requirements do not seem excessive in comparison to the Santa Clara County and Orange County permits.

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6) Monitoring Requirements

In most respects, the monitoring requirements of the Los Angeles County permit are similar to the requirements of the Orange County and Santa Clara County permits. Few adverse comments were received. One particular requirement in the Los Angeles County permit which did generated concerns is the requirement for critical source/BMP monitoring. Los Angeles County would be required to monitor runoff from 5 (and possibly 3 more) particular types of sources (industrial, commercial, or construction sites), and subsequently test appropriate BMPs at the sites. Other co-permittees would monitor and evaluate BMPs for 5 more critical sources. Los Angeles County noted that in its recent settlement agreement with NRDC, the County has agreed to implement this type of project; however, the County suggested certain changes to the program set forth in the draft permit. Other co-permittees argued that this type of research is excessive as a permit condition.

The Santa Clara County permit requires the submittal of an annual monitoring program proposal, and also sets forth the general objectives of the monitoring program. Special studies or pilot projects are expected to be part of the proposal in order for the proposal to be approvable, and several such studies are underway or planned by the co-permittees. Examples include a brake pad study and several other metals reductions studies, a parking lot study, a street sweeping study and others.

The Orange County permit establishes various goals for the monitoring program (which include research concerning pollutant sources and BMPs) and requires the submittal of a upgraded monitoring program in 1997. However, the permit also recognizes that the goals may not be achievable in this permit term. It is unclear but probably doubtful that research at the level required by the Los Angeles County permit would be required. Nevertheless, it should also be pointed out that the Orange County program did conduct some pilot projects in the first permit term including monitoring of golf course runoff and runoff from new developments.

Overall, the permit requirements of the Los Angeles County permit related to critical source monitoring would exceed the requirements of the Orange County permit. The source identification and control program required by the Santa Clara County permit, however, would seem comparable to the requirements of the Los Angeles County permit.

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7) Street Sweeping

In a cost analysis prepared by the Los Angeles County co-permittees, street sweeping was cited as a particularly high cost item. The cost specifically attributable to the storm water permit was not estimated, however. In comparison with the Santa Clara County and Orange County permits, the requirements of the Los Angeles County permit regarding street sweeping are not excessive.

The Los Angeles County permit requires sweeping of curbed streets at least monthly, and more frequently where feasible for areas which generate high levels of refuse. In Santa Clara County, the sweeping frequency varies among cities, but generally exceeds once/month. Examples are: Palo Alto, once/week or more; Mountain View, once or twice/month; San Jose, weekly to monthly. In addition, a study is required to investigate improved street sweeping methods with revisions in sweeping programs to be implemented based on the results of the study. In Orange County, sweeping frequencies are also on the order of monthly or more frequent.

The street sweeping requirements of the Los Angeles County permit were not among the more controversial aspects of the permit (the City of Los Angeles did recommend that the monthly frequency be considered a target rather than a requirement). However, the costs associated with the Los Angeles County street sweeping should be comparable to the programs of the other Counties.

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APPENDIX 2 - KEY LOS ANGELES COUNTY PERMIT REQUIREMENTS WHICH ARE MORE DETAILED OR EXCEED THE REQUIREMENTS OF THE SANTA CLARA COUNTY AND/OR ORANGE COUNTY PERMITS

- *Receiving water limitations* - the Los Angeles County permit omits the provision in the Orange County permit that the permittees would not be in violation of receiving water limitations if they implement the required BMPs.

- *BMPs for street and sidewalk washing* - specifically included in the Santa Clara County permit, but not Orange County. The Santa Clara County permit also requires review of 12 other types of non-storm water discharges for possible BMP requirements.

- *Specific inspection program for industrial/commercial businesses* - inspection program is developed by the Santa Clara and Orange County permittees, rather than specified by the permit. The proposed Los Angeles County inspection frequency is slightly greater than a proposal from Santa Clara County, but slightly less than Orange County's frequency. Orange County plans to incorporate storm water inspections into other inspection programs (e.g., hazardous waste). However, Orange County is still in the process of incorporating storm water into the other inspection programs and no specific schedule is included in the permit to complete this task.

- *Specific BMPs for industrial/commercial businesses* - these requirements are developed by the Santa Clara County and and Orange County permittees rather than specified by the permit. Similar BMPs are likely to be required by Santa Clara and Orange County, but more flexibility is provided.

- *Critical source monitoring* - comparable requirements are found in the Santa Clara County permit, but the Los Angeles County permit generally exceeds Orange County requirements in this area.

VOL 19

00533

7/1/96 RWQCB Overhead Presentation : Xai. Swamikannu

# FEDERAL STORM WATER REGULATIONS
# THE CLEAN WATER ACT

## II. ILLICIT CONNECTIONS/ DISCHARGES

develop program and schedule to detect and remove illicit discharges and improper disposal
[122.26(d)(2) (iv)(B)]

develop program to inspect, implement, and enforce local laws to prevent illicit discharges.
[122.26(d)(2) (iv)(B)(1)]

develop procedures to conduct on-going field screening activities
[122.26(d)(2) (iv)(B)(2)]

develop procedures to investigate illicit discharges based on the field screen
[122.26(d)(2) (iv)(B)(3)]

develop procedures to prevent, contain, and respond to spills
[122.26(d)(2) (iv)(B)(4)]

develop program to promote, publicize, and facilitate public reporting of illicit discharges
[122.26(d)(2) (iv)(B)(5)]



R0064179

# "EXEMPTED" DISCHARGES
# 40 CFR 122.26(d)(2)(iv)(B)(1)

Water line flushing

Potable water sources

Uncontaminated pumped ground water

Uncontaminated ground water infiltation

Foundation drains

Footing drains

Water from crawl space pumps

Dechlorinated swimming pool discharges

Street wash water

Emergency firefighting flows

Landscape irrigation

Irrigation water.

Lawn watering

Rising ground water

Springs

Diverted stream flows

Flows from riparian habitats & wetlands

Air conditioning condensation

Individual residential car washing



R0064180

# FEDERAL STORM WATER REGULATIONS
# THE CLEAN WATER ACT

## III. INDUSTRIAL/ COMMERCIAL SOURCES

provide inventory of industrial sites by watershed
[122.26(d)(2)(ii)]

develop structural and source control measures for pollutants from commercial areas
[122.26(d)(2)(iv)(A)]

develop a program to monitor and control pollutants from industrial facilities
[122.26(d)(2)(iv)(C)]

develop priorities and procedures for inspection of industrial facilities
[122.26(d)(2)(iv)(C)(1)]

R0064181

# FEDERAL STORM WATER REGULATIONS
# THE CLEAN WATER ACT

## IV. DEVELOPMENT PLANNING/ CONSTRUCTION

provide inventory of construction sites by watershed
[122.26(d)(2)(ii)]

develop a comprehensive plan to implement, and enforce controls from new development and significant redevelopment
[122.26(d)(2)(iv)(A)(2)]

develop a program to implement and maintain BMPs to reduce pollutants from construction sites [122.26(d)(2)(iv)(D)]

develop procedures for site planning to consider water quality impacts
[122.26(d)(2)(iv)(D)(1)]

develop procedures to prioritize, inspect and enforce controls at construction sites
[122.26(d)(2)(iv)(D)(3)]

develop educational and training measures for construction site operators
[122.26(d)(2)(iv)(D)(4)]

R0064182

# FEDERAL STORM WATER REGULATIONS
# THE CLEAN WATER ACT

## V. PUBLIC AGENCY

develop maintenance activities and maintenance schedule for structural controls [122.26(d)(2)(iv)(A)(1)]

develop practices for operating and maintaining public streets, roads and highways to reduce pollutants [122.26(d)(2)(iv)(A)(3)]

develop procedures to assure flood management projects consider water quality impacts [122.26(d)(2)(iv)(A)(4)]

develop program to monitor and inspect waste management facilities [122.26(d)(2)(iv)(A)(5)]

develop program to reduce pollutants from application of pesticides, herbicides, and fertilizers [122.26(d)(2)(iv)(A)(6)]

develop a program to implement and maintain bmps to reduce pollutants from construction sites [122.26(d)(2)(iv)(D)]

develop program to limit infiltration from sanitary sewer systems [122.26(d)(2)(iv)(B)(7)]

R0064183

# FEDERAL STORM WATER REGULATIONS
# THE CLEAN WATER ACT

## VI. PUBLIC INFORMATION/ PARTICIPATION

control storm water pollutants from residential areas
[122.26(d)(2)(iv)(A)]

develop educational activities/ information materials to facilitate the proper management of used oil and toxic materials
[122.26(d)(2)(iv)(B)(6)]

## VII. MONITORING

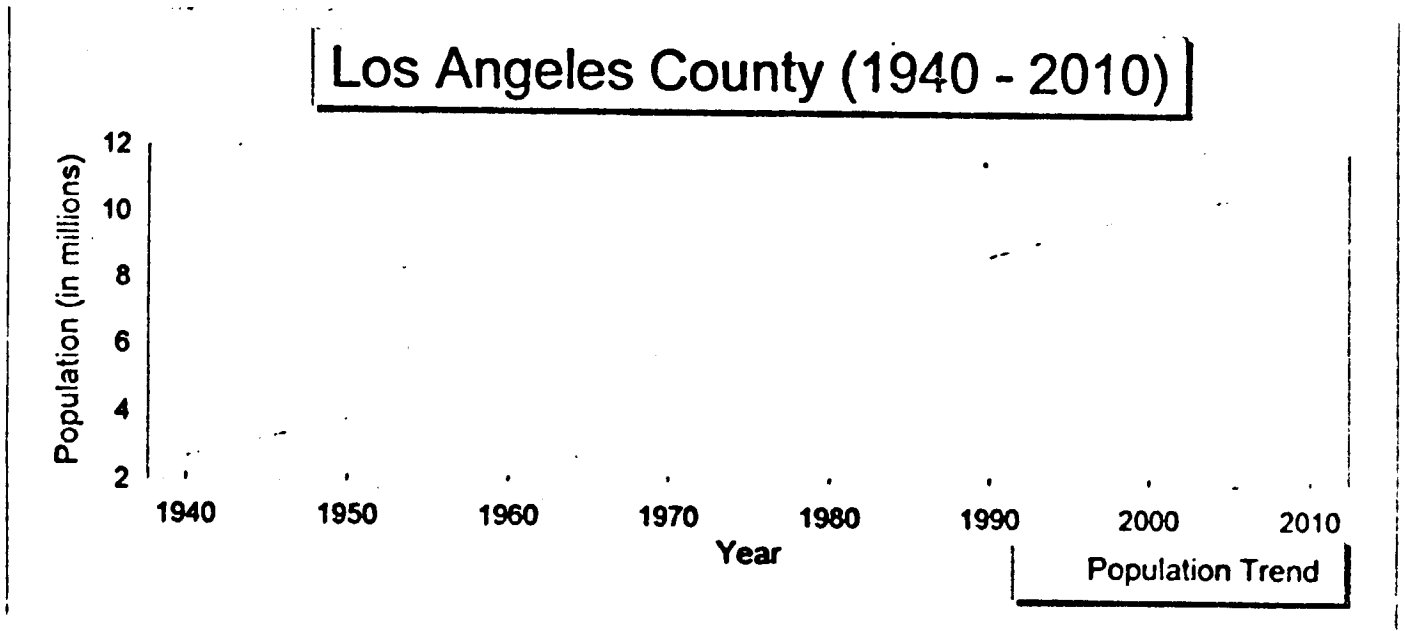
monitor and collect quantitative data on storm water pollutants in MS4 discharges
[122.26(d)(2)(iii)]

develop a monitoring program for storm water discharges from industrial sites
[122.26(d)(2)(iv)(C)(2)]

estimate reductions in pollutant loads as a result of program implementation
[122.26(d)(2)(v)]

R0064184

50503 VOL 19




R0064185



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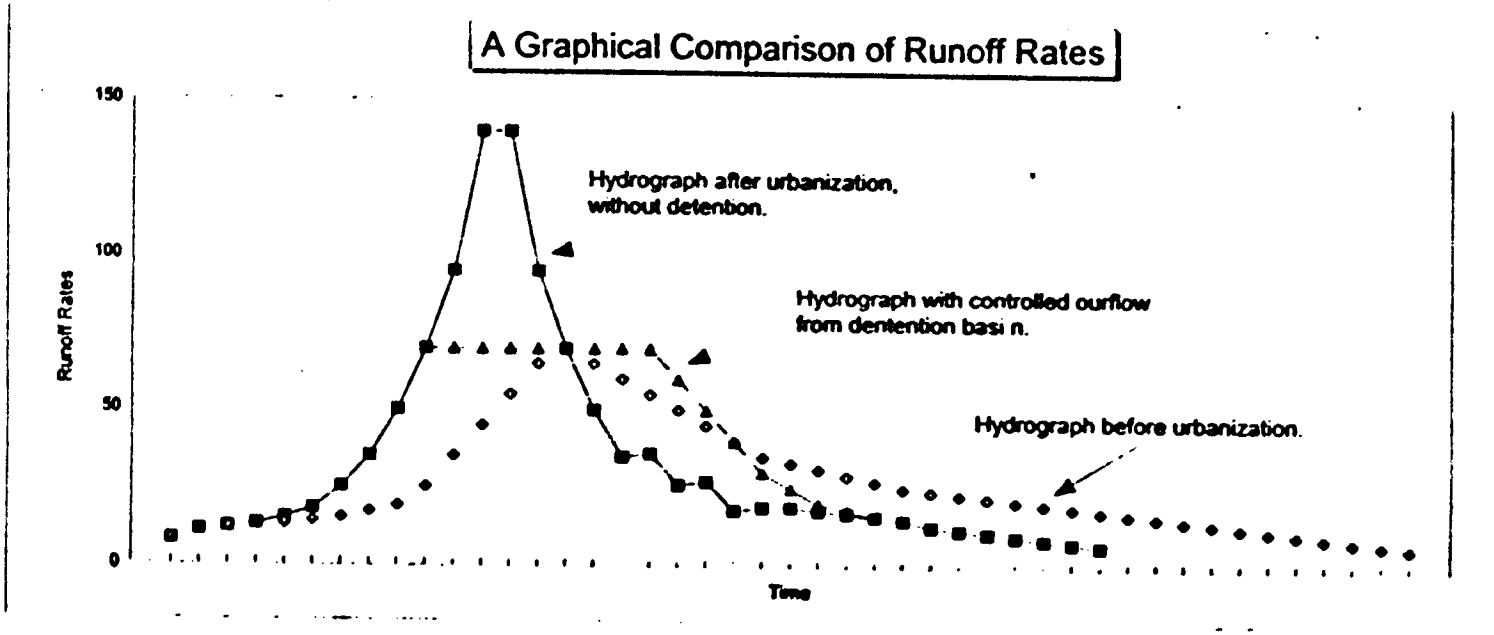
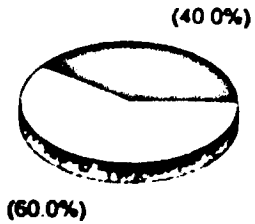

A Graphical Comparison of Runoff Rates
150
100
50
0
Runoff Rates
Hydrograph after urbanization, without detention.
Hydrograph with controlled ourflow from dentention basi n.
Hydrograph before urbanization.
Time

R0064186

Zinc (1986)




Zinc (1992)




From 1986 to 1992, Zinc emissions from Sewage treatment plants decreased from 75% to 40% (a 35% reduction).

Urban Runoff correspondingly represents a greater portion (60%) of total Copper loadings.

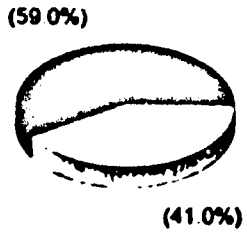


R0064187

## Copper (1986)




## Copper (1992)



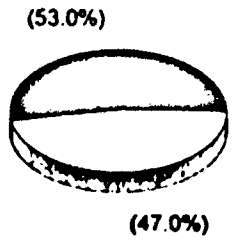

From 1986 to 1992, Copper emissions from Sewage treatment plants decreased from 90% to 59% (a 31% reduction).

Urban Runoff correspondingly represents a greater portion (41%) of total Copper loadings.

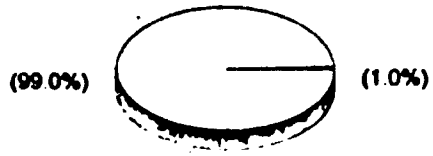


R0064188

## Lead (1986)




## Lead (1992)




From 1986 to 1992, Lead emissions from Sewage treatment plants decreased from 53% to 1% (a 52% reduction).

Urban Runoff correspondingly represents a greater portion (99%) of total Lead loadings.

R0064189



VOL 19

# SPECIFIC EXAMPLES

What do heavy metals do to fish?

- Impair reproduction
- Cause epidermal tumors
- Cause liver abnormalities
- Bioaccumulate making them unsafe to eat

What do pathogens do to swimmers and bathers?

- Cause skin infections
- Cause gastroenteritis
- Cause spinal meningitis
- Infectious hepatitis

R0064190



VOL 19

# SOURCES OF STORM WATER POLLUTANTS

| | POLLUTANTS | | | | | | | ACTIONS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SOURCES | NUTRIENTS | EXCESS SEDIMENT | HEAVY METALS | TRASH | PATHOGENS | PESTICIDES | TOXIC ORGANICS | | | |
| ILLICIT CONNECTIONS | ✓ | | ✓✓✓ | | ✓✓✓ | ✓ | ✓ | | | |
| ILLICIT DISCHARGES | ✓ | | ✓✓✓ | | ✓✓✓ | ✓ | ✓✓ | | | |
| INDUSTRIAL SITES | ✓ | ✓ | ✓✓✓ | ✓ | ✓ | ✓ | ✓✓✓ | | | |
| COMMERCIAL SITES | ✓ | ✓ | ✓ | ✓✓ | ✓ | | ✓ | | | |
| CONSTRUCTION SITES | ✓✓ | ✓✓✓ | ✓ | ✓ | | ✓ | ✓ | | | |
| MUNICIPAL FACILITIES | ✓ | | ✓✓✓ | ✓ | | ✓✓ | ✓ | | | |
| RESIDENTIAL AREAS | ✓✓ | ✓ | ✓ | ✓ | ✓ | ✓✓ | ✓ | | | |
| STREETS AND ROADS | ✓ | ✓ | ✓✓✓ | ✓✓✓ | ✓ | ✓✓ | ✓ | | | |
| HIGHWAYS | ✓ | ✓ | ✓✓✓ | ✓✓ | ✓ | ✓✓ | ✓ | | | |
| NATURAL PROCESSES | ✓ | ✓✓✓ | ✓ | | | | | | | |
| AERIAL DEPOSITION | ✓ | | ✓ | | | | ✓ | | | |
| | | | | | | | | | | |
| **IMPACT** | | | | | | | | | | |
| AQUATIC LIFE | x | x | x | x | | x | x | | | |
| DRINKING WATER | x | | x | | x | x | x | | | |
| SEAFOOD CONSUMPTION | | | x | | x | x | x | | | |
| HUMAN HEALTH | | | x | | x | x | x | | | |
| HUMAN RECREATION | x | x | | x | x | | | | | |
| TOURISM | x | | | x | x | | | | | |



R0064191

VOL 19

# SOURCES OF STORM WATER POLLUTANTS AND PERMIT ACTIONS

| | POLLUTANTS | | | | | | | ACTIONS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SOURCES | NUTRIENTS | EXCESS SEDIMENT | HEAVY METALS | TRASH | PATHOGENS | PESTICIDES | TOXIC ORGANICS | EDUCATION | BMPs DEVELOPED | SPECIFIED BMPs |
| ILLICIT CONNECTIONS | | | | | | | | ●● | ●●● | ● |
| ILLICIT DISCHARGES | | | | | | | | ●● | ●●● | ● |
| INDUSTRIAL SITES | | | | | | | | ●●● | ●● | ● |
| COMMERCIAL SITES | | | | | | | | ●●● | ●● | ● |
| CONSTRUCTION SITES | | | | | | | | ●● | ●● | ● |
| MUNICIPAL FACILITIES | | | | | | | | ●●● | ●●● | ● |
| RESIDENTIAL AREAS | | | | | | | | ●●● | | |
| STREETS AND ROADS | | | | | | | | ● | ●●● | ● |
| HIGHWAYS | | | | | | | | CalTrans | Permit | |
| NATURAL PROCESSES | | | | | | | | | | |
| AERIAL DEPOSITION | | | | | | | | | | |
| | | | | | | | | | | |
| **IMPACT** | | | | | | | | | | |
| AQUATIC LIFE | x | x | x | x | | x | x | | | |
| DRINKING WATER | x | | x | | x | x | x | | | |
| SEAFOOD CONSUMPTION | | | x | | x | x | x | | | |
| HUMAN HEALTH | | | x | | x | x | x | | | |
| HUMAN RECREATION | x | x | | x | x | | | | | |
| TOURISM | x | | | x | x | | | | | |



R0064192

# SOURCES OF STORM WATER POLLUTANTS AND THEIR IMPACT

| | POLLUTANTS | | | | | | | ACTIONS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SOURCES | NUTRIENTS | EXCESS SEDIMENT | HEAVY METALS | TRASH | PATHOGENS | PESTICIDES | TOXIC ORGANICS | EDUCATION | BMPs DEVELOPED | SPECIFIED BMPs |
| ILLICIT CONNECTIONS | ✓ | | ✓✓✓ | | ✓✓✓ | ✓ | ✓ | ●● | ●●● | ● |
| ILLICIT DISCHARGES | ✓ | | ✓✓✓ | | ✓✓✓ | ✓ | ✓✓ | ●● | ●●● | ● |
| INDUSTRIAL SITES | ✓ | ✓ | ✓✓✓ | ✓ | ✓ | ✓ | ✓✓✓ | ●●● | ●● | ● |
| COMMERCIAL SITES | ✓ | ✓ | ✓ | ✓✓ | ✓ | | ✓ | ●●● | ●● | ● |
| CONSTRUCTION SITES | ✓✓ | ✓✓✓ | ✓ | ✓ | | ✓ | ✓ | ●● | ●● | ● |
| MUNICIPAL FACILITIES | ✓ | | ✓✓✓ | ✓ | | ✓✓ | ✓ | ●●● | ●●● | |
| RESIDENTIAL AREAS | ✓✓ | ✓ | ✓ | ✓ | ✓ | ✓✓ | ✓ | ●●● | | |
| STREETS AND ROADS | ✓ | ✓ | ✓✓✓ | ✓✓✓ | ✓ | ✓✓ | ✓ | ● | ●●● | ● |
| HIGHWAYS | ✓ | ✓ | ✓✓✓ | ✓✓ | ✓ | ✓✓ | ✓ | CalTrans | Permit | |
| NATURAL PROCESSES | ✓ | ✓✓✓ | ✓ | | | | | | | |
| AERIAL DEPOSITION | ✓ | | ✓ | | | | ✓ | | | |
| | | | | | | | | | | |
| **IMPACT** | | | | | | | | | | |
| AQUATIC LIFE | x | x | x | x | | x | x | | | |
| DRINKING WATER | x | | x | | x | x | x | | | |
| SEAFOOD CONSUMPTION | | | x | | x | x | x | | | |
| HUMAN HEALTH | | | x | | x | x | x | | | |
| HUMAN RECREATION | x | x | | x | x | | | | | |
| TOURISM | x | | | x | x | | | | | |



R0064193

VOL 76

# PERMIT DEVELOPMENT

- Categories - As in federal storm water regulations
- Choices of Action
  - Education (Voluntary)
  - Compliance schedule to develop BMPs
  - Specific BMPs
- Negotiation

R0064194

# "EXEMPTED" NON-STORM WATER DISCHARGES CURRENTLY REGULATED

| TYPE OF DISCHARGE | CONCERNS | REGULATORY APPROACH/ COMMENTS |
|---|---|---|
| Water line flushing<br>- Hydrotest water | Residual chlorine<br>Sediments | Board Order No. 91-111<br>(NPDES No. CAG994002) |
| Potable water sources | Residual chlorine<br>Sediments, cleaning chemicals, downstream erosion | Proposed general permit pending at the State Board<br><br>Regional Board encourages BMPs to minimize and/or beneficially reuse reservoir drainage. Cleaning wastes should be treated, hauled away, or sewered. |
| Uncontaminated ground water<br>- pumped, infiltration,<br>- foundation/ footing drains | Depending on land use & contamination history, may draw in contamination plumes: HCs, solvents, metals | Commercial/Industrial/Construction Dewatering - Board Order No. 91-092 (NPDES No. CAG994001); Board encourages reuse of pumped ground water. |
| Swimming pool discharges | Residual chlorine, TSS | Commercial & public swimming pools - individual NPDES permits. Filter backwash are mostly sewered. |
| Irrigation - reclaimed water reuse | Res. chlorine, salts, ground water contamination | Water reclamation requirements. Title 22 prohibits excessive runoff. |
| Water from crawl space pumps | Contaminated ground water seepage, oil & grease | DWP is currently characterizing discharges from their utility vaults, and if necessary, determine appropriate BMPs. |



R0064195

# 'STORM WATER PROGRAM TASKS

| PROGRAM COMPONENT | TASKS | EDUCATION | BMPs DEVELOPED | SPECIFIED BMPs |
|---|---|---|---|---|
| ILLICIT CONNECTIONS | Develop and implement program to eliminate illicit connections | | ●●● | |
| ILLICIT DISCHARGES | Develop and implement program to eliminate illicit discharges | | ●●● | |
| | Prohibit or control by law specific illicit discharge activity | | | ● |
| | | | | |
| INDUSTRIAL/ | Develop and maintain facilities list as a public record | ● | ● | ● |
| COMMERCIAL | Develop and use BMP checklists by industry | ●●● | ●● | ● |
| | Prohibit or control by law activities that pollute storm water | | | ● |
| | Make educational site visits to industrial sites | ●●● | ●● | |
| | Make educational site visits to restaurants, gas stations | ●●● | ●● | |
| | | | | |
| DEVELOPMENT | Develop BMPs for planning and permitting of development projects | | ●● | |
| PLANNING\ | Develop model Urban Runoff Mitigation Plan guidelines | | ●● | |
| CONSTRUCTION | Develop checklist for potential impact and identify exempted projects | | ●● | |
| | Develop guidelines for EIRs so as to consider storm water quality | | ●● | |
| | Implement planning and permitting measures that have been developed | | ●● | |
| | Develop and implement program to inform developers and contractors | ●● | | |
| | Develop and maintain construction projects list as a public record | ● | | |
| | Develop minimum recomended requirements and BMPs for all projects | | ●● | |
| | Implement a regulatory program for implementation of construction BMPs | ● | ●● | |
| | Develop and implement an inspection program | ● | ●●● | |
| | | | | |



R0064196

# 'STORM WATER PROGRAM TASKS

| PROGRAM COMPONENT | TASKS | EDUCATION | BMPs DEVELOPED | SPECIFIED BMPs |
|---|---|---|---|---|
| PUBLIC AGENCY | Develop and implement specific BMPs at sewage systems operations | ●●● | ●●● | ● |
| | Develop and implement pollution prevention at vehicle maintenance sites | | | |
| | Develop and implement pollution prevention at parks and recreation sites | | ●● | ● |
| | Develop and implement BMPs for storm drain operation and maintenance | | ●● | ● |
| | Develop and implement BMPs for streets and roads | | ●● | ● |
| | Develop and implement BMPs during flood management planning | | ●● | ● |
| | Develop and implement BMPs at municipal parking facilities | | ●● | ● |
| PUBLIC INFORMATION/ PUBLIC PARTICIPATION | Implement a short-term outreach program | ●●● | | ● |
| | Develop and implement a 5 year education | ●●● | ●●● | |
| MONITORING PROGRAM | Develop and maintain a monitoring plan | | ●● | |
| | Monitor to evaluate land-uses | | | ●● |
| | Monitor to evaluate mass emissions | | | ●● |
| | Monitoring to identify critical sources | | ●● | |
| | Monitor to evaluate BMPs and effectiveness | | ●● | |
| | Monitor to evaluate receiving water impacts | | | ●● |
| | Implement plume study to identify fate and dispersion of pollutants | | | ●● |
| | Implement toxicity study | | | ●● |



R0064197

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
Glendale, California
May 6, 1996
393rd Regular Meeting

ITEM: 2

SUBJECT: Approval of Minutes of the Regular Meeting held on April 1, 1996.

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00073

DRAFT DRAFT DRAFT

VOL 19 3-4 0074

Minutes of 392nd Regular Meeting
April 1, 1996
City Council Chambers
613 East Broadway
Glendale, California

INTRODUCTION

1. The meeting was called to order by Chairman Keston at 9:05 a.m.

Board Members Present

Jack Coe, Charlotte Craven, Clark Drane, Michael Keston, Beth Rogers, John Slezak, Charles Vernon, Larry Zarian

Board Members Absent

None

Staff Present

Robert P. Ghirelli, Catherine Tyrrell, Jorge León, Robyn Shipley, Anne Saffell, Hank Yacoub, Arthur Heath, Roy Sakaida, Winnie Jesena, John Lewis, Mark Pumford, Albert Novak, Rod Nelson, David Bacharowski

Others Present

Mary Jane Forster, State Board Member
Jane M. Bray, Bray Consulting
Jacqueline Lambrichts, self
Dennis Hagnes, Los Angeles City Harbor Department
Carole Missirian, Lockheed Martin Corporation
Dave Leu, Clayton Environmental
Tim Hersch, self
John D. Long, Redian Internation LLC
Ron Halsey, Brown & Caldwell
Dave Soreni, Peck Road Gravel Pit
Barnia Szabo, H.N.P.
Matt Nusenow, Delta Environmental Consultants
Chris Patton, self
Bob Kanter, Port of Long Beach



000003

Rick Sase, Main San Gabriel Basin Watermaster
Lisa Anderson, Metropolitan Water District of So. California
Doug Beach, Ventura County EHD
Dave Salter, Ventura County EHD
Mike Huggins, Wayne Perry, Inc.
Gordon Stewart, National Environmental, Inc.
Kathy Letcher, Metropolitan Transportation Authority
Dorothy Sperry, Metropolitan Transportation Authority
Katherine Winsor, Pacific Environmental Group
Jovita Pajunlio, U.S. Environmental Protection Agency
Cat Kuhlman, U.S. Environmental Protection Agency
Eugene Browley, U.S. Environmental Protection Agency
Zafar Kanmi, City of Los Angeles
Gary Hildebrand, Los Angeles County Public Works
Charles Gale, BIA/SC
Jeff Wilson, WSPA

2. Approval of Minutes of the Regular Meeting held on February 26, 1998.

There was a motion to adopt the minutes.

MOTION: By Mr. Zarian, seconded by Ms. Craven, and approved on a voice vote.

**UNCONTESTED ITEMS**

3. Uncontested Items Calendar.

Item 4.1 (Anacapa Marine Services) and Item 8 (Consideration of Proposed 1997 State Revolving Fund (SRF Loan Program Priority List for Fiscal Years 1996-1997 Through 2000-2001) were pulled from the consent calendar for discussion. A change sheet was issued for Item 8.1. After discussion of both items, there was a motion to adop the consent calendar.

MOTION: Mr. Drane, seconded by Mr. Zarian and approved on a voice vote with Mr. Slezak abstaining on Item 8.

**NPDES Requirements**

NEW

| | | |
|---|---|---|
| 4.1 | Anacapa Marine Services, Oxnard | CA006385 |
| 4.2 | McWhorter Technologies, Inc., Lynwood | CA006390 |

RENEWAL

| | | |
|---|---|---|
| 4.3. | Chevron U.S.A., Inc. (Van Nuys Terminal), Van Nuys | CA005929 |



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R0064200

NPDES Requirements - Rescission

| | | |
|---|---|---|
| 5.1 | W & M Partners Development Corporation, Los Angeles | CA0061531 |
| 5.2 | Abraham Moradzudeh & Sam Shaou, West Hollywood | CA0061221 |
| 5.3 | Douglas, Emmet Joint Venture Village on Canon, Beverly Hills | CA0060097 |
| 5.4 | American Home Mortgage Corporation (Former Gasoline Service Station), Los Angeles | CA0060771 |
| 5.5 | Hallwood, Inc. dba Chase Brothers Dairy | CA0062545 |
| 5.6 | Elmer George Friend Estate, Ojai | CA0060379 |

Non-NPDES Requirements

NEW

| | | |
|---|---|---|
| 6.1 | Hugo Neu-Proler Company, Terminal Island | 90-047 |

REVISION

| | | |
|---|---|---|
| 6.2 | Social Model Recovery Systems, Inc. (River Community Sewage Treatment Plant), Azusa | 71-047 |
| 6.3 | TCL Consent Order Study Area, Wilmington | 65-121 |
| 6.4 | S.L.S. & N., Inc. (Peck Road Gravel Pit Landfill), Monrovia | 82-017 |

Non-NPDES Requirements - Rescission

| | | |
|---|---|---|
| 7.1 | Mobil Oil Corporation, Torrance | 85-007 |
| 7.2 | Freight Terminals, Inc. (Heritage Park), Commerce | 87-011 |
| 7.3 | Unocal Torrance Tank Farm, Torrance | 100.315 |
| 7.4 | Cusenza Partnership, Woodland Hills | 91-001 |
| 7.5 | Michael D. Joseph, et al., Northern Trust of California (Former Texaco Service Station), Reseda | 92-049 |
| 7.6 | Los Angeles County Fire Department Camp No. 9, Angeles National Forest | 55-166 |
| 7.7 | Department of Water Resources (Pyramid Lake Powerplant), Castaic | 79-021 |

OTHER BUSINESS

8. Consideration of Proposed 1997 State Revolving Fund (SRF) Loan Program Priority List for Fiscal Years 1996-1997 Through 2000-2001.

*Chairman Keston asked that a memo be sent to the board which prioritizes the projects within the categories.*

PUBLIC FORUM



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R0064201

9. Public Forum.

There were no speakers.

INFORMATION ITEMS

11. Staff Report on the Revised Interim Site Assessment and Cleanup Guidebook.

*Staff member Arthur Heath gave a staff report on the interim guidebook. The board directed staff to send them a list of sites awaiting joint EPA/RWQCB NFA letters and the "final" guidebook when available.*

10. Staff Report on Closure Criteria for Low Risk Fuel Contamination Sites.

*Staff member Anne Saffell gave a staff report on proposed closure criteria for low risk cases. The board directed staff to consider options available to accelerate the closure rate of low risk UST cases, modify the management plan if necessary, and report back to the board.*

12. Board member Communications.

*The following issues were discussed:*

*Brownfields Task Force [B. Rogers] - recommended staff develop proposal on cost/risk/benefit case study using "brownfields".*

*Monitoring cost factsheets [C. Craven] - recommended staff use factsheets to identify "big ticket" cost items*

*Groundwater pollution in the Oxnard Plain [J. Slezak] - recommended staff review nitrate problems in the Oxnard plain.*

*Calleguas Creek Watershed [C. Craven, B. Rogers] - recommended staff update landowners list: add property owners in "flood plain", check "Mary Smith Trust" and send outline of permit issues to board.*

13. Executive Officer's Report.

Dr. Ghirelli updated the board on the list of priority action items.

14. Closed Session.

There was not a closed session.

ADJOURNMENT

15. Adjournment.

The meeting adjourned at 11:25 a.m. to the Storm Water Permit Study Session.



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R0064202

MOTION: Ms. Craven, seconded by Mr. Vernon, and approved on a unanimous voice vote.

Adjournment to the Regular Meeting of May 6, 1996, at 9:00 a.m., 613 East Broadway, Glendale, California.

STORM WATER PERMIT STUDY SESSION

*Vice Chairman Slezak opened the informal study session to discuss the ongoing storm water permit processes. Members Keston and Zanan were not present for the session. Staff members Catherine Tyrrell and Xavier Swamikannu presented background information as well as framework for the permit. Catherine Kuhlman of USEPA presented a comparison of the Los Angeles Permit with similar permits in Orange and Santa Clara Counties.*

The study session was adjourned at 12:40 pm.



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R0064203

VOL 19 00078

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
Camarillo, California
June 10, 1996
394th Regular Meeting

ITEM: 3

SUBJECT: Approval of Minutes of the Regular Meeting held on May 6, 1996.

VOL 19

00079



R0064204

DRAFT DRAFT DRAFT

VOL 19

Minutes of 393rd Regular Meeting
May 6, 1996
City Council Chambers
613 East Broadway
Glendale, California

INTRODUCTION

1. The meeting was called to order by Chairman Keston at 9:05 a.m.

Board Members Present

Jack Coe, Charlotte Craven, Clark Drane, Michael Keston, John Slezak, Charles Vernon, Larry Zarian

Board Members Absent

Beth Rogers

Staff Present

Robert P. Ghirelli, Catherine Tyrrell, Jorge León, Robyn Shipley, Dennis Dasker, Anne Saffell, Hank Yacoub, Arthur Heath, Roy Sakaida, John Lewis, Mark Pumford, Rod Nelson, Veronica Alpuche-Cuevas, Ana Veloz

Others Present

Mary Jane Forster, State Board Member
Jane M. Bray, Bray Consulting
Katie Koning, Congressman McKeon Field Repres.
Sharon Rubalcava, McClintock & Weston
William R. Lettis, William Lettis & Associates
Chuck White, Waste Management, Inc.
Kenneth L. Ludwig, DPW, Bureau of Sanitation
Damian Durrant, Bill Hussey & Associates
David Brickman, SBEC
Sheldon Singer, SBEC
Mark Leymaster, Targhee, Inc.
James Howard, ENVIRON
Marsha McLean, SCV Canyons Preservation Comm.
Phyllis Hines, Lake View Terrace Improvement Assn.
Liselette Crowell, Lake View Terrace Improvement Assn.
Jacqueline Lambrichts, self
John Elwell, City of Camarillo
Kimble Sheets, Erler & Kalinowski, Inc.
Lynne Planbeck, LASER
MJ Edwards, Granada Hills Women's Club
Rosemary Woodlock, North Valley Coalition
Dr. Joyce Edelman, North Valley Coalition
Ernest Hilberg, North Valley Coalition
Laura Smith, North Valley Coalition
Earlyne Reimer, North Valley Coalition
Frederick Holzer, North Valley Coalition
Ralph Kroy, North Valley Coalition
Esther Simmons, North Valley Coalition
Jeannette Maldonado, North Valley Coalition
Mary Edwards, North Valley Coalition
Norah Schumacher, North Valley Coalition
Francis Navickas, North Valley Coalition
Frank Korrum, North Valley Coalition
Kevin Jeung, Student Body President, Robert Frost Middle School, representing 80 students present at meeting.

0080

2. Approval of Minutes of the Regular Meeting held on April 1, 1998.

There was a motion to adopt the minutes as amended.

MOTION: By Dr. Coe, seconded by Mr. Slezak, and approved on a voice vote.

UNCONTESTED ITEMS

3. Uncontested Items Calendar.

There was a motion to adopt the consent calendar.

MOTION: Ms. Craven, seconded by Mr. Drane and approved on a voice vote with Mr. Slezak abstaining on Item 4.1. Items 8 and 9 (Other Business) were included in the consent calendar.

**NPDES Requirements**

NEW

| | | |
|---|---|---|
| 4.1 | Pnemo Abex Aerospace, Inc., Oxnard | CA0063894 |
| 4.2 | Carlson Circle Associates (C.C. Associates), Canoga Park | CA0063983 |

REVISION

| | | |
|---|---|---|
| 4.3 | County of Los Angeles, Department of Parks & Recreation (Lennox County Park), Los Angeles | CA0062766 |

**NPDES Requirements - Rescission**

| | | |
|---|---|---|
| 5.1 | House Ear Institute Inc., Los Angeles | CA0061832 |
| 5.2 | Cedar-Sinai Medical Center, Los Angeles | CA0053228 |
| 5.3 | Unocal Corporation (Service Station #1715), Los Angeles | CA0061107 |
| 5.4 | A.G. Layne, Inc., Los Angeles | CA0053589 |
| 5.5 | L.A. Turf Club Inc., Arcadia | CA0062111 |
| 5.6 | California Department of Transportation, Los Angeles | CA0060895 |

**Non-NPDES Requirements**

NEW

| | | |
|---|---|---|
| 6.1 | Penn Camarillo Realty Corporation (G&H Technology, Inc.) Camarillo | 96-002 |

REVISION

| | | |
|---|---|---|
| 6.2 | Texaco Exploration and Production Company (Texaco Disposal Site C), Ventura | 72-104 |



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R0064206

Non-NPDES Requirements - Rescission

| | | |
|---|---|---|
| 7.1 | Chevron Land & Development Company (Murphy-Emery Property), La Mirada | 88-067 |
| 7.2 | J C. Company, Inc. (Former Treasury Service Station), Woodland Hills | 89-024 |
| 7.3 | Manville Sales Corporation (Manville Plant Site), Carson | 53-163 |

OTHER BUSINESS

8. Consideration of a Resolution Adopting a Proposed Negative Declaration for the Conditional Waiver of Waste Discharge Requirements for Specified Composting Operations. *[Adopted on the Consent Calender].*

9. Consideration of a Conditional Waiver of Waste Discharge Requirements for Specified Composting Operations in the Los Angeles Region. *[Adopted on the Consent Calender].*

10. Consideration of a Resolution Authorizing the Executive Officer to Sign an Investigation and Cleanup Agreement with the Small Business Environmental Coalition.

*Staff member Ana Veloz presented the item and recommended the Board adopt the resolution. The board directed staff to work with U S. EPA to issue a joint sign-off letter as sites are cleared. The Boare also directed staff to move quickly on Coalition sites and report back in 60 days, the progress of the investigation activities at these dry cleaner facilities.*

PUBLIC FORUM

11. Public Forum.

The following speakers addressed the Board expressing concerns over the proposed Sunshine Canyon Landfill extensions, and requested a public hearing:

1. Rosemary Woodlock, legal counsel for North Valley Coalition
2. Chuck White, Waste Management, Inc.
3. William Lettis, William Lettis & Associates, Inc.
4. Phyllis Hines, Lake View Terrace Improvement Assoc.
5. Damian Durrant, Bill Hussey & Associates
6. Katie Koning, Field Representative for Congressman McKeon
7. Mary Edwards, Granada Hills Womens Club
8. Kevin Jeung, Student Body President -Robert Frost Middle School
9. Krista Lundgren, Student Body Vice-President-Robert Frost Middle School

After discussion of the board, there was a motion to hold a public hearing at the June 10, 1996 regular board meeting in City of Camarillo with the following conditions:

*1) The Board receive a staff report, including staff assessment of each issue raised, a minimum of two weeks prior to the hearing.*
*2) Staff meet with BFI to explain that, in the interim, that they are proceeding at their own risk.*

MOTION: By Mr. Zarian, seconded by Mr. Drane and approved on a voice vote.



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R0064207

12. Board Member Communications.

The following issues were discussed:

*Mr. Slezak referred to a recent article he authored regarding the State Board's containment zone policy and a Department of Fish & Game steelhead management plan.*

*Mr. Vernon informed the Board about an upcoming epi-study press conference on Tuesday, May 7, 1996 in Santa Monica.*

13. Executive Officer's Report.

*Dr. Ghirelli reminded the Board of the upcoming WQCC meeting, May 16-17, 1996 in Ontario and presented an update on the Priority Action Items. The Board directed staff to give them regular status reports of the number of low risk underground storage cases being closed. Dr. Ghirelli also updated the board on the municipal stormwater permit. The board directed staff to proceed with releasing the next draft of the permit and staff response to comments.*

14. Closed Session.

There was not a closed session.

ADJOURNMENT

15. Adjournment.

The meeting adjourned at 11.50 a.m. to the Calleguas Creek Watershed Study Session.

MOTION: Ms. Craven, seconded by Mr. Vernon, and approved on a unanimous voice vote.

Adjournment to the Regular Meeting of June 10, 1996, at 9:00 a.m., City of Camarillo, Council Chambersm 601 Carmen Drive, Camarillo, California.

CALLEGUAS CREEK STUDY SESSION

*Chairman Keston opened the informal study session. Staff member Veronica Cueves-Alpuche gave status update on the watershed approach for NPDES permits in the Calleguas Creek Watershed.*

The study session ended at 12:50 pm.



VOL 19 0083

0000007

R0064208

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
Los Angeles, California
July 15, 1996
395th Regular Meeting

ITEM: 2

SUBJECT: Approval of Minutes of the Regular Meeting held on June 10, 1996.

VOL 19

00084

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R0064209

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Minutes of 394th Regular Meeting
June 10, 1996
City of Camarillo
Council Chambers
601 Carmen Drive
Camarillo, California

INTRODUCTION

1. The meeting was called to order by Chairman Keston at 9:05 a.m.

Board Members Present

Jack Coe, Charlotte Craven, Clark Drane, Michael Keston, Beth Rogers, John Slezak, Larry Zarian

Board Members Absent

Charles Vernon

Staff Present

Robert P. Ghirelli, Catherine Tyrrell, Jorge León, Robyn Shipley, Dennis Dasker, Anne Saffell, Roy Sakaida, John Lewis, Mark Pumford, Wen Yang, Rod Nelson, Veronica Alpuche-Cuevas

Others Present

Jane M. Bray, Bray Consulting
Sharon Rubalcava, McClintock & Weston
William R. Lettis, William Lettis & Associates
Chuck White, Waste Management, Inc.
Kenneth L. Ludwig, DPW, Bureau of Sanitation
Damian Durrant, Bill Hussey & Associates
David Brickman, SBEC
Sheldon Singer, SBEC
Marsha McLean, SCV Canyons Preservation Comm.
Phyllis Hines, Lake View Terrace Improvement Assn.
Liselette Crowell, Lake View Terrace Improvement Assn.
Jacqueline Lambrichts, self
John Elwell, City of Camarillo
Kimble Sheets, Erler & Kalinowski, Inc.
Lynne Planbeck, LASER
MJ Edwards, Granada Hills Women's Club
Rosemary Woodlock, North Valley Coalition
Dr. Joyce Edelman, North Valley Coalition
Ernest Hilberg, North Valley Coalition
Laura Smith, North Valley Coalition
Earlyne Reimer, North Valley Coalition
Frederick Holzer, North Valley Coalition
Ralph Kroy, North Valley Coalition
Esther Simmons, North Valley Coalition
Jeannette Maldonado, North Valley Coalition
Mary Edwards, North Valley Coalition
Norah Schumacher, North Valley Coalition
Francis Navickas, North Valley Coalition
Frank Korrum, North Valley Coalition
Robert E. Palmer, GD & C.
P.G. Thyamagondalu, City of Burbank
J. Heighton, VCCSTL
Linda Jason, self
Sally Bilodpau, EMCON
Peggy Kelly, Santa Paula Times
Molly Kline, self
Steve Onstot, self
Robert Sawyer, Norman, Dowler, et al.
Sherman Klein, North Valley Coalition
Mary Ellen Crosby, Friends of Parks
John A.F. Melton, Mayor, City of Santa Paula
Frank E. Royer, ULCD



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R0064210

Ray/Darrel Cole, North Valley Coalition
Jennifer E. Sabari, Northrop Grumman Corp.
Melissa Appel, self
Tammy McCracken, Santa Clara ESD
Bennett Curtis, self
Ernest Hilberg, self
Jack Tingstrom, Mayor, City of Ventura
Tammy McCracken, Santa Clara Elementary Dist.
Ruben Mesa, City of Oxnard
Katherine Stone, City of Fillmore
Ed McCombs, Ventura Regional Sanitation Dist.
Charles Dowdell, Los Angeles Cty. Sanitation Dist.
Dan Tempelis, BFI
Bill Yeates, Office of J.William Yeates
Maribel Marin, NRDC
Orvene Carpenter, VRSD
Don Nelson, City of Thousand Oaks
Melissa Appel, self
Ken Gose, Camarillo City Council
Robert A. Procter, Limoneira & Elkins
Judy Lazar, Mayor Pro Tem, City Thousand Oaks
Earl McPhail, Ventura County Commissioners
Linda Brewster,Councilwoman, City of Fillmore
Mark Zirbel, VRSD
Maggie Kildee, self
Pete Fallini, Property Owner
William Orcutt, Timber Cyn. Mutual Water Cos.
Gary Schussolin, City of Los Angeles
Scott Quady, City of Burbank
Robert Sawyer, Noman, Dowler, et al.
Dora Crouch, Citizens of Santa Paula
Steve Onstot, self
Larry Diamond, self
Barry Hammitt, SEIU 998
Linda Bartelson, self
Peter Fallini, Property Owner
Chuck Rogers, County of Ventura
Sally Bilodeau, EMCON
Tony Strickland, Tom McClintock
Lee Blackman, McDermott, Will & Emery
Robert Palmer, Gibson,m Dunn & Crutcher
Ben Hushmand, Hushmand Associates
Ted Hromadka, Failure Analysis Assoc.
Douglas Hamilton, North Valley Coalition
Ben Curtis, self
Carla Bard, Patagonia
Jim Heighton, VCCSTL
Patti Friedman, Knollwood Property Owners
Jesus A. Hartado, North Valley Coalition
Roberto Mariscal, North Valley Coalition
Ernest Hilberg, North Valley Coalition
Paul Davenport, North Valley Coalition
Dara Mosc, North Valley Coalition
Wayde Hunter, North Valley Coalition
Reddy Pakala, County of Ventura Waterworks

2. Report of Nominating Committee and Election of Officers.

*Mr. Zarian announced the nominating committee's recommendation to elect Dr. Coe as Chair and [illegible] Cre.en and Vice-Chair for the remainder of the year.*

MOTION: By Zarian, seconded by Mr. Drane, and approved on a voice vote.

*Mr. Keston thanked his Board collegues for their dedication and support while serving as Chairma[illegible] Dr. Coe presented Mr. Keston with a Resolution of Appreciation as Chairman of the Board fo[illegible] 1994-1996.*

Ms. Rogers arrived at 9:15 during this Item.

3. Approval of Minutes of the Regular Meeting held on May 6, 1996.

There was a motion to adopt the minutes.

MOTION: By Mr. Zarian, seconded by Mr. Keston, and approved on a voice vote.



0000012

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R0064211

UNCONTESTED ITEMS

4. Uncontested Items Calendar.

Item 5.1 (City of Burbank, Public Works Department (Burbank Water Reclamation Plant and Steam Power Plant) CA0055531 and 8.2 (Ventura Regional Sanitation District, Toland Road Landfill) File No. 69-091 were pulled from the consent calendar.

There was a motion to adopt the consent calendar.

MOTION: By Mr. Zarian, seconded by Ms. Rogers and approved on a voice vote.

NPDES Requirements

RENEWAL

| | | | Issued Order No. |
|---|---|---|---|
| 5.2 | Cansle Foods, Inc., El Monte | CA0053392 | 96-034 |
| 5.3 | City of Los Angeles, Department of Recreation and Parks (Los Angeles Zoo), Los Angeles | CA0056545 | 96-035 |
| 5.4 | BKK Corporation, West Covina | CA0059536 | 96-036 |

NPDES Requirements - Rescission

| | | | Issued Order No. |
|---|---|---|---|
| 7.1 | Conam Management Corp., Los Angeles | CA0061271 | 96-037 |
| 7.2 | The Casden Company (now PMG, Inc.) Los Angeles | CA0059889 | [7.1 - 7.17] |
| 7.3 | Clinton Partnership (now 585 North Rossmore Ltd.), Los Angeles | CA0061891 | |
| 7.4 | Peter Georgianni, Los Angeles | CA0061751 | |
| 7.5 | Century Properties Fund (now Copperfield Investment & Development Company), Los Angeles | CA0053279 | |
| 7.6 | CWD Cloverdale Associates, Los Angeles | CA0061743 | |
| 7.7 | Scottish Rite Association of Los Angeles, Los Angeles | CA0054887 | |
| 7.8 | Mobil Oil Corporation, Los Angeles | CA0062804 | |
| 7.9 | IL Mook Kang (Maplewood Apartments), Los Angeles | CA0062120 | |
| 7.10 | Royal Crown Cola Co., La Mirada | CA0057916 | |
| 7.11 | Refiners Marketing Co., Terminal Island | CA0058939 | |
| 7.12 | United Food Processors, Terminal Island | CA0001325 | |
| 7.13 | Unocal Corporation Service Station LS #0981, Los Angeles | CA0061379 | |

RENEWAL

| | | |
|---|---|---|
| 7.14 | Al-Sal Oil Company, Newbury Park | CA0061212 |
| 7.15 | Chevron U.S.A., Inc., Simi Valley | CA0062332 |
| 7.16 | US Naval Resale System, Navy Exchange Gasoline Station (Building 161), Point Mugu | CA0061719 |
| 7.17 | Mobil Oil Corporation Station #11-KTB, Simi Valley | CA0062863 |



0000013

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R0064212

Non-NPDES Requirements

NEW

| | | |
|---|---|---|
| 8.1 | Santa Monica Number Seven Associates, L.P. and the City of Santa Monica (Sony Music Campus), Santa Monica 95-105 | 96-038 |

Non-NPDES Requirements - Rescission

| | | |
|---|---|---|
| 9.1 | Modine Manufacturing, Whittier | 96-039 |
| 9.2 | Texaco Service Station, Los Angeles | [9.1-9.2] |

*Item 5.1 (City of Burbank, Public Works Department (Burbank Water Reclamation Plant and Steam Power Plant) was pulled and discussed. Paul Thyamegondalu of City of Burbank requested that the Board delete Item 9 a/b on page 3 and 8 of the existing order. Dr. Ghirelli recommended the item be continued until these issues can be resolved.*

There was a motion to continue this item.

MOTION: By Mr. Zerlan, seconded by Ms. Craven and approved on a voice vote.

WASTE DISCHARGE REQUIREMENTS

6. Consideration of NPDES Watershed Permit Renewals. Item 6.10 (Teleflex Control Systems (The Talley Site) CA0059609) was continued.

Ventura River Watershed

6.1 Ojai Valley Sanitary District, Wastewater Treatment Plant (CA0053961)

Calleguas Creek Watershed

| | |
|---|---|
| 6.2 | Camarillo Sanitary District, (Water Reclamation Plant) (CA0053597) |
| 6.3 | City of Simi Valley, (Water Quality Control Facility) (CA0055221) |
| 6.4 | City of Thousand Oaks, (Hill Canyon Wastewater Treatment Plant) (CA0056294) |
| 6.5 | City of Thousand Oaks, (Olsen Road Water Reclamation Plant) (CA0056359) |
| 6.6 | Ventura Regional Sanitation District, (Nyeland Acres Wastewater Treatment Plant) (CA0059005) |
| 6.7 | Transit Mixed Concrete Co., (Moorpark Facility) (CA0059315) |
| 6.8 | Northrop Grumman Corporation, Military Air Craft Systems Division (CA0062588) |
| 6.9 | Rockwell International Corporation, (Hillcrest Facility) (CA0060348) |

*Staff member Mark Pumford read the opening statement and presented the item to the Board and recommended adoption of the tentative permits.*

*Eric Oltmann of Ojai Valley Sanitary District, Mike Sedell, City of Simi Valley, and Don Nelson, City of Thousand Oaks supported the staff recommendation.*

*Chuck Rogers of Ventura Regional Sanitation District addressed the Board to request a continuance of Item 6.6 until they have an opportunity to meet with the County and discuss the monitoring costs and requirements.*



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R0064213

MOTION: By Mr. Keston, seconded by Mr. Zarian and approved on a voice vote. Dr. Coe and Mr. Siezak abstained from item 6.1, Ms. Craven abstained from items 6.2 and 6.6.

Item 6.2 - (Ventura Regional Sanitation District, Toland Road Landfill, Ventura County, File No. 69-091).

*The following individuals addressed the Board to request this item be continued until they have sufficient time to review the tentative permit:*

*Ed McCombs, General Manager, Ventura Regional Sanitation District*
*John A.F. Melton, Mayor, City of Santa Paula*
*Roger Campbell, Mayor, City of Fillmore*

A motion was made to continue this item until a future board meeting.

MOTION: By Mr. Keston, seconded by Ms. Rogers and approved on a voice vote, with Ms. Craven and Mr. Siezak abstaining.

PUBLIC HEARING

10. Public Hearing to Obtain Testimony Concerning Action to be Taken Concerning Staff Approval of the Liner Design for the Sunshine Canyon Landfill Los Angeles County Expansion.

*Staff member Rodney Nelson presented the item to the Board, and recommended the Board approve the landfill liner design.*

*Les Harder, a Consultant to staff from the California Department of Water Resources, answered questions of the Board.*

*Dan Templis, Browning-Ferris Industries (BFI), and Dr. Edward Kanbazanjian, Geosyntec in Huntington Beach, spoke in support of the staff recommendation.*

*The following speakers addressed the Board to oppose the liner design of the Sunshine Canyon Landfill:*

1. Norah Schumacher, North Valley Coalition
2. Esther Simmons, North Valley Coalition
3. Rosemary Woodlock, Legal Counsel, North Valley Coalition
4. Robert Pike, Geotec Engineer
5. Dr. Benham Hershman, Hershman Associates
6. Dr. Norman Abrahamson, Independant Consultant
7. Dr. Ted Hromadka, Failure Analysis Associates
8. Dr. Douglas Hamilton, Stanford University
9. Wade Hunter, President, North Valley Coalition

The Board Members adjourned for a 10 minute break.

10. Patti Friedman, Knollwood Property Owners Association
11. Bill Yates, PCL
12. Jesus Hartado, self
13. Roberto Marisca, self
14. Raizy Goffman, Camelot Riding Club



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R0064214

15. Gordon Murley, Valley Federation
16. Mary Ellen Crosby, Chairman, Friends of the Park
17. Ernest Hilberg, self
18. Paul Davenport, self
19. Wayde Hunter, self
20. Lewis Berti, LASER
21. Marsha McClean, President, Santa Clarita Canyon Preservation Committee
22. Dann Moss, Robert Frost Middle School
23. Charles White, Director, Waste Management, Inc.
24. William Lettis, William Lettis & Associates, Inc.

The following speakers spoke in support of the staff recommendations:

25. Kathy Davis, Councilmember, City of Apple Valley
26. Tony Strickland, Chief Aide for Former Assemblyman Tom McClintock

The following speakers spoke but took no position:

27. Larry Sweetzer, Director, Regulatory Affairs of North Cal Waste Systems was not in support or opposition. His concern was the decision-making processes regarding state and federal standards.
28. Charles Dowdell, Los Angeles County Sanitation Districts was not in support or opposition. His concern was the policy issues relating to the seismic-design process.

Mr. Zarian departed at 2:00 for the remainder of the meeting.

The public hearing was closed. The Board discussed the testimony presented. A motion was made to affirm the Executive Officer's decision to approve the liner design of the Sunshine Canyon Landfill.

MOTION: By Mr. Drane, seconded by Ms. Rogers and approved on a voice vote. [6 Ayes - 0 Noes]

The hearing adjourned at 2:35 p.m.

13. Executive Officer's Report.

*Mr. Keston discussed an on-going issue regarding Southern California Association of Governments (SCAG). SCAG requested that a meeting be scheduled with board members to discuss the Los Angeles County Municipal Stormwater Permit. The Board directed Dr. Ghirelli contact SCAG to discuss this issue.*

*Dr. Ghirelli updated the Board on the Dry Cleaner's Agreement. He informed the Board that the agreement will be ready for signature on June 18, 1996, and the field work will begin in July, 1996.*

*Dr. Ghirelli updated the Board on the San Fernando Valley Joint No Further Action letters.*

PUBLIC FORUM

11. Public Forum.

*Lewis Berti of Val Verde Civic Association addressed the Board requesting they investigate violations of Waste Discharge Requirements (Order No. 89-052 Laidlaw Waste Systems, Inc. - Chiquita Landfill - File No. 67-020). He stated that Laidlaw has exceeded the height, area and acreage limit restrictions of the WDR.*



0000016

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R0064215

*Paul Stiglich, a Private Consultant, representing Majestic Realty Co., addressed the Board regarding a underground storage tank in City of Industry. He expressed his concerns regarding a workplan implementing further investigation at the site. He requested the Board direct staff to move forward on this case and review for closure.*

*Dr. Ghirelli indicated staff would follow up in both matters.*

12. Board Member Communications.

There was no discussion by the Board members.

14. Closed Session.

There was not a closed session.

ADJOURNMENT

15. Adjournment.

The meeting adjourned at 3:15 p.m.

MOTION: Mr. Slezak, seconded by Ms. Rogers, and approved on a unanimous voice vote.

Adjournment to the Regular Meeting of July 15, 1996, at 8:00 a.m., Junipero Serra Building, State Office Building, 107 S. Broadway, Room 1138 - Auditorium, Los Angeles.

VOL 19

0091



R0064216

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX (213) 266-7600

# AGENDA

**STATE OF CALIFORNIA**
**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**
**LOS ANGELES / VENTURA REGION**

**395th Regular Meeting**
**Monday, July 15, 1996 - 8:00 A.M.**

**JUNIPERO SERRA BUILDING - STATE OFFICE BUILDING**
**107 SOUTH BROADWAY STREET**
**ROOM # 1138 - AUDITORIUM**
**LOS ANGELES, CALIFORNIA**

**Please note change of meeting location and start time.**

## INTRODUCTION

1. **Roll Call.**

2. Approval of Minutes of the Regular Meeting held on June 10, 1996.

## PUBLIC FORUM

3. Public Forum. *(Any member of the public may address the Board regarding any matter within the Board's jurisdiction. This need not be related to any item on the agenda.) Remarks will be limited to 3 minutes.*

## UNCONTESTED ITEMS

4. Uncontested Items Calendar. *(Items marked with an asterisk are expected to be routine and noncontroversial. The Board will be asked to approve these items at one time without discussion. If any interested party, Board Member, or staff person requests that an item be removed from the calendar, it will be taken up in the regular agenda order.)*

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## CLOSED SESSION

5. Closed Session. *(Please note that this item is not open to the public).*

At any time during the regular session, the Board may adjourn to a closed session to consider litigation, personnel matters, or to deliberate on a decision to be reached based upon evidence introduced in a hearing. Discussion of litigation is within the attorney-client privilege and may be held in closed session. Authority: Government Code Section 11126(a)(d)(q).

## WASTE DISCHARGE REQUIREMENTS

6. Consideration of NPDES Permits -New, Renewal and Revision. *(The Board will be asked to adopt the proposed permits for the following facilities.)*

**NEW**

| | | |
|---|---|---|
| *6.1 | Union Oil Company of California (Former Unocal La Mirada Facility), La Mirada (J. Tang) | CA0063975 |

**RENEWAL**

| | | |
|---|---|---|
| *6.2 | City of Burbank, Public Works Department (Burbank Water Reclamation Plant and Steam Power Plant), Burbank (W. Chiou) | CA0055531 |
| *6.3 | Quaker State Corporation, Rancho Dominguez (J. Tang) | CA0059480 |

**REVISION**

| | | |
|---|---|---|
| *6.4 | Southern California Edison Company (Dominguez Hills Fuel Oil Facility), Compton (J. Tang) | CA0052949 |

7. Consideration of Non-NPDES Requirements - Revision. *(The Board will be asked to adopt the proposed requirements for the following facilities).*

**REVISION**

| | | |
|---|---|---|
| *7.1 | County of Los Angeles Fire Department, Camp No. 16 (Mt. Gleason Young Adult Conservation Corps Resident Camp), Acton (M. Belady) | 55-120 |
| 7.2 | Ventura Regional Sanitation District, Toland Road Landfill, Ventura County (R. Nelson) | 69-091 |

[CONSIDERATION OF ITEM 7.2 WILL OCCUR NO EARLIER THAN 9:15 A.M.]

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## PUBLIC HEARING

8. Public Hearing to Obtain Testimony Concerning the Adoption of the Revised Los Angeles County Municipal Stormwater Permit. (C. Urrunaga) *(Following the hearing, the Board will consider adoption of the tentative permit.)*

**[CONSIDERATION OF THIS ITEM WILL OCCUR NO EARLIER THAN 10:30 A.M.]**

## INFORMATION ITEMS *(Please note that these items are for information only. There will be no voting or formal action taken by the Board on these items.)*

9. Watershed Management Grant Program. *(Staff will review the watershed grant applications and describe the projects recommended for funding.)*

10. Board Member Communications. *(The Board Members may discuss communications, correspondence, or other items of general interest relating to matters within the Board's jurisdiction.)*

11. Executive Officer's Report.

## ADJOURNMENT

12. Adjournment to Regular Meeting of August 19 at 9:00 a.m., City Council Chambers, City of Glendale, 613 East Broadway, Glendale.

•••

*A copy of the Agenda is available for examination by the public at the office of the Board during regular working hours. Please call the Executive Office at (213) 266-7514 for general information about the Agenda. Questions about specific items on the Agenda should be directed to the staff person whose name is listed with the item.*

••••

*Material presented to the Board as part of testimony that is to be made part of the record must be left with the Board. This includes photographs, slides, charts, diagrams, etc. All Board files pertaining to the items on this Agenda are hereby made a part of the record submitted to the Regional Board by staff for its consideration prior to action on the related items.*

•••••

*A Bulletin Board Service is available to the public that provides ready access to information about various Regional Board programs. The bulletin board telephone number is 213-266-7663 and is accessible with a computer and modem 24 hours a day, seven days a week. Currently, the bulletin board contains agenda notices, agenda minutes, executive officer's reports, a stormwater data base, a list of Regional Board staff phone numbers, and the text of the Porter-Cologne Water Quality Control Act. It also functions as a message service.*

••••••

*The Regional Board's Business Assistance Office offers help to business owners and others seeking information about discharge permits, cleanup requirements, and other water-related issues. Callers can reach the Office by dialing 1-800-500-8008, or in the Los Angeles area at 213-266-7671. The Office is open Mondays through Fridays from 8:00 a.m. to 4:00 p.m. Staff are available to answer general questions, help callers prepare permit applications, and address other concerns relating to the permitting process.*

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*A listing of pending applications for water quality certification pursuant to Section 401 of the Federal Clean Water Act may be obtained by calling Lauma Jurkevics at (213)266-7609. Alternatively, if you have a computer with a modem, you may obtain this information by calling in to our Bulletin Board at (213)266-7663. This information will be updated every week and also as new applications are received.*

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# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
# LOS ANGELES / VENTURA REGION

## BOARD STAFF


101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Information: (213) 266-7500
FAX: (213) 266-7600
Bulletin Board: (213) 266-7663
Business Assistance Office: (213) 266-7671
(800) 500-8008


| BOARD MEMBERS | CITY OF RESIDENCE | APPOINTMENT CATEGORY |
|---|---|---|
| Jack J. Coe, Ph.D., P.E., Chair | La Puente | Water Supply |
| Charlotte Craven, Vice Chair | Camarillo | Public Member |
| Clark Drane | Tujunga | Water Quality |
| Michael Keston | Los Angeles | Industrial Water Use |
| Beth Rogers, Ph.D. | Camarillo | Water Quality |
| John A. Slezak | Westlake Village | Recreation, Fish, and Wildlife |
| Charles C. Vernon | La Mirada | Irrigated Agriculture |
| Larry Zarian | Glendale | Municipal Government |
| Vacant | | County Government |

**Executive Office**
Robert P. Ghirelli, D.Env., *Executive Officer*
Catherine Tyrrell, *Assistant Executive Officer--Surface Water Programs*
Vacant, Assistant Executive Officer--*Ground Water Programs*
Robyn L. Shipley, *Executive Assistant*
Pat Ouokan, *Administrative Officer*
Jorge Leon, *Senior Staff Counsel, State Water Resources Control Board, 901 P Street, Sacramento, CA 95814*

**Underground Tanks**
Anne Saffell, *Chief*
Al Novak, *Program Support*
Gregg Kwey, *Closure Unit*
David Bacharowski, *Ventura Co./LIA*

**San Gabriel/San Fernando Cleanup Program**
Hank H. Yacoub, *Chief*
Jonathan S. Bishop, *Cleanup Programs/Network*
Arthur G. Heath, Ph.D., *SGV Cleanup Program*
Eric Nupen, *SFV Cleanup Program*

**Groundwater Protection**
Roy R. Sakaida, Ph.D., *Chief*
Hubert H. Kang, *Subsurface Investigation*
Rod Nelson, *Landfills*
James E. Ross, *Site Cleanup*

**Surface Water Regulatory**
Dennis Dasker, *Chief*
Winnie D. Jesena, *Los Angeles Coastal*
Joshua M. Workman, *Los Angeles Inland*
Mark Pumford, *Ventura Coastal*
*J.T. Liu, Revitalize L.A.*

**Regional Programs**
Deborah Smith, *Chief*
J. Michael Lyons, *Surveillance*
John L. Lewis, *Technical Support*
Wendy Phillips, *Planning*

**Santa Monica Bay Restoration Project**
Marianne Yamaguchi, *Program Manager*


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## STAFF

*Leticia Aguilar*
*Mashar Ali*
*Elsa Aquino*
*Marian Amaranto*
*Rosario Aston*
*Jenny Au*
*Blythe P. Bacharowski*
*Magdy L. Baiady*
*Nhan Bao*
*Maria Bambico*
*Shirley A. Birosik*
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*Alex Carlos*
*Tori Chaires*
*Manjulika Chakrabarti*
*John L. Chiang*
*Wayne Chiou*
*Paul Cho*
*Rebecca Chou, Ph.D.*
*Ana Corado*
*Vilma Correa*
*A. Veronica Cuevas*
*Jaydeb Das*
*Keith L. Elliott*
*Lucinda Flores*
*Kee Fong*
*Alex Fu*
*Patricia A. Gardenhire*
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*John Geroch*
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*Elijah Hill*
*H. Alan Hsu*
*Mercedes S. Hsu*
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*David Hung*
*Carolyn Hunter*
*Lauma Jurkevics*
*Sandra Kelley*
*David Koo*
*Walter Krostek*
*Ahmad Lamaa*
*Kwangil Lee, Ph.D.*
*Wendy Liu*
*Carolina Lopez*
*Yi Lu, Ph.D.*
*Joseph Luera*
*Gale Madyun*
*Hugh Marley*
*Kirby McClellan*
*Stephanie McDonald*
*Ozden Mindevalli*
*Ronji Moffett*
*Gwendolyn Monroe*
*Jose M. Morales*
*Rebecca Nevarez*
*Ha D. Nguyen*
*Gay Norris*
*Dixon A. Oriola*
*Himanshu Patel*
*Jose Pereyra*
*Don Peterson*
*Martha Pinto*
*Jack D. Price*
*Dan Radulescu*
*Dave Rasmussen*
*Dolores Renick*
*Theresa Rodgers*
*Yue Rong, Ph.D.*
*Walter Salas*
*Carlos Santos*
*Gary Schultz*
*Princetta Scott*
*Thomas Siebels*
*Mark Smythe*
*Ejigu O. Solomon*
*Xavier Swamikannu, DEnv*
*James Tang, Ph.D.*
*Heather Trim, Ph.D*
*Carlos Urrunaga*
*Ana Velez*
*Rick Vergets*
*Guangyu Wang, Ph.D.*
*Rueen-Fang Wang, Ph.D.*
*Twila Willis*
*Jimmie Woo*
*Wen Yang, Ph.D.*
*King Yu*
*Aniela Zaskodna*

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## GENERAL STATEMENT

The primary duty of the Regional Water Quality Control Board (Regional Board) is to protect the quality of the waters within the region for all beneficial uses. This is accomplished by formulating and adopting water quality control plans for specific ground or surface water basins and discharges. Specific responsibilities and procedures of the Regional Board and the State Water Resources Control Board (State Board) are outlined in the Porter-Cologne Water Quality Control Act.

The purpose of the meeting is for the Board to obtain testimony and information from concerned and affected parties and make decisions after considering the recommendations made by the Executive Officer.

The Board and the Staff welcome information on pertinent problems, but comments at the meeting should be brief and directed to specifics of the case to enable the Board to take appropriate action. Whenever possible, lengthy testimony should be presented to the Board in writing and only a summary of pertinent points presented verbally. If you wish to make a statement, please fill out one of the cards on the table at the back of the room, indicate the agenda number or name of the item you wish to comment on, and turn the card in to a member of the Board's staff. The Board would appreciate written testimony (14 copies) being provided to the Board's Executive Assistant for distribution at or before the beginning of the meeting.

Any person affected adversely by a decision of the Regional Board, Los Angeles Region, may petition the State Board to review the decision. The petition must be received by the State Board within 30 days of the Regional Board's meeting at which the adverse action was taken. Copies of the law and regulations applicable to filing petitions will be provided upon request.

## DISCLOSURE STATEMENT

All persons who actively support or oppose the adoption of waste discharge requirements or an NPDES permit pending before a Regional Board must submit a statement to the Board disclosing any contribution of $250 or more to be used in a federal, state, or local election, made by the action supporter or opponent, or his or her agent within the last 12 months to any Regional Board Member.

Also, all permit applicants and all persons who actively support or oppose adoption of a set of waste discharge requirements or an NPDES permit pending before the Regional Board are prohibited from making a contribution of $250 or more to any Board Member for 3 months following a Regional Board decision on the permit application.

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
Glendale, California
August 19, 1998
396th Regular Meeting

ITEM: 2

SUBJECT: Approval of Minutes of the Regular Meeting held on July 15, 1998.

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Minutes of 395th Regular Meeting
July 15, 1996
State Office Building
Room 1138, Auditorium
107 S. Broadway
Los Angeles, California

INTRODUCTION

1. The meeting was called to order by Chairman Coe at 8:05 a.m.

Board Members Present

Jack Coe, Charlotte Craven, Clark Drane, Michael Keston, Beth Rogers, John Slezak, Charles Vernon, Larry Zarian

Board Members Absent

None

Staff Present

Robert P. Ghirelli, Catherine Tyrrell, Jorge León, Robyn Shipley, Dennis Dasker, Anne Saffell, Roy Sakaida, John Lewis, Mark Pumford, Rod Nelson, Don Peterson, Winnie Jesena, Xavier Swamikannu, Mazhar Ali, Rosario Aston, Carlos Urrunaga, Vilma Correa, Twila Willis-Hunter

Others Present

Mary Jane Forster, Member, State Water Resources Control Board
Jane M. Bray, Bray Consulting
Senator Tom Hayden
Ruth Galanter, City of Los Angeles
Beatrice La Pisto-Kirtley, City of Bradbury
Mayor Margaret Clark, City of Rosemead
Mayor Eileen Ansari, City of Diamond Bar
Mayor Dee Hardison, City of Torrance
Mayor John A.F. Melton, City of Santa Paula
John O. Robertson, City of Cudahy
Carolyn Van Horn, City of Malibu
Mayor Lawson Pedigo, City of Lomita
John Fasana, City of Duarte
Bob Pinzler, Elected Representative of Coastal Cities
Mayor Pro Tem Judy Lazar, City of Thousand Oaks
Mayor John A.F. Melton, City of Santa Paula
Orvene Carpenter, City of Port Hueneme
Ken Gose, City of Camarillo
Roy Payne, City of Fillmore
Daniel Keesey, City of LaVerne
Sid Mousavi, City of Baldwin Park
Richard Burtt, City of Torrance
Ted Semaan, City of Lynwood
Ed Schroder, City of El Segundo
Marilyn White, City of Redondo Beach
Nasser Abbaszadeh, City of Azusa
Robert Bammes, City of Monrovia
Laura Keddington, City of La Mirada
Christina Madrid, City of Azusa
Charles Sihler, City of Pomona
Katherine Stone, Cities of Fillmore and Santa Paula
P.G. Thyamagondalu, City of Burbank
Raymond Holland, City of Long Beach

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Henry Baldwin, City of San Gabriel
Dennis Washburn, City of Calabesas
Carolyn Greene, City of Thousand Oaks
James OTousa, County of Ventura
John Wisz, City of Carson
Lawson Pauligg, City of Lomita
Robert W. Bruesch, City of Rosemead
Phil Richardson, City of Los Angeles
Rosemarie Peterson, City of San Dimas
Larry Galvan, People of Cudahy
Farid Hentabli, City of Glendale
Desi Alvarez, City of Glendale
Francisco Alonso, City of Monterey Park
Melissa Clack, Burger King Corporation
Joyce Lawrence, City of Downey
Edward Putz, City of Long Beach
Richard Schacht, City of Long Beach
Jerry Wedding, City of San Fernando
Katherine Rubin, Los Angeles City Dept. Water & Power
Algird Leiga, City of Claremont
Mike Kantor, City of Los Angeles
Laurie Newman, Assemblymember Sheila Kuehl
Scott McVarish, NRDC
Chris Salvaggio, City of Los Angeles
Charles Redden, City of Covina
Paul Rosenstein, City of Santa Monica
C. Lampman, City of Burbank
B. Garrett, City of Los Angeles
Madelyn Glickfeld, self
Larry Diamond, self
Pete Fallini, self
Don Koepp, Ventura County EHD/LEA
William Stratton, Ventura County EHD/LEA
Mike Stokes, Calpirg
Lori Bender, Calpirg
Angela/Madeline Mains, Heal the Bay
Andi Nissbarm, Heal the Bay
Cat Kuhlman, U.S. EPA
Joseph Traina, Heal the Bay
Gloria Morales, Heal the Bay
John Parson, South Bay Association of Chambers of Commerce
Gary Huttil, Department of Geosciences
Shelly Holms, Rogers & Associates
Nancy Tarn, Rogers & Associates
Ken Schiff, S. California Coastal Water Research
Jeffrey Nell Jones, Sierra Club
Mary Ellen Vojtek, Compliance Strategies
Mr. VonBurger, Sav-Mor-Oil
Gary Carlin, Sav-Mor-Oil
Don Wolfe, LA County Dept. Public Works
Jacqueline Lambrichts, self
Steve Barkan, Heal the Bay
Jun Lee, Lee Clean Technology
Nancy Kimball, self
Charlene Bailey, self
Jennifer Heighton, self
Dolores Taylor, Ventura Co. PWA/FC
Dan Milojevich, In-N-Out Burger
Virginia Calvano, self
James McCarthy, Caltrans
Alison Flesch, Environmental Media Assoc.
Joyce Sheby, Environmental Media Assoc.
Bill Irwin, Bio Geo
Kathy Adibi, Surfrider Foundation
Mike Kissler, Carl Karcher
Pierce Flynn, Surfrider Foundation
Brian Gusman, Toland Landfill
Robert Bronkall, Cities of La Habra, Walnut, La Puente
Ray Tahir, City of Whittier
Jay Duncan, City of Oxnard
Frank Kuo, Los Angeles County Dept. Public Works
Don Gunderson, Ventura Regional Sanitation District
Jim Acosta, Ventura Regional Sanitation District
Peggy Kelly, Santa Paula Times
Sharon Perlstein, City of West Hollywood
Danielle Chupa, Southern California Edison
David Kay, Southern California Edison
John Tommy Rosas, self
Alan Bick, Gibson, Dunn & Crutcher
Ben Curtis, self
James Lesserman, Water Replenishment District of Southern California
Steven Castellanos, City of Pico Rivera
Peter Piccaro, Surfrider Foundation
Beth Kudlicki, Surfrider Foundation
Victor Laury, Los Angeles County Metropolitan Transporation Authority
Betty Werthman, Southern California Association of Governments
John Kao, C&C Engineering
Dorothy Green, Heal the Bay
Jacob Green, Heal the Bay
Gail Ruderman Feuer, NRDC
Terry Tamminen, BayKeeper
Pierce Flynn, Surfrider Foundation
Andy Goodman, Environmental Media Assoc.
Mike Jenkins, Richards, Watson, et al.
Christopher Jones, Surfrider Foundation
Royall Brown, Coalition of West Covina Homeowners
Toni Pogue, Heal the Bay
Ed McCombs, Ventura Regional Sanitation District
LaVern Hoffman,County of Ventura Public Works Agency
Robert Palmer, Gibson, Dunn & Crutcher
Jeff McConaghy, self



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Doug Staheu, Bel Air Bay Club
Gary Hildebrand, Los Angeles County Dept. of Public Works
Robert M. Sawyer, Attorney
Douglas Gardner, Maguire Thomas Partners
Jonathan Stein, Law Offices of Jonathan Stein
John Perenchio, Malibu Bay Co.
Jennifer Taggart, Demetriou, Del Guercio, et al.
Mark Ryavec, American Oceans Campaign
Martin Byhower, Chadwick School
Jose Luis Sedano, Latino Scholastic Achvment Corp.
Kenneth Fields, Fields & Pearl
Barbara Taylor, self
Gerald Breitbart, California Restaurant Association
Gregory Mastin, Froggy's Truckwash
Peter Piccaro, Surfrider Foundation
Christopher Lee, Lee's Ladd Liquor

Doris Bradshaw, self
Maryann Jones, State Water Resources Control Board
John Hunter, JLH & Associates
Heather Wortz, CAA
Evelyn Lansberry, self
Dolphina Bastel, self
Jim VanWinkle, South Pasadena
Rufus C. Young, Burke, Williams & Sorensen
Shelly Holmes, Rogers & Anoe
Nancy Jack, self
Andy Goodman, Environmental Media Association
Gary Hufbie, Oregon State University
Mark Zirbel, Ventura Regional Sanitation District
Sara Wan, California Coastal Commission
Tom Boar, self

2. Approval of Minutes of the Regular Meeting held on June 10, 1996.

There was a motion to adopt the minutes.

MOTION: By Mr. Zarian, seconded by Ms. Craven, and approved on a voice vote.

UNCONTESTED ITEMS

3. Uncontested Items Calendar.

Item 7.1 (County of Los Angeles Fire Department, Camp No. 16 (Mt. Gleason Young Adult Conservation Corps Resident Camp), File No. 55-120 was continued until a future board meeting.

There was a motion to adopt the consent calendar.

MOTION: By Ms. Craven, seconded by Mr. Zarian and approved on a voice vote.

NPDES Requirements

NEW

| | | Issued Order No. |
|---|---|---|
| 6.1 | Union Oil Company of California (Former Unocal La Mirada Facility, La Mirada (CA0063975) | 96-049 |

RENEWAL

| | | |
|---|---|---|
| 6.2 | City of Burbank, Public Works Department (Burbank Water Reclamation Plant and Steam Power Plant), Burbank (CA0055531) | 96-050 |
| 6.3 | Quaker State Corporation, Rancho Dominguez (CA0059480) | 96-051 |



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REVISION

6.4 Southern California Edison Company (Dominguez Hills Fuel Oil Facility) (CA0052949) 96-052

Closed Session.

The Board adjourned at 8:10 a.m. to a closed session to discuss personnel issues. The regular meeting reconvened at 9:20 a.m.

*Mr. Drane arrived at 8:15 a.m.*

PUBLIC FORUM

Public Forum.

*Mark VonBurger of Sav-Mor Oil Co. addressed the Board regarding an underground storage tank issue. The Board directed staff to meet with him and resolve the issue.*

Item 7.2 - (Ventura Regional Sanitation District, Toland Road Landfill, Ventura County, File No. 69-091)

*Members Craven and Slezak abstained from this item and left the room while the testimony was being given. A change sheet was submitted with this item.*

*Staff member Rod Nelson gave a presentation to the Board on the proposed vertical and lateral expansion of the landfill and recommended adoption of the Waste Discharge Requirements.*

*The following individuals addressed the Board supporting the waste discharge requirements:*

Ed McCombs, General Manager, Ventura Regional Sanitation District
Mark Zerbel, General Counsel, Ventura Regional Sanitation District
Jim Acosta, Ventura Regional Sanitation District
Judy Lazar, Mayor Pro Tem, City of Thousand Oaks
Ken Gose, Mayor, City of Camarillo

*The following individuals addressed the Board opposing the waste discharge requirements:*

John A.F. Melton, Mayor, City of Santa Paula
Roy Payne, Councilmember, City of Fillmore
Katherine Stone, City of Ventura and City of Santa Paula
Gary Huftile, Oregon State University, Dept. of Geosciences
Robert Palmer, Gibson, Dunn & Crutcher
John Tommy Rosas, Jr. aka, Ki Nuah, Indian, Chumash Nation
Roger Myers, City of Fillmore

*A motion was made to support staff's recommendation to adopt the tentative waste discharge requirements.*

MOTION: By Ms. Rogers, seconded by Mr. Vernon and approved on a voice vote, with Ms. Craven and Mr. Slezak abstaining.

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The meeting was adjourned for a 10 minute recess. Members Keston and Zarian recused themselves from the Los Angeles County Municipal Stormwater Permit and left the meeting, and were not present for the remainder of the meeting.

PUBLIC HEARING

8. Public Hearing to Obtain Testimony Concerning the Adoption of the Revised Los Angeles County Municipal Stormwater Permit.

*Assistant Executive Officer Catherine Tyrrell presented the item to the Board, showed a video, and recommended the Board approve the permit. The following persons were selected to sit on a panel and made presentations to the Board.*

1. Jorge Leon, Legal Counsel, State Water Resources Control Board
2. Catherine Kuhlman, U.S. Environmental Protection Agency
3. Don Wolfe, Los Angeles County Department Public Works
4. Amy Glad, Building Industry Association (BIA)
5. Mike Kisell, Carls Jr. Corporate Offices
6. Dr. Mark Gold, Heal the Bay

The following speakers addressed the Board to oppose adoption of the stormwater permit:

1. Beatrice Curtley, San Gabriel Valley Council of Governments
2. Margaret Clark, Southern California Association of Governments
3. Joyce Lawrence, City of Downey
4. Mayor Pro Tem Marilyn White, City of Redondo Beach
5. Mayor Elaine Ansari, City of Diamond Bar
6. Mayor Dee Hardison, City of Torrance
7. Mayor Margaret Clark, City of Rosemead
8. Councilmember Fran Alanzo, City of Monterey Park
9. Mayor Lawson Pedigo, City of Lomita
10. Councilmember Bob Pinzler, City of Redondo Beach
11. Councilmember John Ahlsad, City of Duarte
12. Dan Keesey, City of LaVerne
13. Desi Alvarez, City of Glendale
14. Mayor Algird Leiga, City of Claremont
15. Mayor Sandra Jacobs, City of El Segundo
16. Councilmember Sid Mousavi, City of Baldwin Park
17. Ray Holland, City of Long Beach, Department Public Works
18. Nassar Abbas-Zadeh, City of Azusa
19. Rufus C. Young, Burke, Williams & Sorenson
20. Richard Burton, City of Torrance
21. Charles Sihler, City of Pomona, Department Public Works
22. Ray Tahir, Consultant Representative
23. Gerald Breitbart, California Restaurant Association
24. Gregory Mastin, Froggy's Truckwash Next Generation L.L.C.

The Board Members adjourned for a 10 minute break.



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The following speakers spoke in support of the stormwater permit:

1. Honorable Senator Tom Hayden
2. Avi Bernard, Santa Monica Boulevard Elementary School + students
2. Laune Newman, Representative for Assemblymember Sheila Kuehl
3. Assemblymember Debra Bowen
4. Councilmember Ruth Galanter, City of Los Angeles
5. Councilmember Dennis Washburn, City of Calabasas
6. Mayor Paul Rosenstein, City of Santa Monica
7. Councilmember Carolyn Van Horn
8. Gary Hildebrand, County of Los Angeles Department Public Works
9. Ora Lampman, City of Burbank, Department Public Works
10. David Kay, Southern California Edison
11. Andy Goodman, Media Association
12. Doug Steiner, self
13. John Stein, Esq., self
14. Mark Ryavec, American Oceans Campaign
15. Sara Wan, California Coastal Commission
16. Gail Ruderman Feur, Natural Resource Defense Counsel
18. Terry Tamminen, Santa Monica BayKEEPER
19. Beth Pierce Glenn, Surfrider Foundation
20. Jose' Louis Sedano, Feliz Latino Scholastic Foundation
21. Barbara Taylor, self
22. Robert Wright, self

The meeting adjourned at 2:00 p.m. for a lunch break. The meeting reconvened at 2:50.

The hearing was closed at 4:10 for board discussion. Following board member comments, a motion was made to adopt the stormwater permit.

MOTION: By Mr. Vernon, seconded by Mr. Slezak to adopt the permit with the following direction to staff:

*1) Work with the stakeholders and resolve any remaining issues.*
*2) Bring a progress report back to the Board in six months.*
*3) Assist the stakeholders in the implementation process if needed.*

A roll call vote was taken with the following result: Ayes 8 - Noes 0

9. Watershed Management Grant Program.

*Staff member Wendy Phillips gave a presentation to the Board describing the projects recommended by staff for funding.*

10. Board Member Communications.

There was no discussion by the Board members.

11. Executive Officer's Report.

There were no issues discussed under this item.



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ADJOURNMENT

12. Adjournment.

The meeting adjourned at 5:10 p.m.

MOTION: Mr. Slezak, seconded by Ms. Rogers, and approved on a unanimous voice vote.

Adjournment to the Regular Meeting of August 19, 1996, at 9:00 a.m., City of Glendale Council Chambers, 613 E. Broadway, Glendale.

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## ATTACHMENT A

The individuals listed below were present at the meeting and, rather than speak, submitted cards registering their position as *for* or *against* on the items listed below:

ITEM 7.2 -Ventura Regional Sanitation District (Toland Road Landfill and Expansion):

### *FOR*

LaVern Hoffman, County of Ventura
Jay Duncan, City of Oxnard
John Conaway, Ventura Regional Sanitation Dist.
Jim Acosta, Ventura Regional Sanitation Dist.
Dolores B. Taylor, Ventura County PWA
Nina Shelley, Ventura Regional Sanitation Dist.
Rhonda Catron, Ventura Regional Sanitation Dist.
Damon Brown, EBA Wastechnologies
Robert Mason, Ventura Regional Sanitation Dist.
Marshall Payne, Ventura Regional Sanitation Dist.
Richard Slade, Ventura Regional Sanitation Dist.
Mike Leonard, Ventura Regional Sanitation Dist.
Joe Deakin, Ventura Regional Sanitation Dist.
Craig Prentice, Ventura Regional Sanitation Dist.
David Gadner, Fugro West, Inc.
Damon Brown, Ventura Regional Sanitation Dist.

### *AGAINST*

Robert M. Sawyer, Norman,Doulor,Sawyer, et al.
John Wisz, City of Carson
Mary Shore, Citizens of U.C. Citizens
Anita Nelson, self
Nancy Kimball, self
Gordon Kimball, self
Jennifer Heighton, self
Charlene Bailey, self
Bennett Curtis, self
Larry Diamond, self
Peggy Kelly, Santa Paula's Concerned Citizens
Dorcas H. Thille, VCCSTL

ITEM 8 - Public Hearing to Obtain Testimony Concerning the Adoption of the Revised Los Angeles County Municipal Stormwater Permit:

### *FOR*

Ruben Aronin, Entertainment Community
Jeffrey Neil Jones, Coastal Protection Committee
Michael Stokes, Calpirg
Dr. Mark Gold, Heal the Bay
Douglas Stanell, Bel Air Bay Club
Stephanie Fidel, Heal the Bay
Susan Rogers, self
Andi Nussbaum, Heal the Bay
Daniel Miller, Heal the Bay
Leo Trujilo Cox, UCLA, School of Law
Joan Hartmann, American Oceans Campaign
Dolphina Bastel, self
Evelyn Lansberry, self
Maribel Marin, self

### *AGAINST*

John J. Harris, Richards, Watson & Gershon
Robert Bammes, City of Monrovia
Robert Sepulveda, City of Commerce
John Bingham, City of San Marino
Jay Imperial, City of Rosemead
Judy Martinez, self
Rosemarie Peterson, City of San Dimas
Robert Bronkall, City of La Habra Hts.
Charles Herbertson, City of Hawthorne



VOL 19 0107



R0064232

ITEM 8 - Public Hearing to Obtain Testimony Concerning the Adoption of the Revised Los Angeles County Municipal Stormwater Permit:

Continued:

*FOR*

Michelle Hudson, Natural Resources Defense Council
Steve Gray-Barkan, self
Tracy Gray-Barkan, self
Dr. Pierce Flynn, Surfrider Foundation
Lauren Rem, Heal the Bay
Jenna Postar, Heal the Bay
Roger Gorke, Heal the Bay
Eduado Perez, Heal the Bay
Claire McConnico, self
Joanila Powell, St. James School
Virginia Calvano, self
Toni Pogue, Heal the Bay
Juliette Anthony, Coalition for Clean Air
Susan McCabe, Santa Monica Bay Restoration Project
Jeffrey Prang, self
Rich Thigpen, self
Roger Kintz, self
Julia Louis-Dreyfus, self
Scott McVarish, self
Tom Boer, self
Michael Jose Torre, self
Lisa Holtzman, Heal the Bay
L. Kronmal, self
Marilyn Kronmal, Heal the Bay
Angela Mains, Heal the Bay
Kathy Adibi, Surfrider Foundation
Joseph Traina, Heal the Bay
Gloria Morales, Heal the Bay
Jaque Forrest, Heal the Bay
Katherine Rubin, LA City Department Water & Power
Jessica Maldonado, self
Jacob Green, self
Dorothy Green, Heal the Bay
Evelin Molina, self
Julia Cruz, self
Freddy Paniagua, self
Oscar Chavez, self
Ericka Rodriquez, self
Christopher Jones, Surfrider Foundation
Tatiana Diaz, self

*AGAINST*

Mayor Hofmann, City of Lawndale
Larry Galvan, Cudahy Constituents
John Robertson, City of Cudahy
Charles Redden, City of Covina
Mayor Margaret Clark, City of Rosemead

VOL 19

01008

RESOLUTIONS/LETTERS RECEIVED AFTER 7/9/98

| PERMITTEES | DATE RECEIVED | R=RESOLUTION L=LETTER | ADOPT | POSTPONE |
|---|---|---|---|---|
| Baldwin Park (Rutan & Tucker, LLP) | 7/10 | R | yes* | |
| Monrovia | 7/10 | R | | yes** |
| El Segundo | 7/10 | R | | yes** |
| Glendale | 7/10 | R | | yes** |
| Temple City | 7/10 | R | | yes** |
| Santa Monica | 7/11 | R | yes | |
| Downey | 7/12 | R | | yes** |
| Rosemead | 7/12 | R | | yes** |
| Cudahy | 7/12 | L | yes*** | |
| Rolling Hills Estate | 7/12 | L | yes | |
| Los Angeles | 7/12 | R | yes | |
| Duarte | 7/12 | R | | yes** |
| Pomona | 7/12 | Comment L | N/A | N/A |
| Santa Fe Springs | 7/12 | R | | yes** |
| San Gabriel | 7/12 | L | | yes |
| Hawthorne | 7/12 | L | | yes** |
| Torrance | 7/12 | L | | yes** |
| Richards, Watson & Gershon (represent several cities) | 7/12 | Comment L | | |
| GOVERNMENT OFFICIALS | | | | |
| Assembly Member Dominic Cortese | 7/11 | L | | yes |
| Assembly Member Diane Martinez | 7/12 | L | | yes |
| Others | | | | |
| Southern California Edison | 7/10 | L | yes | |
| Southern California Gas Co. | 7/1 | L | yes | |
| South Bay Association of Chambers of Commerce | 7/12 | L | yes**** | |

*Conditional support - provided some findings are deleted as not applicable/requires clarification on some provisions/suggests deletions of some legal authority requirements. The issues raised were already addressed or responded to; as to clarifications, these could be handled by the Executive Officer.
**Have similar arguments (most are exact copies) - unscientific findings, unfunded mandates, delete receiving water requirements, liability exposure, delete requirements relating to administration of State-issued permits, approval of model programs by the regional board, reopener clause. All these issues were already addressed or responded to.
***Supports provided permit is amended according to comments from Richards, Watson & Gershon. Most of the comments are refinements in the language, others were already either addressed or responded to.
****Supports the permit provided unfunded mandate, cost, & achievable goals/objectives are resolved.

VOL 19 0109

| LETTERS OF SUPPORT | NO. OF SIGNATORIES |
|---|---|
| Government Officials | 8 |
| Senator Tom Hayden, 23rd District | |
| Assembly Member Richard Katz, 39th District | |
| Assembly Member Wally Knox, 42nd District | |
| Assembly Member Antonio Villaraigosa, 45th District | |
| LA Board of Supervisors - Resolution | |
| LA Co. Supervisor Zev Yaroslavsky | |
| Council Member Ruth Galanter, City of Los Angeles | |
| Brad Sherman, Member, State Board of Equalization | |
| Total Number of Concerned Citizens | 2,290 |
| Environmental Groups | 8 |
| Chamber of Commerce | 3 |
| Santa Monica | |
| Venice | |
| Westside Council | |
| Business & Industry | 154 |
| Architectural/Engineering Firms | 11 |
| Auto Dealerships | 2 |
| Developers/Real State/ Construction | 5 |
| Entertainment | 59 |
| Environmental Groups | 8 |
| Hotels | 6 |
| Law Offices | 15 |
| Medical Services | 4 |
| Restaurant/Cafe' | 1 |
| General Business & Retail Stores | 43 |

VOL 19

0110

7/14/96

R0064235

The Outlook

WEDNESDAY, March 27, 1996

# Cleanup plan for bay is criticized by cities

From staff and news service reports

A proposed set of regulations aimed at cleaning up Santa Monica Bay by tidying up the streets and storm drains of Los Angeles County is running into opposition from some cities that claim the rules are too stringent and too costly to enforce.

"Santa Monica fully supports the efforts to control runoff into the storm drains. We have implemented already all of the significant proposals and we don't find them overly burdensome or onerous," said Santa Monica Mayor Paul Rosenstein.

"It is every city's responsibility to do its share to clear up the bay and we are distressed at the thought the process may be reversed. We realize most cities are strapped and we can understand the financial pressures they are under."

The environmental organization Heal the Bay said the cleanup of urban runoff is vital to the health of the bay.

BAY/B2

## Bay

FROM PAGE B1

If the cities cannot live with the proposed regulations, said Heal the Bay staff scientist Jacque Forrest, they should offer alternatives.

"When everyone first came to the table in February '95, the environmentalists wanted cities to do everything under the sun. And that was not possible, and we know that," Forrest said. "But we need to find alternative solutions."

Representatives from 85 cities and the county have been meeting for the past year to hammer out an unprecedented guide for keeping pollution out of storm drains, which are one of the biggest sources of coastal contamination, especially during the rainy season.

With controls placed in recent years on industrial and sewage treatment plant discharges, the largest sources of pollution are roadways, parking lots, construction zones and certain businesses that funnel debris into the urban runoff system.

Some cities are unwilling to sign off on a cleanup plan that includes regulations that would prohibit local businesses from hosing down soiled sidewalks or rinsing out floor mats.

While the county and other local governments have launched public education campaigns asking residents to avoid rinsing soaps, pesticides and fertilizers into the gutter, the new set of regulations would make such practices illegal for businesses.

The cleanup plan, known as a National Pollutant Discharge Elimination System permit, is required by the Clean Water Act.

Xavier Swamikannu, associate engineer for the Los Angeles Regional Water Quality Control Board, said a response to the cities' concerns is due next month.

VOL 20

00002

R0064236

## LOS ANGELES TIMES EDITORIALS



# Clean It Up, Now

The problem is ugly and obvious: floating cups, newspapers, plastic bags and other trash in the waters of Playa del Rey. Much of the rubbish finds its way to Santa Monica Bay via storm drains from streets and commercial facilities. It jeopardizes marine life and the health of swimmers and compromises our tourism-dependent economy. And its continued presence in the bay means this region will be unable to comply with the federal Clean Water Act.

Outright dumping of sewage and toxic waste has largely been eliminated through enforcement of federal law. On a national scale, what remains is a formidable environmental challenge: controlling the debris and contaminants that drain into rivers, lakes and bays from farms, highways, yards, businesses and alleys.

The local problem is far bigger than the Santa Monica Bay. Orange County beaches were closed for 125 days in 1994, double the previous year's figure, according to a report by the Natural Resources Defense Council.

Solutions are controversial; they usually involve plans for close monitoring by regulators and programs to change the behavior of individuals. Proposals under discussion for Santa Monica Bay, for example, include limiting the hosing of streets and sidewalks and requiring businesses to regularly sweep their parking lots.

Cities seem headed in the wrong direction. Many of the 85 Los Angeles-area municipalities that had been working toward a common plan to control bay runoff are now balking. Moreover, the consensus and cooperation that once guided their efforts have disintegrated; by summer, the plan, which must be accepted by state regulators, will be a year overdue.

The bickering should end. Cities that have walked away from countywide negotiations should return to the table. State and county officials should encourage them. Meanwhile, neighborhood associations, business groups and local chambers of commerce need not wait. They should set up programs to voluntarily clear storm drains, monitor businesses and educate the public. Clean it up.

VOL 20 00007

LOS ANGELES TIMES

# Warnings Near Storm Drains to Be Replaced

**■ Pollution:** Los Angeles finds tile signs glued to curbs urging people not to dump trash where it will be carried into the ocean are getting knocked off.

By BOB POOL
TIMES STAFF WRITER 1-22-96

Close encounters of the terrestrial kind are sending part of an antipollution campaign down the drain in Los Angeles.

Officials are prying up 1,150 customized signs glued to curbs around the city that urge people not to dump trash into storm drains that empty into the ocean.

The reason: Buses pulling close to the curb for passengers are crushing the tile-like signs, knocking ceramic chunks into the very drains they're designed to protect.

It's the second setback for a $720,000 effort to prevent foam cups, cigarette butts, used motor oil and other discards from washing through 100,000 urban street drains into Santa Monica Bay and Long Beach Harbor.

Earlier "no dumping" reminders stenciled onto sidewalks above drain openings were worn away by pedestrians or obliterated by weather, dirt and discarded chewing gum.

City officials say they'll try tougher plastic curb tiles next. And if that doesn't work, they will try to attach signs to sidewalks with a special adhesive.

"It's life in the big city," shrugged Mark Gold, executive director of Heal the Bay—an environmental group whose lawsuit against the city eight years ago triggered the sign campaign. "Thank God they stopped it before wasting a lot of taxpayer money. You can imagine them doing all of their drains before realizing it didn't work."

Not that plenty of taxpayer money hasn't already been spent.

The city has so far paid $320,000 for the storm drain markers—including the cost of focus groups that helped pick the signs' fish-skeleton logo. There was even debate over the wording. "No Dumping—This Drains to Ocean." A proposal to include the words "No Tire Basura" (don't throw trash) was scrapped after Latino groups complained that Spanish-speaking people were unfairly being singled out.

> **'Thank God they stopped it before wasting a lot of taxpayer money. You can imagine them doing all of their drains before realizing it didn't work.'**
>
> MARK GOLD
> Heal the Bay executive director

The logos made their first appearance in the fall of 1993 on spray-painted signs stenciled on sidewalks above street drain openings. But many were blurry and difficult to read. And most started fading after about six months.

Looking for something more lasting, officials turned last year to ceramic tiles, which cost about $5 each. Fearful that pedestrians might trip over them and sue the city, officials decided to glue them to the sides of curbs rather than place them on sidewalks.

The first tiles were installed Downtown, near UCLA and in the San Fernando Valley's Porter Ranch and Northridge-Winnetka areas. Officials soon noticed that bus tires were bumping against them and breaking them, said Chuck Ellis, spokesman for the city Department of Public Works.

Los Angeles is responsible for about 55,000 of the region's 100,000 or so storm drains. Unlike sewer lines that run from homes and businesses to waste-water treatment plants, storm drains funnel street runoff directly to the ocean through open channels.

Ellis said the city is determined to find a durable sign for its drains. In a new test, 850 plastic tiles are being glued to curb sides and 175 stenciled signs are being cemented to sidewalks with "hot tape"—a process most commonly used to put crosswalk lines on streets, he said.

"We may have to change the design, or the color," he added. "We're trying to figure out how to label so it lasts the longest."

The city has paid workers from the Los Angeles Conservation Corps to install the test signs. Marun Ludlow, that group's Downtown director, predicted Thursday that the hot tape method—with more legible white-and-blue lettering—will be the eventual winner.

But will any sign actually stop people from tossing trash into storm drains? Officials acknowledged that they don't know—although the campaign has had at least one positive result.

Workers stenciling signs next to drains have taken it upon themselves to pluck debris from adjacent gutters, Heal the Bay storm water manager Lisa Crossley said.

"We can document keeping 180 grocery-size bags of trash out of the bay," she said.

R0064238

LOS ANGELES TIMES, August 19, 1993

VOL 20 0008

EDITORIALS of THE TIMES

# Stop This Monstrous Runoff

## *UCLA study points finger at storm drains as a major bay polluter*

It's yucky, possibly even deadly: runoff from city streets. Trash, motor oil, chemicals, pet droppings and who knows what else find their ways into gutters. All this collects in catch basins and flows though storm drains into the great Pacific Ocean, where people and fish play.

How powerful can such toxins be? Just look at what happened to the Teenage Mutant Ninja Turtles, contaminated when they were dropped into storm drains as babies. Well, OK—that's just fiction. But the fact is that preventing ocean contamination should be a major, year-round concern. Even in hard times, a little public awareness can help keep storm drains from being receptacles of contaminants.

A new study by UCLA found that an estimated 160 toxic chemicals—many of them known or suspected carcinogens—flow daily through storm drains into Santa Monica Bay, the home of Southern California's most popular beaches. The study, commissioned by American Oceans Campaign, the City of Santa Monica and Environment Now, identified a wider range of chemical pollutants than had been previously analyzed in the bay, long known as a site of toxic contamination.

Most of the attention and pollution remedies have been directed at sewage plants; storm drains have been studied little. Now it turns out that Santa Monica Bay levels of some carcinogens from storm drains are above those allowed in other situations under the California Ocean Plan, which sets standards for California coastal areas. Storm drains are not covered in the plan. Perhaps they should be—a matter for the State Water Resources Board to consider.

Meanwhile, cities in Los Angeles County that feed into the Santa Monica Bay watershed should be complying with the 1990 requirement that they file a storm water management plan. Even if implementation must be delayed because of tight budgets, cities could at least embark on educational efforts to drive home the point that people can help keep the ocean clean even when they are many miles away from the shoreline.

R0064239

VOL 20 0003

# Study finds 160 toxins reach bay

## *Environmentalists release results*

**By Nick Madigan**
STAFF WRITER

At least 160 toxic chemicals, many of them known or suspected carcinogens, are flowing into Santa Monica Bay on a regular basis, according to a UCLA study released Tuesday by the environmental group American Oceans Campaign.

In the most extensive study undertaken of the effluents of storm drains, researchers found significant traces of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and chlorinated pesticides, the most toxic and dangerous of the many substances analyzed.

"There are very real storm water risks to users of the bay," said Robert H. Sulnick, executive director of the Santa Monica-based American Oceans Campaign, "and this is just the tip of the iceberg. If we'd had more money, we'd have found more."

The $100,000 study was funded by AOC, the Santa Monica Bay Restoration Project, Environment Now and the city of Santa Monica, and was conducted by Dr. John Froines and Dr. Mel Suffet of the UCLA School of Public Health and Dr. Michael Stenstrom of the UCLA Department of Civil and Environmental Engineering.

**5 drains chosen**

Although 64 storm drains empty into the bay, the researchers concentrated on five — Pico-Kenter, Ashland, Sepulveda Channel, Ballona Creek and Centinela — from which samples were collected over a six-month period. The five were chosen because they were good examples of high-flow areas.

"Many of the compounds identified are widely recognized as being probable or possible carcinogens, reproductive toxicants, or having other chronic or acute toxicities," Froines said at a press conference Tuesday morning at Ballona Creek. "The finding of alpha-chlordane, dieldrin and PCBs, the latter es-

TOXINS/A8

R0064240

SANTA MONICA OUTLOOK, August 18, 1993 Page 2 of 2

R0064241

# Toxins

FROM PAGE A1

pecially in the Ashland drain, represents an important finding in this study. These substances are of particular significance because of their potential toxicity, persistence and potential for bioaccumulation in the environment."

Chemical contamination was found in all five of the drains surveyed. By far the worst storm drain was Ashland, which runs into Santa Monica State Beach, where 120 trace organic compounds were found.

At least 50 such compounds were identified at each of the other storm drains tested. The most toxic compounds found were polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), phthalates, chlorinated pesticides and hydrocarbons, phenols and other carcinogenic organic compounds and organophosphate pesticides. In addition, 33 volatile organic compounds were found in the effluent of all five storm drains.

Chemicals identified in the study can enter the body in one of two ways — through bioaccumulation, the build-up of toxins in living organisms, usually through eating fish or shellfish, or through the skin. The study summary did not mention swallowing water while swimming.

PAHs, which were found in all five drains, were deemed carcinogenic in studies that focused on contact with skin. Petroleum-based, they are often the product of incomplete combustion and are found throughout the environment. They may come from exhausts, tires and used motor oil as well as from barbecues and industrial sources.

## PCBs at 5 sites

PCBs, likewise sampled at all five sites, are found in aerosols and are also used for insulation in transformers. They are virtually indestructible in the environment and accumulate in the body through the food chain. PCBs are considered probable carcinogens by the Environmental Protection Agency and the International Agency for Research on Cancer.

"The existence of PCBs in the studied storm drains is one of the most important discoveries of the study and is a serious concern to both humans and the ecology of Santa Monica Bay," according to a summary of the study issued by American Oceans Campaign.

"To date, the state Department of Health Services has taken the position that there was no need to warn the public of any health impact from storm water contamination free of human waste," said Lisa Weil, policy director for AOC. "The results of this study demonstrate that it is time for DHS to step up to the plate, post those warnings and do the job they are charged with — protecting the health and safety of the citizens of California."

Carol J. Henry, director the office of Environme Health Hazard Assessment the state Environmental I tection Agency, said the st "points to the strong need improved control of storm d discharges into Californ bays and estuaries."

In a letter Monday to Molly Joel Coye, director of state Department of He Services, Assemblyman T B. Friedman, D-Brentw urged that DHS "adopt an gressive statewide policy conjunction with county he departments, of perma warning signs on beaches w swimmers come into con with storm drain effluent."

VOL 20

R0064242

LOS ANGELES TIMES, August 18, 1993 Metro Section

# 160 Toxics Per Day Flow Into Santa Monica Bay, Study Finds

**■ Pollution: Urban runoff into the ocean deserves more research, says a report commissioned by an environmental group. Statewide posting of warning signs about the danger of swimming near storm drains is being sought.**

By MARIA L. La GANGA
TIMES STAFF WRITER

An estimated 160 toxic chemicals—many of them known or suspected carcinogens—flow daily into Santa Monica Bay through the storm drains that capture urban runoff, causing potential danger to humans and marine life, according to an environmental study released Tuesday.

Although the bay, the most popular Southern California beach destination, has long been known as a site of some toxic contamination, the study identified a wider range of chemical pollutants than had been analyzed before.

"As this study shows, there are very real storm water risks to users of the bay and the ecology itself, which must be evaluated and quantified if we are to properly inform our citizens and protect Santa Monica Bay," said Robert H. Sulnick, executive director of the American Oceans Campaign, an environmental group that commissioned UCLA to conduct the study.

The findings are the latest salvo against the widespread problem of ocean pollution from urban runoff. Although the most single sources of pollution to the bay—such as sewage plants—have largely been remedied, storm water pollution is an area that has had little study and even less prevention, scientists and environmentalists say.

One of the most findings of the report is a high level of polycyclic aromatic hydrocarbons, also known as PAHs, carcinogens that are byproducts of incomplete combustion and may emanate from auto exhaust, used motor oil and tires. A wide range of PAHs were found in levels above those allowed in the California Ocean Plan, which sets standards for California's coastal areas.

"If PAHs are well above Ocean Plan standards, shouldn't we care about them, if humans and marine life are directly exposed to urban runoff, which we are?" asked Mark Gold, staff scientist for Heal the Bay, another environmental organization. "This brings out the need for the Ocean Plan to apply to urban runoff as well. It's not clear that it does."

To John Froines, a professor of toxicology at the UCLA School of Public Health and the lead scientist on the study, the presence of PCBs, or polychlorinated biphenyls, in levels greater than allowed under the Ocean Plan is also of great concern. PCBs are known carcinogens and cause reproductive problems. They can enter the body through contact with the skin and also concentrate in fish that are later eaten by people.

"We don't know their origin," Froines said, "or why they've come into the storm drains."

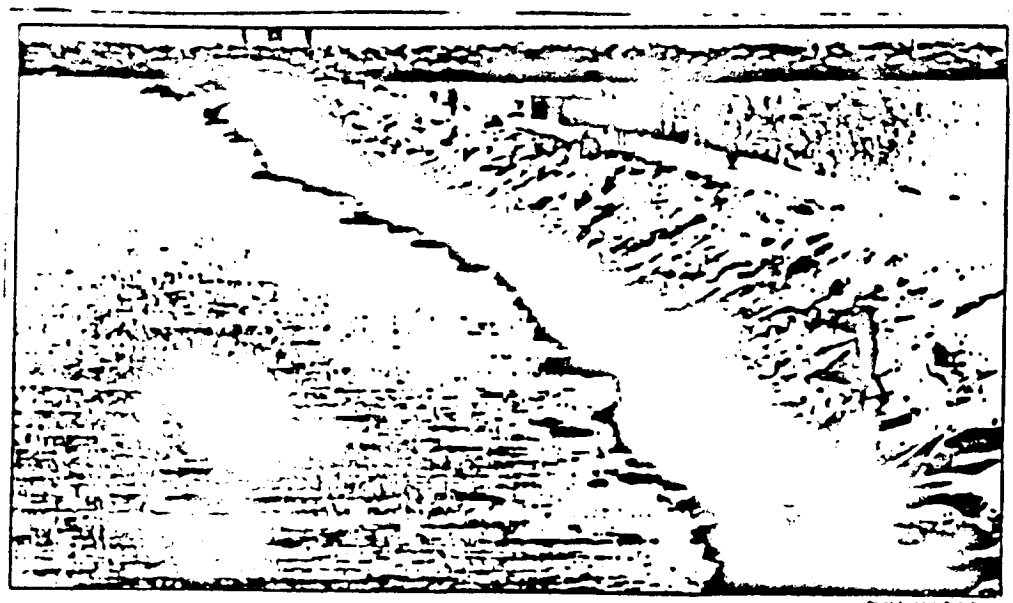
The study sampled water from five of the bay's 64 storm drains over a six-month period and found what Froines characterized as probably 10% of the chemicals that flow from drains into the bay.

"What this study shows is that there's a lot more there that needs to be characterized, but also that we're only seeing part of the problem," Froines said.

Although Los Angeles County beaches have signs at most storm drains warning of the dangers of swimming closer than 100 feet, the American Oceans Campaign is asking for statewide warnings—large and bilingual—about swimming near drains. The group also is urging the state to come up with a management strategy for pollution from urban runoff.

Assemblyman Terry B. Friedman (D-Brentwood) this week wrote to Molly J. Coye, director of the state Department of Health Services, informing her of the study and requesting that signs be posted at beaches throughout the state.

DAILY NEWS, August 18, 1993



Researchers took samples from five storm drains, including the one at Ballona Creek, and found traces of organic compounds

# Toxics found in 5 drains feeding bay

## *UCLA study says compounds came from pesticides, other chemicals*

By Tony Knight
*Daily News Staff Writer*

Storm drains carry into the Santa Monica Bay traces of about 160 chemical compounds, including some that are known to cause cancer and birth defects, according to a study released Tuesday by researchers from the UCLA School of Public Health.

The traces, which were found in five of 64 storm drains that empty into the bay, come from the widespread use of pesticides and other chemicals throughout Los Angeles, said the study by the University of California, Los Angeles.

Researchers, who described the testing as the most exhaustive look at storm drain pollutants to date, called for additional studies to assess the possible health threat and for programs to find and eliminate the sources of pollution.

"The PCBs and the pesticides that we found deserve much more investigation because where they're coming from is not clear, and they do stick around in the environment, so they are accumulating," said John Froines, one of the principal researchers.

Froines and fellow researchers took samples for six months from five storm drains, including the Pico-Kenter storm drain near Santa Monica Pier, the Ashland storm drain in Venice, the Ballona Creek channel south of Marina del Rey, and the Sepulveda and Centinela channels that empty into Ballona Creek.

Fifty traces of organic compounds were found in all the storm drains. More than 120 compounds were found in the Ashland storm drain alone.

The $100,000 study was funded with grants from the city of Santa Monica, a federally funded public/private consortium known as the Santa Monica Bay Restoration Project and two environmental groups — the American Oceans Campaign and Environment Now!

The environmentalists urged people to stay out of storm drain water where it crosses the beach, never to swim within 100 yards of a discharge point and to avoid swimming in the ocean for three days after a storm.

"The actual levels of the contaminants were not in and of themselves so great," said Lisa Weil, policy director for American Oceans Campaign. "The cause for concern is that they found so many. They found over 150 in only five storm drains monitored."

Officials with the California Environmental Protection Agency said the study points out the need to control storm drain discharges.

"Little has been done to address the quantities of hazardous consumer products, illegally dumped motor oil and other toxic compounds that find their way into storm drains, and ultimately, the bay," said Carol J. Henry, director of CAL-EPA's health hazard assessment office.

Assemblyman Terry Friedman, D-Encino, in a letter called on Molly J. Coye, director of the state Department of Health Services, to immediately post warning signs at all 64 storm drain outlets to the bay.

"People living in coastal communities who spend time at the beach should be made aware of precautions that can be taken to minimize contact with these dangerous chemicals," Friedman said.

Ken August, spokesman for the state health department said Coye could not respond directly to Friedman's letter or the study results on Tuesday.

"The department is looking into his (Friedman's) request," August said.

Los Angeles County officials already post permanent warnings at three storm drains and temporarily post a half dozen others when they have water in them, said Jack Petralia, director of Environmental Protection for the county Department of Health Services.

Petralia said the levels of the toxics that were found was extremely low compared to safe drinking water standards. The study measured toxic traces in nanograms (millionths of a gram) per liter. One nanogram per liter is equal to one part toxic compound for every trillion parts of water.

"Nanograms are below drinking water standards," Petralia said. "When you start talking about parts per trillion that doesn't make any sense. The drinking water standards are based on you drinking a liter a day, every day, for 70 years."

VOL 20
00110
R0064243

SIXTH DISTRICT

# NEWS

## From Councilwoman Ruth Galanter

**FOR IMMEDIATE RELEASE**
**Tue., July 9, 1996**

**CONTACT: JEFFREY PRANG**
**(213) 485-3357**
**(213) 237-1274**

### L.A. CITY COUNCIL APPROVES GALANTER MOTION TO SUPPORT SWEEPING COASTAL ANTI-POLLUTION PROGRAM

The Los Angeles City Council today approved Councilmember Ruth Galanter's motion supporting the proposed Los Angeles County Municipal Storm Water NPDES (National Pollution Discharge Elimination System) Permit regulating urban runoff.

Under the federal Clean Water Act of 1987, local governments must adopt an NPDES permit regulating runoff and storm water pollution. The Los Angeles Regional Water Quality Control Board (RWQCB) will vote on the draft NPDES permit on July 15. The proposed storm drain pollution permit will reduce storm water pollution to the maximum extent practicable and ensure compliance with the objectives contained in the permit. Those conditions include identification of illicit discharges into the storm drain system, increasing public and business education, and increasing site inspections.

Everyday, an estimated 100 million gallons of urban runoff flow off city streets into storm drains into San Pedro and Santa Monica Bays. Urban runoff typically consists of a toxic mixture of oil, gasoline and lawn fertilizers and chemicals washed from parking lots, driveways and from watering lawns. An epidemiological study report released in May by the Santa Monica Bay Restoration Project revealed that swimmers who swim near storm drains are at a significantly higher risk of getting sick than those who swim further away, demonstrating the need for tough storm water and runoff regulations.

"The most significant action the RWQCB can take to clean-up Santa Monica Bay is to adopt this permit," said Galanter. "Local government and businesses may have to take some extra steps, but at stake is the health of the millions of swimmers at our beaches and our region's multi-billion

**MORE**

VOL 20 0011

**GALANTER**
**July 9, 1996**
**2-2-2-2**

dollar tourist industry. Since some local governments have balked at some of the permit requirements, the Los Angeles City Council's adoption of this resolution sends a strong message to the Water Board that the City of Los Angeles and its residents are willing to do what it takes to control pollution and clean-up the Bay."

###

VOL 20 0012

TUESDAY, JULY 2, 1996
PASADENA STAR-NEWS



# Clean oceans start at home

EDITORIAL

LOCAL cities should welcome the new consensus plan for cleaning up our coastal waters. Storm drain runoff has been identified as the No. 1 pollutant fouling our beaches and threatening marine life.

During the rainy season, rubbish, silt, pesticides and toxics from streets, parking lots, yards and farmland flow into street drains, forming a lethal soup. Much of the unsightly and disease-laden mess is dumped directly into the ocean and washed back up along the Southland's biggest tourist attraction — miles of beach.

**THE ISSUE:** Cities and counties will soon have pollution abatement guidelines for helping clean up coastal waters.

**WE SAY:** Individuals can help by proper disposal of toxics and better management of water resources.

The largely voluntary plan relies heavily on education, leaving enforcement up to existing local agencies. Mitigation is based on simple and often inexpensive measures that cities must take now.

For instance, barriers around storm drains catch much of the urban debris, offering easy and ongoing cleanup. They are an efficient solution to clogged catch basins, which often back up, resulting in flooding. Cheaper, too.

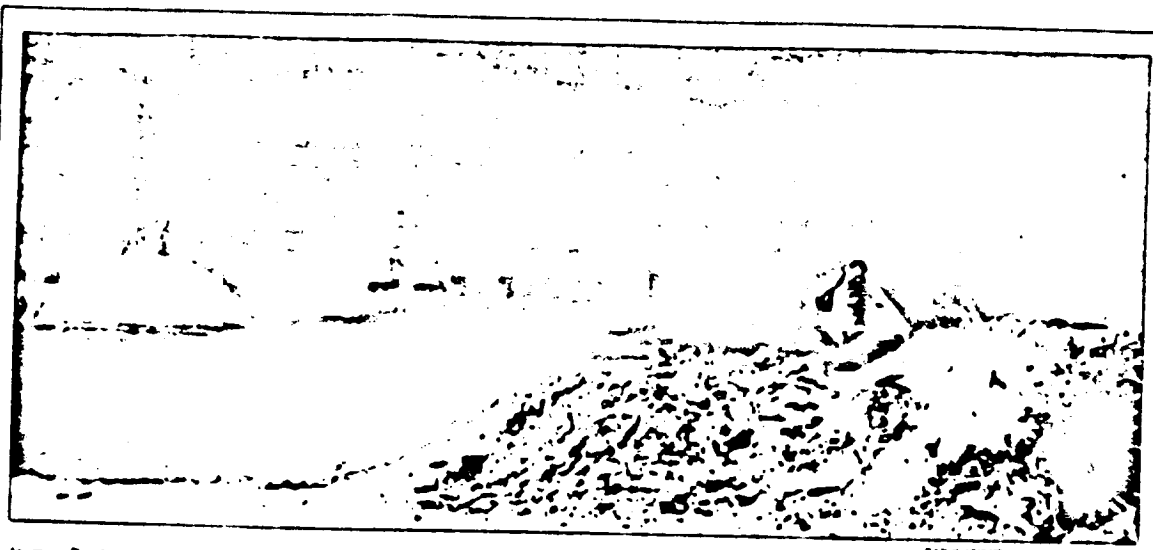
Regular street sweeping must be a priority for cities and counties. This midnight maintenance not only clears streets, alleyways and parking lots of paper and dirt, but also vacuums up oil, gasoline and other automotive fluids from leaking vehicles.

The state could go a long way toward reducing these contaminants by making checks and repairs part of the biannual smog certification required for vehicle registration. Most folks would be grateful if such leaks were caught early enough to avoid costly repairs.

The Regional Water Quality Control Board will oversee the program and is expected to adopt an abatement permit by July 15. Based on the consensus concept, the permit is expected to require cities to reduce runoff from public facilities such as vehicle maintenance yards, fire stations and parks as well as include storm water runoff considerations in General Plan revisions. Cities must move immediately to make mitigation part of environmental impact requirements for developments.

Individuals must become part of the solution as well, putting trash in containers instead of tossing it on the street. Proper disposal of used motor oil at a service station; timing lawn sprinklers to prevent pesticides, fertilizer and soil from going over the curb; and sweeping, instead of hosing driveways are precautions people can implement easily and quickly. Only by working together can we turn the tide on the wave of pollution that is killing our oceans. Let's clean it up, now.

VOL 20 0013
R0064246



CARLOS CHEATHAM Los Angeles Times

Jaymes Pawlowsky treks over piles of driftwood and man-made debris left along Long Beach's shoreline from the mouth of the Los Angeles River



Ojai resident Wendy Burger, right, gathers bamboo on San Buenaventura State Beach to build an impromptu shed. The debris left on the Ventura County beach has presented an aesthetic challenge as summer looms.

Photo by [illegible] For The Times



# Flotsam AND Jetsam

## Rains Wash Ashore Everything From Old Refrigerators to Rattlesnakes Along the Coast

By PAUL FELLMAN
TIMES STAFF WRITER

When Earl and Sandee Simons arrived at the beach in Ventura the other day, they were hard pressed to find a clean spot to plunk down their towels.

The problem was the 20-foot-wide layer of driftwood and other debris that washed out of the Santa Clara and Ventura rivers and up onto the shore.

"It's as if the tributaries of all the rivers have puked into the ocean," mused Earl Simons, a disabled oil field foreman.

From Santa Barbara south to San Diego, the unusual season of heavy storms has left an impressive residue on Southern California's glistening sands—tons and tons of flotsam and jetsam, the likes of which have not been seen for more than a decade.

On many Ventura County beaches, piles of bamboo-like sticks are so thick that it looks as if a Pier 1 Imports warehouse exploded at seaside.

More than a month after the harshest rains, the coastline in Long Beach resembles a hay farm just after harvest, as city maintenance workers stack piles of driftwood and man-made debris that continue to spew out of the mouth of the Los Angeles River near the Queen Mary.

With Easter but a week away and summer looming as something more than an abstract concept, the debris is proving a daunting physical, fiscal and aesthetic challenge.

Please see FLOTSAM, A30

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# FLOTSAM: Heavy Rains Bring Rattlesnakes, Reeds and Refuse Ashore

Continued from A3

Some beach-goers, though, see the deluge of driftwood as a healthy sign that a whole lot of nature still remains in metropolitan Southern California.

"It makes you feel like you're so far away from the city—it makes it so much more natural here," said surfer Michael Creel, 24, as he shaded himself in an impromptu tepee made of tree branches and logs at Trestle, a venerated surfing beach near the border of Orange and San Diego counties.

Although the bulk of debris can be found on beaches in the vicinity of river and creek mouths, some has floated in the sea 10 to 20 miles before washing ashore.

Particularly mobile is arundo, a prolific bamboo-like giant reed that grows in large groves along stream beds in the Ventura and Malibu areas and has been found on the sand as far south as Hermosa Beach.

"It's an exotic, invasive weed that has gone wild," said marine biologist Susan Williams, who works as a Channel Islands National Park ranger. "With lots of rain, lots of the stuff grew last year. And with the rain this year, there has been a tremendous flow down the watersheds."

Surfers seemed to be taking the invasion of floating obstacles in stride.

"Occasionally, you see a log cruising by and laugh and say, "Whoa, log, look out," said Troy Peters, 23, after a morning in the waves at Surfer's Knoll in Ventura. "I hit a half a tree, a big old huge branch. It broke a fin on my board. But I like the beach this way. I'm opposed to making the beach all perfect. You see the craziest wood formations. It's real intense."

The same day, Ventura Harbor beach-goers sifted through weathered driftwood for natural art or made use of cane-like branches for surfside baseball games. On the beach next to the Ventura County Fairgrounds, near a homeless encampment in the live arundo groves known as "Hobo Jungle," two homeless Vietnam veterans improvised a game of their own—seaside ringtoss, employing a washed-up bicycle inner tube and a two-foot reed.

"We know this game from 'Nam," said one of the drifters, who said he goes by the name "The Preacher." "We're bored and so this keeps our morale high."

Also boosting their spirits, The Preacher added, were the fresh oranges and lemons that were carried to sea from citrus groves along the Santa Clara River. "We pick 'em off the beach to eat," he said.

While the fallen fruit lent a festive color to the shore, several surfers at Ventura said it also stood as testimony to a silent repercussion of the storm season.

"God knows what kind of pesticides are washing out to sea," said Craig Lane, 27, a restaurant manager from San Luis Obispo. "The pollution concerns me."

In less developed areas of Orange County, the issue of agricultural runoff has been complemented by fears of rattlesnakes.

At San Clemente State Beach near the one-time Western White House of Richard Nixon, lifeguard Mike Broussard said he recently spotted a three-foot rattler.

"I wasn't going to be a hero," Broussard said. "I called the animal control people."

At nearby San Onofre State Beach, a recent surfing contest was canceled when a participant noticed a live rattlesnake floating in the surf on a branch. And at Doheny State Beach off Dana Point, free driftwood is available for use as firewood—but consumers are warned to watch out for snakes when picking through the timber.

> **'I hit a half a tree, a big old huge branch. It broke a fin on my board. But I like the beach this way. I'm opposed to making the beach all perfect.'**
>
> TROY PETERS
> Surfer

Clearly, though, the heaviest impact of this year's storms has been on beaches that were forced to shut for several days because of pollutants streaming out of storm drains and overflow from sanitary sewage systems.

Moreover, the most lingering impact has been in the coastal communities of Long Beach, Seal Beach and Playa del Rey, which suffer the misfortune of abutting the mouths of the Los Angeles River, the San Gabriel River and Ballona Creek.

When the sun beats down on Dockweiler State Beach at Playa del Rey these days, the little bits of foam in the sand glisten as if they were mica.

"During each storm, it looks like white lilies are floating down the creek—it's like a Styrofoam garden," said artist Kelly Fein, as she sifted through the sand and refuse for seashells.

On a nearby jetty, fisherman Aaron Crawford, 48, said conditions remain dreadful in the water—at least if fish are the object of one's desires. "I've caught plenty of plastic bags, T-shirts and all kinds of stuff," said the Southern Pacific freight car worker.

The heavy storms have also helped create a large underwater buildup of sediment at the south entrance to the Marina del Rey channel. Last October, the Army Corp of Engineers spent $400,000 on a dragging project—but now the channel has shoaled up again.

At Seal Beach last week, the shoreline was more the consistency of mulch than sand because of the high content of pulpy debris washing ashore from the adjacent San Gabriel River.

"It's not what they show on TV about Southern California," said vacationing Portland, Ore., resident Sandy Eichstadt. "It's pretty nasty here."

Tractor operator John Ayala, 27, said the cleanup has been nonstop work. "Every time it seems like you can breathe a sigh of relief, it starts up again the next day."

Nowhere has it been worse than in next-door Long Beach, where city officials say a staggering 8,000 tons of debris have washed to shore.

That is twice as much refuse as the Los Angeles County Department of Beaches and Harbors picks up in an entire year along 31 miles of beaches from San Pedro's Cabrillo Beach north to Zuma Beach. It is also twice as much debris as Long Beach has ever had to deal with before, said Long Beach parks and recreation manager Phil Hester.

"It's probably going to cost a minimum of $500,000 to clean," Hester said. "We anticipate it will be another month before we get all the debris off the beach."

Hester said his crews have picked up refrigerators, 30 foot logs, cigarette butts, tires, plastic oil containers and dead dogs.

After sifting out the sand with a $75,000 machine, he said, trash haulers transport the refuse where it should have gone in the first place before tumbling down the Los Angeles River—the county dump.

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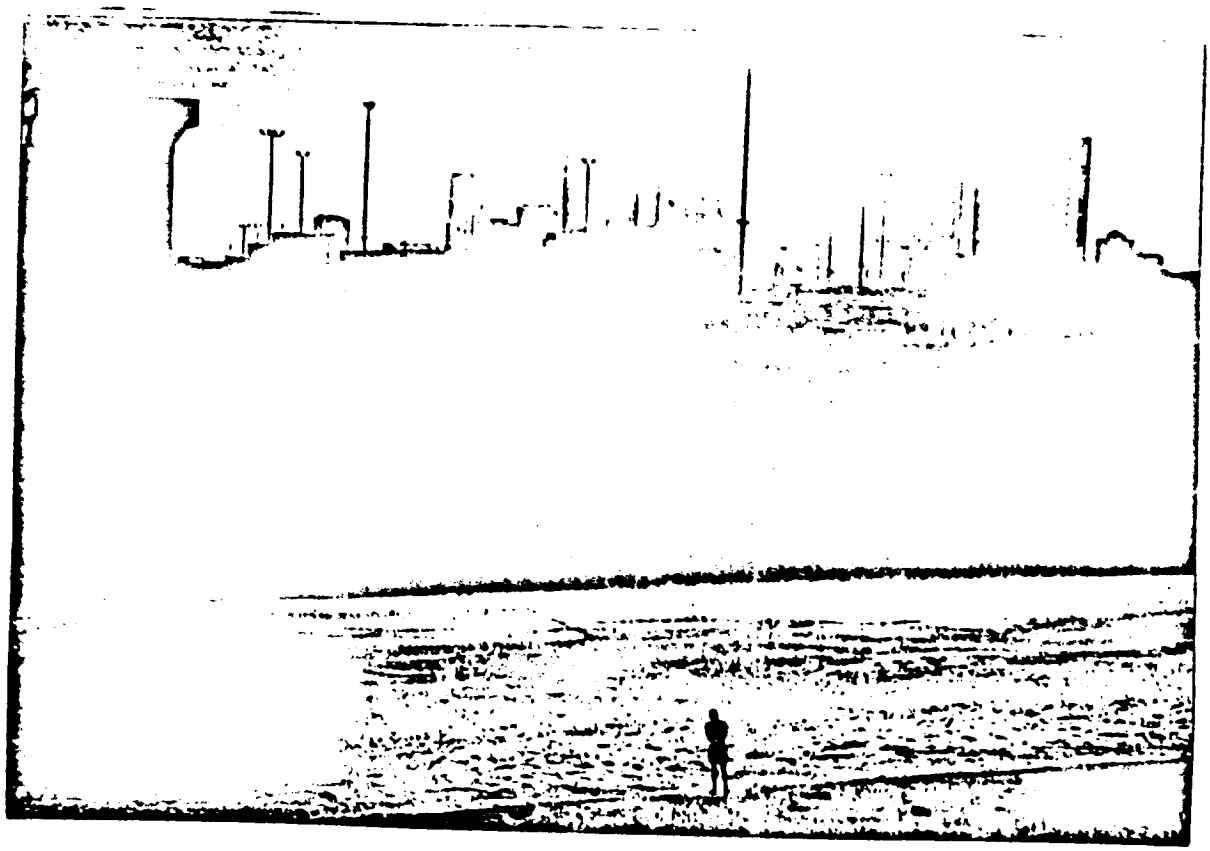
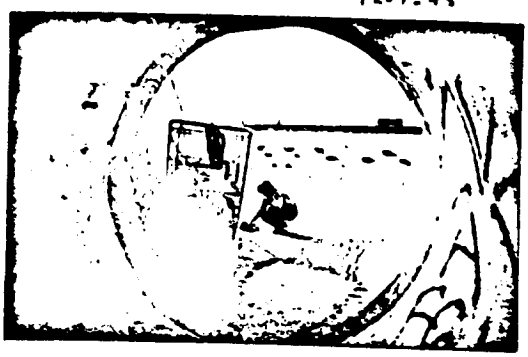
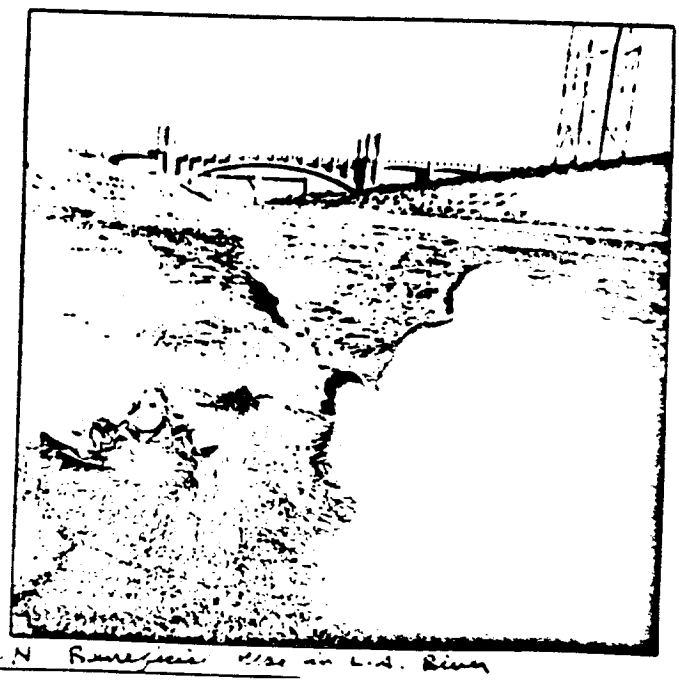


# River Views

The Los Angeles River, which cuts a serpentine, 58-mile swath through the county, is often ridiculed, abused and defiled. Despite the flotsam and jetsam the river leaves behind, homeless people often live by the murky water. A man stands on the banks of river after taking a swim, top, while a man bathes in the river, right. A woman cooks a meal at the mouth of a drainage pipe, below.

Photos by
CLARENCE WILLIAMS / Los Angeles Times
12-1-95





MLN Barrefoot Plan in L.A. River

VOL 20

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# PR firms to do dirty work in cleanup plan

By Marni McEntee
*Daily News Staff Writer*

Storm drains might be a dirty subject, but certainly not a sexy one. Just ask the public relations experts at Rogers and Associates and Harris and Co.

With $5.2 million in Los Angeles County money, the two companies have the unenviable task of teaching people what happens when what they dump down storm drains ends up in the ocean.

They were chosen for the job in May, partly because they have launched other successful public education efforts, including AIDS and smoking prevention campaigns, Rogers and Associates partner Lynne Doll said.

Making the transition to, say, explaining how a discarded fast-food wrapper makes its way from a restaurant parking lot to the beach should be a snap.

"If we can get people to stop smoking or put on a condom before they have sex, then getting them not to litter, for example, is easy," Doll said.

The public education campaign is the main feature of a plan to help bring Los Angeles County in line with federal Clean Water Act regulations designed to clean up coastal waters.

On July 15, the Regional Water Quality Control Board is scheduled to consider issuing Los Angeles County a five-year permit for its cleanup plan, called the National Pollutant Discharge Elimination System permit.

The meeting is scheduled for 9 a.m. in the county Hall of Administration, 500 W. Temple St.

The plan is designed to reduce a toxic soup of pathogens, oil wastes, heavy metals, pesticides and animal wastes that run down storm drains and account for an estimated 60 percent of the pollution in the Santa Monica Bay — toxins that sicken ocean swimmers and surfers, a recent scientific study found.

"Watershed management is a concept whose time has come," declared Dennis Washburn, a Calabasas City Council member, who has helped shepherd the county's permit process.

The efforts have not been without controversy.

Glendale City Engineer Desi Alvarez predicts that the plan will be expensive — for consumers, businesses and public agencies.

The cleanup plan requires 85 cities in Los Angeles County to adopt and enforce regulations on runoff pollution. That means cities must develop a public education system for businesses and consumers, identify and eliminate illicit storm drain hookups, limit street and sidewalk washing, and mandate regular sweeping of larger parking lots and proper waste disposal at restaurants, car repair shops and gas stations.

Alvarez said some requirements, such as rules that require swimming pool water to be chlorine-free before it is flushed down untreated drains, will be a burden to consumers and the city.

"That means you'll have to pay someone to come out and test the water. It could cost $300 to do the test," Alvarez said. "Somebody's going to bear the burden of that and it's going to be the homeowners."

Still, plan supporters say the final product actually has been stripped of many of its teeth.

Although it requires the county and cities to visit businesses and industries to explain storm water regulations, it does not require regular city inspections to ensure commercial and industrial businesses are complying with wastewater permit requirements, said Roger Gorke, science and policy analyst for the environmental group Heal The Bay.

Yet, some business associations say there's no good science behind the permit requirements.

Restaurant operators, for example, would be required to make sure any runoff from food-covered mats doesn't make it into storm drains untreated.

"We have been concerned about the fact that we have been included in here without any empirical evidence that we should be," said Gerald Breitbart, a consultant for the California Restaurant Association.

Long Beach officials have requested that the board postpone permit requirements for that city, until studies can determine whether storm drain runoff has tainted beaches there, said Deputy City Attorney Lisa Peskay Malmsten.

That city already spends $12.4 million on storm water projects, such as street sweeping and public education, she said

The new requirements could cost an additional $3.5 million per year, which may be funded through an assessment district similar to the one in Los Angeles, she said.

"If you're a taxpayer you're paying for it out of one pocket or the other," Peskay Malmsten said.

R0064250

Beach Reporter
8/27/96

# Redondo councilmember key player in water debate

by Corrinne Frost Jr.

When the countywide permit that regulates storm drain pollution expired a year ago, a group of city engineers, Los Angeles County officials and representatives of environmental organizations met to craft a new permit that would directly address the growing problem of the waste that flows into our oceans.

Giving extra impetus to their mission was the recent publication of a study that for the first time linked pollution from storm drains to illness in swimmers.

As negotiations continued, though, it became clear to all parties that an agreement would be difficult. Officials from local governments balked at the high cost of broad enforcement measures. Environmental organizations argued that tough policing was the only way to get real gains.

At that point, the negotiations fell into an impasse over the enforcement heavy proposal that was on the table. That is where negotiations would probably still be if not for a group of city representatives from the Santa Monica Bay Restoration Project who brought forth an alternative.

It was these representatives who, in fighting what they described as unfunded mandates in the original permit proposal, put forth a plan that would keep strong enforcement provisions intact, but would allow cities to first attack the problem with education. This newer, less-divisive and less-costly permit proposal will go to a vote before the California Regional Water Quality Control Board July 15.

Representing small cities on the Restoration Project's executive advisory committee was Redondo Beach



Bob Pinzler

Councilmember Bob Pinzler who, as the negotiations continued, found himself in the midst of one of the most heated environmental debates that the county has seen in years.

Further, this representative from a small- to medium-sized beach city found himself dealing with political heavyweights from county, state and federal government, as well as some savvy players in the environmental community.

But Pinzler said this work that he was not intimidated by the company.

"In everything that happens that affects the (City) council, you can take the position of being a superficialist or get involved," Pinzler said. "I tend to get involved."

While not describing himself as a textbook environmentalist, Pinzler said that

(Please turn to page 15)

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# Pinzler

*(Continued from page 10)*

because controlling storm drain pollution was very important to him, he felt the need to get involved.

"I felt this was extremely important to the economy, and I felt it was extremely important to our quality of life," he said. "I sort of took it to heart."

According to Pinzler, he and his associates were originally concerned with the costs that small cities were facing under the proposed permit. He estimates that if the original proposal had been approved, it would have cost his city $250,000 a year to implement. In a cash-strapped city like Redondo, that would have been a tough pill to swallow.

Although specific estimates aren't available for the new proposal, Pinzler says the costs will be "substantially less" because they give cities the option of devising their own strategies, using resources that, in many cases, are already in place.

Another problem that Pinzler and his associates on the Restoration Project found with the old proposal was that there was no real plan to change the behavior of the violators who were doing the most damage with regard to storm drain pollution. These were the common citizens who dump motor oil in the gutter or let their dogs defecate in the street.

Most agreed that getting compliance from these people was the most important step in cleaning up storm drain runoff. Save an elaborate and expensive method of policing, the only way to achieve the necessary change in behavior would be through education, contended the Restoration Project and a number of city representatives.

"We can't afford storm drain police," Pinzler said. "What this (the new proposed permit) does is permit cities to try stuff. If it doesn't work, there is still tough enforcement.

"The key is that it allows for a period of time to see if it (each city's educational programs) will work. I think it will."

Pinzler drew the analogy to recycling. Once ignored by most adults, recycling became the norm when kids learned about the importance of such programs at school and brought that information home.

"Kids shame their parents," he said. "That's what we're going to deal with here."

Most citizens were never privy to the work that Pinzler and his colleagues performed behind the scenes. However, if they've watched a Redondo or Manhattan Beach council meeting recently they may have seen the video that Pinzler helped produce with the county, the Restoration Project and Heal the Bay.

"In our travels around, Dennis Washburn (the inland cities representative with the Restoration Project) found a lack of awareness on this issue," Pinzler said. "We wanted not only to let them know what was going on, but to get their responses to it."

Because both Pinzler and Washburn have backgrounds in advertising, they were perfect choices to put together the informational video which presents the problems of storm drain pollution and discusses the proposed permit. Pinzler is credited with writing and directing the video.

The video has been distributed to just about every city in the county. Other government officials and environmental groups have also received a copy of the video.

VOL 20 0019

R0064252

The Outlook

June 19, 1996

OUR VIEWS

# A new chapter for bay cleanup

## Cities must address urban runoff

Years of efforts to clean up Santa Monica Bay have yielded many successes. Pollution from so-called "point sources," such as industrial giants, has been markedly reduced. Water monitoring has increased. Government agencies have invested millions of dollars in sewage treatment.

But in July the clean-the-bay drive will reach a new plateau. As Joan Hartmann of the American Oceans Campaign in Santa Monica explains, urban runoff now accounts for as much as 60 percent of water pollution.

A new regionwide campaign will attempt to neutralize this "toxic cocktail" of pesticides, animal droppings, trash, food wastes and automobile by-products that are commonly dumped down storm drains in the Los Angeles basin. On July 15, the Regional Water Quality Control Board, a state agency, will vote on requiring the county and 65 cities in the region to follow stricter stormwater pollution practices.

**AT ISSUE:**

Will a regional stormwater program reduce pollution in Santa Monica Bay?

The new program, the product of more than a year of negotiations, has evolved from one focused on enforcement to a more business-friendly campaign based on education. And though it will mean some additional responsibilities for local governments, it's a reasonable way to achieve a goal everyone agrees with: a cleaner bay.

A cleaner storm-drain system bolsters the region's $2 billion tourism economy. It reduces health risks to swimmers, surfers and other beachgoers. And it lessens the risk of storm-drain backups that create flood conditions during the rainy season.

The new program would create a coordinated effort to identify illicit disposals of pollutants; require educational visits to affected businesses such as gasoline stations, auto repair firms and restaurants; reduce stormwater runoff at construction sites; and develop an outreach program to educate the public.

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00020

R0064253

# The Outlook

June 19, 1996

Smaller cities should be able to reduce their compliance costs by "piggy-backing" with other cities and public agencies. Making businesses more aware of stormwater issues can be done in conjunction with ongoing fire, health and industrial-waste inspections.

Moreover, businesses would not be required to install expensive new technology. They would be given basic instructions on keeping oil, grease and other chemicals out of the storm drains and how to go about emptying industrial wash basins.

Most of these things are simply good housekeeping practices that should appeal to everyone living in the Los Angeles area, especially those who enjoy the beach.

It is also worth mentioning that while some cities — Redondo Beach and El Segundo among them — have had concerns about previous drafts of the new stormwater policy, the current proposal has the backing of the county and the city of Los Angeles in addition to such businesses as Maguire Thomas Partners, Jon Douglas Co. and Body Glove. The Santa Monica Chamber of Commerce is also on board.

Redondo Beach City Councilman Robert Pinzler says the current proposal is geared toward what's "doable and affordable." We agree. By approving the countywide stormwater permit, the Regional Water Quality Control Board would take Santa Monica Bay cleanup efforts to a new level, one that is ambitious, yet necessary to preserve one of the region's most valuable resources.

VOL 20

0021

R0064254

pg2

# The Outlook

June 19, 1996

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VOL 21

April 16, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times about pollution from storm drains in the Santa Monica Bay (3/26/96, page B1), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

c: Governor Pete Wilson
Mayor Richard Riordan

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LOS ANGELES REGION

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SANTA MONICA

VOL 21 0003

18 April 96

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

As a business owner in Los Angeles, I am interested in improving the quality of our local coastline. Coastline beaches are an important economic driver for the region. We must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times about pollution from storm drains in the Santa Monica Bay, I am requesting the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific evidence to support such measures. I am pleased that the business community was included in the negotiations - as were representatives of all the effected parities.

In an time when government is so often criticized for not taking action, take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you.

Mike Sullivan
VP & General Manager

MS:ec

APR. 22 1996

R0064257

2440 Santa Monica Blvd., Santa Monica, CA 90404 • (310) 829-1888 • (310) 829-3906 fax

BRESLAUER, JACOBSON & RUTMAN, INC.
A DIVISION OF PROVIDENT FINANCIAL MANAGEMENT
10345 WEST OLYMPIC BOULEVARD
LOS ANGELES, CALIFORNIA 90064-2524

LOS ANGELES REGION

April 20, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Chairman Keston:

I am very concerned about the pollution of Santa Monica Bay, and the effect of that pollution on the health, not only of the Bay, but on the health of our economy. I encourage you to adopt the pending stormwater permit. It offers the only way to restore the Bay to health and to ensure the prosperity of coastal and tourism businesses.

The Bay has developed a reputation as being polluted and, as a result, visitation has declined. The soon-to-be released epidemiological study showing the health effects of swimming near storm drains could exacerbate this trend. I understand that the epidemiological study deals only with the impact of pathogens on one-time swimmers during dry weather; it does not address the impact of regular swimmers, those who swim in wet weather when flows are greatest, or the impact of toxic pollutants (scores of which have been identified and are known or suspected carcinogens or mutagens). The release of the epidemiological study is likely to raise many questions. If the regulatory authority has no compelling response about how to reduce pollutants from urban runoff flowing to the Bay, people will stay away. This will have enormous short and long-term economic consequences.

As the regulatory authority charged with protecting our waters, I urge you not to delay in adopting the pending stormwater permit.

Sincerely,

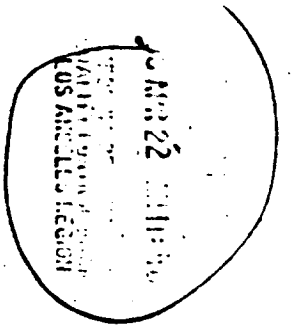
Gerald Breslauer

cc: Governor Wilson
Mayor Riordan

VOL 21 0004

R0064258

Michael Segal
Fred Segal Santa Monica
Fred Segal Melrose
500 Broadway, Santa Monica, CA 90401
310.394.8989



VOL 21

April 17, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

As a business owner in Santa Monica and Los Angeles, I am very interested in and motivated to improve the quality of our coastline. Our beaches are an important social economic factor to our community and the Southern California region, and I am asking your to take reasonable, cost-effective action to protect this vital resource.

After reading in the Los Angeles Times about pollution from storm drains in the Santa Monica Bay (3/26/96, page B1), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Michael Segal

cc: Governor Pete Wilson
Mayor Richard Riordan

0005

R0064259

Received APR 25 '96

4/23/96

**BLACKJACK INCORPORATED**
1341 Las Canoas • Pacific Palisades, CA 90272 (310) 454-7408 Fax:(310) 230-0306

Dear Chairman Keston,

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L.A. County beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end

VOL 21 0006

R0064260

**BLACKJACK INCORPORATED**
1341 Las Canoas • Pacific Palisades, CA 90272 (310) 454-7408 Fax:(310) 230-0306

result is a boater safety problem and a contaminated sediment hot spot problem that poses a severe health risk to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Thank You,

Sue Bramley Glascock

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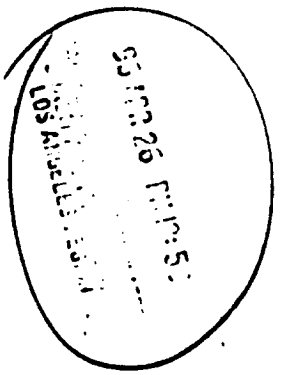
WOLF·KASTELER

PUBLIC RELATIONS

VOL 21



Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

April 20, 1996

Dear Chairman Keston:

I am writing to express my agreement with the Los Angeles Times editorial titled "Clean It Up, Now"—referring to the runoff polluting Santa Monica Bay.

As the editorial states, this pollution jeopardizes marine life, the health of swimmers, and our tourism-dependent economy. We cannot afford *not* to take action.

The Regional Water Quality Board must use its authority to ensure that cities assume responsibility for educating their residents and businesses about good housekeeping practices related to runoff.

Respectfully,

Annett Wolf

cc. Governor Wilson
Mayor Riordan

0008

R0064262

132 South Rodeo Drive, Suite 300 Beverly Hills, California 90212
Phone (310) 205 0618 Fax (310) 205 0879

Shutters
ON THE BEACH

April 24, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Mr. Keston:

As the General Manager of the most elite beachfront hotel in the Los Angeles area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times about pollution from storm drains in the Santa Monica Bay (March 26, 1996, page B1), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there are obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations - as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Klaus Mennekes
General Manager

KM:dk

c: Governor Pete Wilson
Mayor Richard Riordan

ONE PICO BOULEVARD
SANTA MONICA, CALIFORNIA 90405
310 458 0030, FAX 310 458 4589
Members of
The Leading Hotels of the World

VOL 21

00009

R0064263

# Matthew Middlebrook

April 25, 1995

Mr. Michael Keston, President
California Regional Water Quality Control Board
101 Center Plaza Drive
Monterey Park, CA 91754

Dear Mr. Keston:

I live in Santa Monica, and love the area primarily because of its proximity to the ocean. The ocean breezes, the moderate temperatures during the summer, and the beaches are all great reasons to live in Santa Monica and all of the communities that line Santa Monica Bay.

I am also an avid swimmer, and when the water is warm enough thrre is nothing better than swimming in the ocean. Thankfully, significant steps have been made to treat the water that flows into Santa Monica Bay so I and millions of others can enjoy the coastal waters. But urban runoff continues to be a major source of pollution in Santa Monica Bay, and one that desperately needs to be addressed.

Urban runoff dumps tons of contaminants into the rivers and creeks that flow into Santa Monica Bay, threatening the health of marine life and swimmers like me. The threat of water contamination also scares off millions of other possible beach visitors costing communities such as Santa Monica millions in tourist dollars.

The Santa Monica Bay Restoration Plan targets the reduction of storm water runoff as its highest priority. This is a problem that can and should be addressed, but we need your support. The public health, millions of dollars to the local economy, and the health of Santa Monica Bay are all at stake.

I urge you to support the Municipal Storm Water NPDES permit for Los Angeles County. Do the right thing Mr. Keston!

Sincerely,

Matt Middlebrook

827 2nd Street, Apt. 105 / Santa Monica, CA 90403

VOL 21 0010

R0064264

VOL 21

00-11

96 APR 23 PM 1:18
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

April 20, 1996

Dear Chairman Keston:

I am very concerned about the pollution of Santa Monica Bay and the effect of that pollution on the health not only of the Bay but on the health of our economy. I encourage you to adopt the pending stormwater permit. It offers the only way to restore the Bay to health and to ensure the prosperity of coastal and tourism businesses.

The Bay has developed a reputation as being polluted and, as a result, visitation has declined. The soon-to-be released epidemiological study showing the health effects of swimming near storm drains could exacerbate this trend. I understand that the epidemiological study deals only with the impact of pathogens on one-time swimmers during dry weather; it does not address the impact of regular swimmers, those who swim in wet weather when flows are greatest, or the impact of toxic pollutants (scores of which have been identified and are known or suspected carcinogens or mutagens). The release of the epidemiological study is likely to raise many questions. If the regulatory authority has no compelling response about how to reduce pollutants from urban runoff flowing to the Bay, people will stay away. This will have enormous short and long-term economic consequences.

As the regulatory authority charged with protecting our waters, I urge you not to delay in adopting the pending stormwater permit.

Sincerely,

Ted Danson

Ted Danson

Anasazi Productions
Paramount Pictures Corp.
5555 Melrose Ave. Lasky Bldg. #106
LA CA 90038

cc. Governor Wilson
Mayor Riordan

VAL

R0064265

BRET E. WILLIAMS
Post Office Box 5306 · Balboa Island, California 92662
Phone 310.393.1415 · Office Mail 310.262.4491

April 26, 1996

Governor Pete Wilson
1st Floor State Capitol
Sacramento, California 95814

Dear Sir:

As a proud Republican and supporter of your administration, I felt I would be remiss not to write this letter.

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's paramount goal.

Los Angeles County has suffered through a drastic reduction of 30 million beach visitors per year largely because many people are afraid (and wisely so) to swim in the runoff polluted waters off our coast. Additionally, clogged catch basins generate hundreds of thousands of dollars in property damage every year. These situations pose severe health risks to local marine life as well as human swimmers and surfers.

Though not typically high on the Republican agenda, environmental concerns must be addressed when they become this severe. Tens of millions of tourism dollars could disappear each year as travelers seek safer waters in states other than California. Please protect the public health, marine life, real estate and the County's $2 billion a year tourism economy BY SUPPORTING THE MUNICIPAL STORM WATER NPDES PERMIT FOR LOS ANGELES COUNTY.

Sincerely,

Bret E. Williams

Bret E. Williams

VOL 21

0012

R0064266

THE BEACH CLUB
201 Palisades Beach Road
Santa Monica, California 90402-1499
Tel: (310) 395-3254 Fax: (310) 395-8857

VOL 21

0013

Michael Keston, Chair
California Regional Water Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

The Beach Club has enjoyed Santa Monica Bay since its founding in 1923. Our 645 member families are committed to the improvement and preservation of this world class asset for the enjoyment of our members, our neighbors in Santa Monica and the entire Los Angeles community.

Storm drain runoff is a threat to the health and safety of the Bay and is understandably a concern to our members. Knowing this, we urge you to adopt the proposed storm water permit that is currently under consideration by your Board. The continued improvement of this public asset requires that measures like this be adopted so that our and future generations can enjoy this Southern California treasure.

Thank you for your commitment!

With best wishes always, I remain...

Sincerely,

THE BEACH CLUB

Gregg Patterson
General Manager

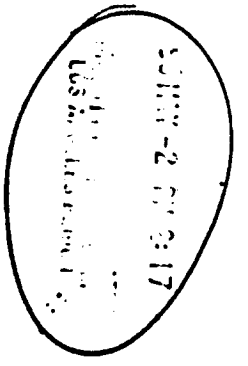
GP/lal

R0064267

WORLD FAMOUS 106.7 FM

3500 WEST OLIVE AVENUE • SUITE 900 • BURBANK • CALIFORNIA 91505 • (818) 567-1067 • FAX (818) 841-5903

VOL 21



April 30, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, Ca 91754-2156

Dear Mr. Keston:

As a citizen of the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times about pollution from storm drains in the Santa Monica Bay (3/26/96, page B1), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the citizens of the community were included in the negotiations- as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Trip Reeb
General Manager

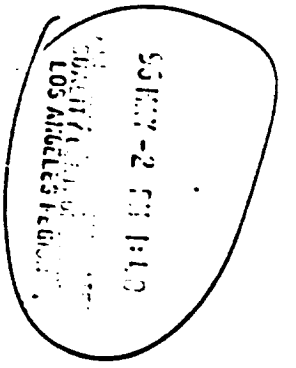
0014

infinity
BROADCASTING CORPORATION

R0064268

CT
RPG
CU

ANTHONY PRITZKER
1022 PALISADES BEACH ROAD
SANTA MONICA, CA 90403
310-393-8185
310-458-3969 - FAX



25 April 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times about pollution from storm drains in the Santa Monica Bay (3/26/96, page B1), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations - as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Anthony N. Pritzker

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0015

R0064269

*Donner/Shuler-Donner Productions*

c/o Warner Bros.
4000 Warner Boulevard
Building 102
Burbank, California 91522
(818) 954-1961
Fax: (818) 954-4908

May 2, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

We are very concerned about the pollution of Santa Monica Bay and the effect of that pollution on the health not only of the Bay but on the health of our economy. We encourage you to adopt the pending stormwater permit. It offers the only way to restore the Bay to health and to ensure the prosperity of coastal and tourism businesses.

The Bay has developed a reputation as being polluted and, as a result, visitation has declined. The soon-to-be released epidemiological study showing the health effects of swimming near storm drains could exacerbate this trend. We understand that the epidemiological study deals only with the impact of pathogens on one-time swimmers during dry weather; it does not address the impact of regular swimmers, those who swim in wet weather when flows are greatest, or the impact of toxic pollutants (scores of which have been identified and are known or suspected carcinogens or mutagens). The release of the epidemiological study is likely to raise many questions. If the regulatory authority has no compelling response about how to reduce pollutants from urban runoff flowing to the Bay, people will stay away. This will have enormous short and long-term economic consequences.

As the regulatory authority charged with protecting our waters, we urge you not to delay in adopting the pending stormwater permit.

Sincerely,

Lauren Shuler Donner

Richard Donner

cc: Governor Wilson
Mayor Riordan

VOL 21 0016

R0064270

LAW OFFICE OF
**Samuel E. Gabriel**
& ASSOCIATES

Samuel E. Gabriel
John S. Buropp
Rochelle McCoy

801 Pacific Avenue
Long Beach, CA
90813-4226
(310) 436-
(714) 904-
FAX
(310) 436-3131

May 13, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

John A. Buropp

RECEIVED
96 MAY 14 PM 12:11
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0017
R0064271

*Law Offices*
*J. SHAFFER SMITH & ASSOCIATES*
*8383 Wilshire Boulevard*
*Suite 660*
*Beverly Hills, California 90211*
*(213) 653-5092*
*Fax: (213) 653-1830*

RECEIVED
96 MAY 15 PM 1:18
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 14, 1996

Mr. Michael Keston, Chairman
California Regional Water Quality
Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogen and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

J. SHAFFER SMITH

JSS/vls

VOL 21 0018

R0064272

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*A member of the Jon Douglas Real Estate Services Group, Inc.*

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96 MAY 15 PM 1:18
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 13, 1996

Dear Sirs:

As a businessperson in Los Angeles County, I am concerned that the pollution along the Los Angeles County coastline is costing millions of dollars out of our economy. We cannot afford to have more businesses leave our region, and have fewer tourists visit our beaches because of the well-known pollution problems.

While there has been a 75% reduction of sewage dumped into the bay stretching from the Palos Verdes Peninsula to Malibu - thanks to the hard work of a coalition of businesses and citizens led by Heal the Bay - there is still one more major source of pollution that must be tackled head on to prevent further economic damage to our regional economy: storm drain runoff pollution.

Storm drain runoff pollution is the largest source of coastal pollution in Los Angeles County. Residues from vehicles, lawn irrigation, various industrial processes, animal wastes, food wastes, human wastes, and a variety of other sources drain into the storm water system and into the ocean - without being treated at all. Public health, marine life, local real estate values, and the County's $2 billion a year tourism economy are at stake. L.A. County has already suffered a drastic reduction in the number of beach visitors (from 80 million per year to less than 50 million) largely because many people are afraid to swim in the runoff polluted waters off our coast. They will not come back to the beach unless they know that serious measures are taken to heal the bay. We need to clean up our coastline to preserve the lifestyle that keeps and attracts new businesses here.

Sincerely,

Jon A. Douglas

JAD/vv

JON A. DOUGLAS
*Chairman of the Board*
427 North Camden Drive, Beverly Hills, California 90210 U.S.A.
Phone (310) 859-7007 Fax (310) 859-7481

VOL 21 0019

R0064273

LAW OFFICES
JOHN S. SCHUESSLER

436 NORTH SAN GABRIEL
P.O. BOX 949
AZUSA, CALIFORNIA 91702
(818) 334-0278

May 14, 1996

Mr. Michael Keston, Chair
California Regional Water
Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxic, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identify as Southern Californians.

Very truly yours,

JOHN S. SCHUESSLER
Attorney at Law

JSS:bgs

96 MAY 15 PM 1:04
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
00020
R0064274

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96 MAY 16 PM 1:02
REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Robert Greenwald

May 14, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Robert Greenwald

RG:df

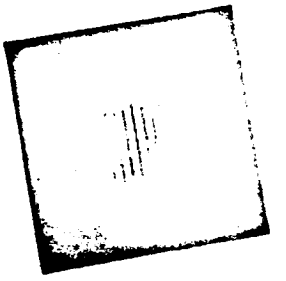
ROBERT GREENWALD
PRODUCTIONS • INC.
10510 Culver Blvd., Culver City, CA 90232 213 • 204-0404 New York 212 • 719-0221

VOL 21

0021

9320 BRIGHTON WAY • SUITE 320 • BEVERLY HILLS, CA 90210 • 310.887.1310 • FAX 310.887.2317

RECEIVED
96 MAY 16 PM 2:40
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION



May 15, 1996

Mr. Michael Keston, Chair
California Regional Water
Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

It is necessary for you to know that this letter represents not only my concerns but my clients concerns regarding the proposed stormwater permit.

We urge you to issue the proposed stormwater permit because it is a fact that stormwater is the single greatest contributor to pollution of the Southern Califonia coastal waters. It contains pathogens, debris and toxins that harm marine life and causes an array of illnesses to swimmers.

I do realize that there is concern about the expense, but we believe that the cooperation among the cities and the public will reduce the costs considerably. The permit simply calls for good common sense in regard to our future.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures and heart-rending ailments among marine mammals will result. Such degradation threatens our econmic prosperity and our very identity as Southern California.

Sincerely,

Deborah Cope

Deborah Cope

KSR/dlc

VOL 21

0022

5/16/96

RECEIVED
96 MAY 16 PM 1:02
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

AMERICAN OCEANS CAMPAIGN

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Casey Coates-Dan
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Mark Ryavec
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Connie Mississippi
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Michael Viebal
Robert H. Sulnick
Executive Director

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Sally Kellerman
Kris Kristofferson
Lisa Kristofferson
Jack Lemmon
Leonard Nimoy
Rhea Perlman
John Ratzenberger
Ally Sheedy
Patrick Swayze &
Lisa Niemi
Robert Urich
George Wendt
Peter Weller

VOL 21

0023

May 15, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

May 14, 1996

Dear Chairman Keston:

I am writing to ask that you share with your colleagues on the Los Angeles Regional Water Quality Control Board the correspondence directed to you that deals with the municipal stormwater permit.

Individuals and organizations interested in the municipal stormwater permit have identified you, as the appropriate individual representing the Board, to be the recipient of their mail. Many have made the assumption that you would make this correspondence available to your colleagues on the Board. I realize that you will not be voting on this issue and that a new Chair will be presiding at the July 15 meeting when the municipal stormwater permit decision is scheduled. In addition, I now understand that you have no formal obligation to either copy other Board members or compile a file that would be available to all Board members to peruse.

As a matter of good government, I believe that this correspondence should be shared. This mail was not directed to you personally, but as a representative of the decision making body on this issue. Many of us assumed, if erroneously, that the letters would as a matter of course be made available to the Board as a whole.

I strongly urge you to allow the voices of those who have taken the initiative to write to be heard by the other Board members.

Respectfully,

Robert H. Sulnick
Executive Director

cc: Board members

A non-profit organization dedicated to saving America's oceans
725 Arizona Avenue Suite 102 Santa Monica, California 90401 (310) 576-6162 FAX (310) 576-6170

R0064277

*MICHAEL D. WAKS*
*ATTORNEY AT LAW*
*ONE CIVIC PLAZA, SUITE 300*
*CARSON, CALIFORNIA 90745*
*TEL NO. 310/834-5570*
*FAX NO. 310/532-2547*

RECEIVED
96 MAY 17 PM 12:53
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

*May 15, 1996*

*Mr. Michael Keston*
*Chairman*
*CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD*
*LOS ANGELES REGION*
*101 Centre Plaza Drive*
*Monterey Park, California 91754-2156*

*Re:* *Proposed Stormwater Permit*

*Dear Mr. Keston:*

*I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.*

*Some cities are concerned about the costs, but opportunities for cooperation amount cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.*

*Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments amount marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.*

*Yours truly,*

*MICHAEL D. WAKS*
*Attorney at Law*
*MDW:tm*
*KESTON.C1*

VOL 21

0024

RECEIVED

May 16, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Moreover I am greatly concerned with the latest news (L.A. Times 5/7/96, page A1) that some areas of our coastline are not safe to swim. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

Subsequent to the release of the swimming study, Mayor Riordan pledged that the City of Los Angeles would take major steps in reducing the risk to swimmers in the Bay by diverting the runoff during summer months to a sewage treatment plan. This is an important step for the city to take. We need more cities in Los Angeles County to take similar steps whether they are located on the coast or not. I urge you to adopt the municipal storm water permit so that all of the cities in Los Angeles County are working together on this very important issue.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Richard Foos

Richard Foos
President

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 MAY 17 PM 1:02
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0025

R0064279

JOHN M. BOWMAN
ALBERT M. COHEN
KENNETH A. EHRLICH
FRED N. GAINES
PENNY GROSZ-SALOMON
JANICE KAMENIR-REZNIK
ALAN J. KHEEL
ANNE M. LAPLACE
JEFFREY S. RASKIN
BENJAMIN M. REZNIK
WILLIAM M. SAMOSKA
L. ELIZABETH STRAHLSTROM
CASSONDRA L. WILLIAMS

REZNIK & REZNIK
A LAW CORPORATION
15456 VENTURA BOULEVARD, FIFTH FLOOR
SHERMAN OAKS, CALIFORNIA 91403-3026
(818) 907-8898
(213) 872-2900

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(818) 907-8465

REFER TO FILE NUMBER

0001.000

May 16, 1996

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96 MAY 17 PM 1:06
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Re: Municipal Storm Water Permit

Dear Mr. Keston:

As a business person in the Los Angeles area, I take great interest in improving the quality of our local coastline and coastal waters. Our beaches represent an important revenue source for our region. We must undertake intelligent, reasonable, and cost effective action to protect our resources.

After reading about pollution from stormdrains in the Santa Monica Bay in the Los Angeles Times (March 26, 1996, p. B1), I respectfully request that the Board adopt a proposed stormwater permit as soon as possible. The permit clearly represents the most effective means to address the problem and it appears strong scientific bases support the measure. I am pleased that the Water Board included the business community in the negotiations as well as representatives of all other affected parties.

In an era where government is often criticized for not taking action, please take advantage of this opportunity to adopt a public policy that makes good economic sense and good environmental sense. Please adopt the proposed stormwater permit as soon as possible.

Thank you for your consideration of this matter.

Very truly yours,

KENNETH A. EHRLICH

KAE:dc

cc: Governor Pete Wilson
Mayor Richard Riordan

NET\001\00\00C301MK.DC (05/16/96)

VOL 21

0026

VBC
5/12

R0064280

# MICHAEL and ROBERT'S MELANGE, INCORPORATED

Chez Melange

1716 Pacific Coast Highway
Redondo Beach, CA 90277
(310) 540-1222

FINO
A MEDITERRANEAN BISTRO
21550 Hawthorne Boulevard
Torrance, CA 90505
(310) 373-1952

MISTO
Caffe and Bakery
21550 Hawthorne Blvd.
Torrance, CA 90505
310-375-3006

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An Urban Grill Room & Bar
1250 Cabrillo Avenue
Torrance, CA 90501
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705 Pier Avenue
Hermosa Beach, CA 90254
310-379-4282

PIER AVENUE BAKERY

May 16, 1996

RECEIVED
96 MAY 20 PM 1:53
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harm marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Robert Bell
Co-Owner

VOL 21

0027

R0064281

1718 South Pacific Coast Highway, Redondo Beach, California 90277 310.540.9135 / FAX 310.316.9283

TREEPEOPLE

RECEIVED
96 MAY 20 PM 1:55
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

May 16, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board,
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Andy Lipkis
President

12601 Mulholland Drive
Beverly Hills, California 90210
Telephone 818 753-4600
Telex 650 263-8793
Facsimile 818 753-4625
MCI Mail Treepeople

0028

R0064282

SHERMAN+BALL

VOL 21

RECEIVED
96 MAY 20 PM 1 55
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

16 May 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business owner in Los Angeles, I take great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times about pollution from storm drains in the Santa Monica Bay (26 March 1996), I am moved to write to request that the Board adopt effective means to address the problem, and there obviously strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic and environmental sense.

Thank you for your time and consideration.

Sincerely,

Michael Ball
Principal

00029

R0064283

14852 VENTURA BLVD. SHERMAN OAKS, CA 91403

Artistic Environments, Inc.
interior design

RECEIVED
96 MAY 20 PM 1:56
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 16, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Montery Park, Ca 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the LA Times about pollution from storm drains in the Santa Monica Bay (3/26/96) , I am moved to write to request that the Board adopt effective means to address the problem, and there is obviously strong scientific bases to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Janet Carpenter
Vice President
Artistic Environments, Inc.

2858 Colorado Avenue • Santa Monica • CA 90404
telephone 310 • 828 • 1774 fax:smile 310 • 828 • 2899

VOL 21
00300
R0064284

JEANNE M. LAWSON
LAW OFFICES
1875 CENTURY PARK EAST
FIFTEENTH FLOOR
LOS ANGELES, CALIFORNIA 90067

TELEPHONE
(310) 556-4350

FACSIMILE
(310) 556-4362

May 16, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston:

The recent Los Angeles Times article regarding the pollution of coastal waters by storm drain runoff addressed an issue which has become very important on a personal level to my family. I have a 5 ½ year old son who for several years now I have been taking to the beach to play in the sand and surf. My husband is a member of the Jonathan Club and so we frequent the beach facility which is very close to the Santa Monica pier.

In May of 1995, after being at the beach and playing in the sand at the surf's edge, my son became ill. No one at his school was ill. In the sixteen days following his visit to the beach he had eleven days of fever in excess of 103°. He lost weight but had no other symptoms which could be pinpointed; his doctors could only suspect he was suffering a virus. No one else we knew had these symptoms.

On April 7th of this year, we again took my son to the beach to play in the sand and surf. If you check the weather history for that period of time, you will see that earlier in the week it had rained. Beginning with the night of April 9th, my son again began suffering very high temperatures with no other symptoms. Again no one else in the family or in his school or among his playmates suffered this illness.

RECEIVED
MAY 20 PM
LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

In 1995 when my son became ill, I suspected he may have contracted a virus during play at the ocean. His illness in April confirmed in my mind that it is simply not safe for young children to be digging huge holes at the water's edge on the Santa Monica beach. The recent article in the Los Angeles Times on this issue was only further confirmation of my suspicions.

VOL 21 0031

R0064285

JEANNE M. LAWSON
LAW OFFICES



I am certain our experiences are only two of many that people have suffered as a result of the pollution in the Santa Monica bay occasioned by the storm drain runoff. It is incontrovertible that this issue must be addressed now and that the Water Quality Control Board must act by requiring cities to be responsible for their use of the storm drains regardless of the cost to the cities. The short-term costs of instituting new practices and educating residents and businesses can only reap long-term benefits for this city and state.

In resolving the current "permit controversy", you and other members of the board must carefully weigh the short-term costs and inconvenience to the cities against the long-term benefit of protecting our children from unnecessary illnesses as well as our natural resources. After doing so, the Board must act immediately and effectively to protect its public from this health hazard. Should there be any way that I can further assist in this endeavor, please do not hesitate to call upon me.

Very truly yours,

JEANNE M. LAWSON

JML/st

VOL 21

0032

R0064286

VEIRUP | ALLAIRE

May 17, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Center Plaza Drive
Monterey Park, Ca 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles area, I take great interest in improving the quality of our local coastline. Our beaches are an important economic drive for the region, and we must take smart, reasonable and cost effective action to protect our resources.

After reading in the LA Times about pollution from the storm drains in the Santa Monica Bay (3/26/96), I am moved to write to request that the Board adopt effective means to address the problem, and there are obviously strong scientific data to support such measures.

In an era when government is often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic and environmental sense.

Thank you for your consideration.

Sincerely,

Chris Allaire
Partner
Veirup-Allaire

RECEIVED
96 MAY 21 PM 1:13
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0033

310 828 9401 TEL 310 828 9601 FAX 2808 COLORADO AVENUE SANTA MONICA CA 90404

R0064287

VEIRUP | ALLAIRE

May 17, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Center Plaza Drive
Monterey Park, Ca 91754-2156

RECEIVED
96 MAY 21 PM 1:1
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles area, I take great interest in improving the quality of our local coastline. Our beaches are an important economic drive for the region, and we must take smart, reasonable and cost effective action to protect our resources.

After reading in the LA Times about pollution from the storm drains in the Santa Monica Bay (3/26/96), I am moved to write to request that the Board adopt effective means to address the problem, and there are obviously strong scientific data to support such measures.

In an era when government is often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic and environmental sense.

Thank you for your consideration.

Sincerely,

Claus Veirup
Partner
Veirup-Allaire

310 828 9401 TEL 310 828 9601 FAX 2868 COLORADO AVENUE SANTA MONICA CA 90404

VOL 21
0034
R0064288

**SEAmagine**
*Hydrospace Corporation*

976 W. Foothill Blvd., Suite 215
Claremont, California 91711
U.S.A.

RECEIVED
96 MAY 21 PM 1:14
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0035

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

William Kohnen
President & CEO

*Tel. (909) 626-6262, Fax (909) 626-7730, Internet Address: SEAmagine@AOL.com*

R0064289

dan siwulec
communications marketing
11818 courtleigh drive, suite 204
los angeles, california 90066
310.397.8022
310.398.0897 fax
email dispuck@aol.com

RECEIVED
96 MAY 28 PM 1:17
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0036

May 24, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Chairman Keston:

I am writing or urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to the pollution of Southern California coastal waters. It contains toxics, pathogens and debris that harms marine life and afflicts swimmers with an array of ailments.

Personally, I have not been swimming in the Bay in over 15 years because of this continuing situation, and urge all of my friends and out-of-town visitors to avoid contact with the Bay at all costs.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Dan Siwulec

AMERICAN OCEANS CAMPAIGN

RECEIVED
96 MAY 28 PM 1:22
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 23, 1996

Charles C. Vernon
California Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Vernon: Chuck

I am enclosing some of the letters that have been sent to the Regional Water Quality Control Board with copies to American Oceans Campaign.

I hope that by now you have been given access to all letters that were addressed to the Chair of the Regional Board, Mr. Keston.

Needless to say, it is distressing to learn that the Board may not have an official, single point of contact for the public. It is difficult to ask members of the public to write to each Board member individually.

Thank you very much for taking the substance of these letters into serious consideration as you make your decision on the municipal stormwater permit.

Sincerely,

Joan Hartmann

Joan Hartmann
Senior Policy Counsel

BOARD OF DIRECTORS
Ted Danson
President
Casey Coates Danson
Vice President
Mark Ryavec
Secretary
Connie Mississopp
Treasurer
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Gerald Breslauer
Warner Chabot
Richard Charter
Lu Haas
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Susan Iger
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Steven Swig
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Kris Kristofferson
Lisa Kristofferson
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Leonard Nimoy
Rhea Perlman
John Ratzenberger
Ally Sheedy
Patrick Swayze II
Lisa Niemi
Robert Urich
George Wendt
Peter Weller

A non-profit organization dedicated to saving America's oceans

725 Arizona Avenue, Suite 102 Santa Monica, California 90401 (310) 576-6162 FAX (310) 576-6170
235 Pennsylvania Avenue SE Washington, D.C. 20003 (202) 544-3526 FAX (202) 544-5625

VOL 21 0037

R0064291

duplicate

TELEPHONE
(310) 556-4350

JEANNE M. LAWSON
LAW OFFICES
1875 CENTURY PARK EAST
FIFTEENTH FLOOR
LOS ANGELES, CALIFORNIA 90067

FACSIMILE
(310) 556-4362

May 16, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston:

The recent Los Angeles Times article regarding the pollution of coastal waters by storm drain runoff addressed an issue which has become very important on a personal level to my family. I have a 5 ½ year old son who for several years now I have been taking to the beach to play in the sand and surf. My husband is a member of the Jonathan Club and so we frequent the beach facility which is very close to the Santa Monica pier.

In May of 1995, after being at the beach and playing in the sand at the surf's edge, my son became ill. No one at his school was ill. In the sixteen days following his visit to the beach he had eleven days of fever in excess of 103°. He lost weight but had no other symptoms which could be pinpointed; his doctors could only suspect he was suffering a virus. No one else we knew had these symptoms.

On April 7th of this year, we again took my son to the beach to play in the sand and surf. If you check the weather history for that period of time, you will see that earlier in the week it had rained. Beginning with the night of April 9th, my son again began suffering very high temperatures with no other symptoms. Again no one else in the family or in his school or among his playmates suffered this illness.

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VOL 21
0038
R0064292

JEANNE M. LAWSON
LAW OFFICES



I am certain our experiences are only two of many that people have suffered as a result of the pollution in the Santa Monica bay occasioned by the storm drain runoff. It is incontrovertible that this issue must be addressed now and that the Water Quality Control Board must act by requiring cities to be responsible for their use of the storm drains regardless of the cost to the cities. The short-term costs of instituting new practices and educating residents and businesses can only reap long-term benefits for this city and state.

In resolving the current "permit controversy", you and other members of the board must carefully weigh the short-term costs and inconvenience to the cities against the long-term benefit of protecting our children from unnecessary illnesses as well as our natural resources. After doing so, the Board must act immediately and effectively to protect its public from this health hazard. Should there be any way that I can further assist in this endeavor, please do not hesitate to call upon me.

Very truly yours,

JEANNE M. LAWSON

JML/st

VOL 21

0039

duplicate

Donner/Shuler-Donner
Productions

c/o Warner Bros.
4000 Warner Boulevard
Building 102
Burbank, California 91522
(818) 954-3961
Fax: (818) 954-4908

VOL 21

May 2, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

We are very concerned about the pollution of Santa Monica Bay and the effect of that pollution on the health not only of the Bay but on the health of our economy. We encourage you to adopt the pending stormwater permit. It offers the only way to restore the Bay to health and to ensure the prosperity of coastal and tourism businesses.

The Bay has developed a reputation as being polluted and, as a result, visitation has declined. The soon-to-be released epidemiological study showing the health effects of swimming near storm drains could exacerbate this trend. We understand that the epidemiological study deals only with the impact of pathogens on one-time swimmers during dry weather; it does not address the impact of regular swimmers, those who swim in wet weather when flows are greatest, or the impact of toxic pollutants (scores of which have been identified and are known or suspected carcinogens or mutagens). The release of the epidemiological study is likely to raise many questions. If the regulatory authority has no compelling response about how to reduce pollutants from urban runoff flowing to the Bay, people will stay away. This will have enormous short and long-term economic consequences.

As the regulatory authority charged with protecting our waters, we urge you not to delay in adopting the pending stormwater permit.

Sincerely,

Lauren Shuler Donner

Richard Donner

cc: Governor Wilson
Mayor Riordan

0040

R0064294

Duplicate

VOL 21 0041

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Central Plaza Drive
Monterey Park, CA 91754-2156

April 24, 1996

Dear Chairman Keston:

I am concerned about an article (3/26/96) appearing recently in the Los Angeles Times that describes the debate about cleaning up the region's urban runoff. I therefore want to urge you to deal with this problem by adopting the stormwater permit now undegoing review and comment.

As the article notes, urban runoff is the primary source of pollution in Santa Monica Bay. Urban runoff results from a vast array of activities and we must begin to address these systematically or lose the tremendous ecological and economic benefits deriving from Southern California's coast. The stormwater permit offers the only reasonable method to ensure the continued enjoyment of these benefits.

Despite the reluctance of cities to take on new responsibities, it is imperative for our economic well-being, our health, and our very identity to take action to safeguard our waterbodies from the contaminated runoff to which we all contribute.

We are looking to the Regional Board to exercise leadership in this area. Our future depends on it.

Sincerely,

Sharon Robinson

cc. Governor Wilson
Mayor Riordan

Duplicate

VOL 21 0042

Barbara Kohn
222 Surfview Drive
Pacific Palisades, California 90272

April 22, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am concerned about an article in the Los Angeles Times (3/26/96) that describes the debate about cleaning up the region's urban runoff. I urge you to deal with this situation by adopting the stormwater permit now undergoing review and comment.

As the article notes, urban runoff is the primary source of pollution in Santa Monica Bay. Urban runoff results from a vast array of activities and we must begin to address these systematically or lose the tremendous ecological and economic benefits deriving from Southern California's coast. The stormwater permit offers the only reasonable method to ensure the continued enjoyment of these benefits.

I am looking to the Regional Board to exercise leadership in this area.

Sincerely,

Barbara Kohn

Barbara Kohn

cc Governor Wilson
Mayor Riordan

Duplicate

Russell Kohn
333 So. Doheny # 306
Los Angeles, CA 90048

April 22,1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 917544-2156,

Dear Chairman Keston:

I am concerned about an article in the Los Angeles Times (3/26/96) that describes the debate about cleaning up the region's urban runoff. I urge you to deal with this situation by adopting the stormwater permit now undergoing review and comment.

As the article notes, urban runoff is the primary source of pollution in Santa Monica Bay. Urban runoff results from a vast array of activities and we must begin to address these systematically or lose the tremendous ecological and economic benefits deriving from Southern California's coast. The stormwater permit offers the only reasonable method to ensure the continued enjoyment of these benefits.

I am looking to the Regional Board to exercise leadership in this area.

Sincerely,

Russell Kohn

cc Governor Wilson
Mayor Riordan

VOL 21

0043

Duplicate

# WOLF·KASTELER
PUBLIC RELATIONS

VOL 21

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

April 20, 1996

Dear Chairman Keston:

I am writing to express my agreement with the Los Angeles Times editorial titled "Clean It Up, Now"—referring to the runoff polluting Santa Monica Bay.

As the editorial states, this pollution jeopardizes marine life, the health of swimmers, and our tourism-dependent economy. We cannot afford not to take action.

The Regional Water Quality Board must use its authority to ensure that cities assume responsibility for educating their residents and businesses about good housekeeping practices related to runoff.

Respectfully,

Annett Wolf

cc. Governor Wilson
Mayor Riordan

0044

132 South Rodeo Drive, Suite 300 Beverly Hills, California 90212
(310) 205 0618 (310) 205 0979

R0064298

Duplicate

VOL 21 0045

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

April 20, 1996

Dear Chairman Keston:

I am very concerned about the pollution of Santa Monica Bay and the effect of that pollution on the health not only of the Bay but on the health of our economy. I encourage you to adopt the pending stormwater permit. It offers the only way to restore the Bay to health and to ensure the prosperity of coastal and tourism businesses.

The Bay has developed a reputation as being polluted and, as a result, visitation has declined. The soon-to-be released epidemiological study showing the health effects of swimming near storm drains could exacerbate this trend. I understand that the epidemiological study deals only with the impact of pathogens on one-time swimmers during dry weather; it does not address the impact of regular swimmers, those who swim in wet weather when flows are greatest, or the impact of toxic pollutants (scores of which have been identified and are known or suspected carcinogens or mutagens). The release of the epidemiological study is likely to raise many questions. If the regulatory authority has no compelling response about how to reduce pollutants from urban runoff flowing to the Bay, people will stay away. This will have enormous short and long-term economic consequences.

As the regulatory authority charged with protecting our waters, I urge you not to delay in adopting the pending stormwater permit.

Sincerely,

Ted Danson

cc. Governor Wilson
Mayor Riordan

R0064299

duplicate

VOL 21

April 19, 1996

Michael Keston, Chairman
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I urge you to adopt the STORMWATER PERMIT now under review.

Urban runoff is the primary source of pollution in Santa Monica Bay, (the Los Angeles Times noted on 3-26-96).

I urge you to safeguard the water bodies from urban runoff contamination.

I urge the Regional Board to take action and exercise leadership.

"The Coast" is Southern California's international identity. Let us not lose the tremendous ecological and economic benefits derived from "The Coast". Let us not be identified as, "The Sewer".

Sincerely,

Janet B. Toot

14000 Leedy Avenue
Sylmar, CA 91342-1755
818-362-7387

cc. Governor Wilson
Mayor Riordan

COPY

JBT:c(sewer496)

0046

*The Voice of Business*
*Since 1925*

501 Colorado Avenue, Suite 150
Santa Monica, California 90401-2430
(310) 393-9825 • Fax (310) 394-1868

RECEIVED
96 MAY 29 PM 2:18
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

May 28, 1996

Mr. Michael Keston, Chair, and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston and Members
Los Angeles Region CRWQCB:

This communication is to inform you that the Santa Monica Chamber of Commerce Board of Directors unanimously approved a motion requesting your support for the adoption of the proposed storm water permit at the earliest possible date.

Santa Monica has long been a leader in such issues, and the Santa Monica Chamber of Commerce has proactively been supportive of similar issues facing our community's sustainability and efforts to maintain a strong and viable economic base. There is no question that quality of life factors such as those being addressed by this proposal directly impact the economic, as well as the physical, health and well being of a community and the region in which it is located. It is because of these concerns, the question of applied equity for all of our regional communities, exceptional scientific bases which support such measures and the reasonable, cost-effective and intelligent approach this proposal takes, the Santa Monica Chamber Board of Directors unanimously approved its recommendation to you to support the adoption of the proposed storm water permit as soon as possible.

Your invaluable time and consideration of our request to support the adoption are greatly appreciated. We also want to express our sincere appreciation for the outreach to the business community and its inclusion in this process and the negotiations. It is also in this spirit of cooperation and partnership that we hope your action will be positive and proactive.

Very sincerely yours,

Daniel L. Ehrler, Executive Director

cc: Governor Pete Wilson
Mayor Richard Riordan

Daniel L. Ehrler
*Executive Director*

*The Voice of Business Since 1925*

501 Colorado Avenue, Suite 150, Santa Monica, CA 90401-2430
(310) 393-9825 • Fax (310) 394-1868

Mission Statement

*The Santa Monica Chamber of Commerce advocates and represents businesses' interests and issues affecting the community. We provide the environment to help our members prosper and succeed through a proactive working partnership with all levels of government and community organizations to achieve a healthy local economy and quality of life.*

VOL 21 0047

R0064301

**Color Design Art**
*Interior Design and Merchandising for the Housing Industry*

17315 Sunset Boulevard
Pacific Palisades, California 90272-4196
(310) 459-7644 FAX (310) 459-4835

RECEIVED
96 MAY 29 PM 1:16
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0048

May 28, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles area, I take great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the L.A. Times about pollution from storm drains in the Santa Monica Bay (3/26/96), I am moved to write to request that the Board adopt effective means to address the problem, and there is obviously strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Don Anderson
President
Color Design Art, Inc.



**RISING STARS**
***TALENT MANAGEMENT***

RECEIVED
96 MAY 31 PM 12:54
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0049

May 28, 1996

Michael Keston, Chair
Calif. Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, Ca. 91754-2156

Dear Mr. Keston:

As a business owner and avid surfer in the Santa Monica area, I am very concerned with on going polices to improve the quality of our coastline. Our beaches and water quality play a significant role in the economy of our state and the health of it's citizens and visitors.

I am writing to encourage the Board to adopt the proposed storm water permit as soon as possible. There is strong scientific evidence that supports taking such measures. That aside, it only makes sense that clean water and pristine coastlines are one of California's most valuable assets.

Thank you for your time.

Sincerely,

David Matis

*1322 2nd St. Suite #25 Santa Monica, Ca. 90401*

*310-394-6360 Fax 310-394-7699*

R0064303



741 N. CAHUENGA Blvd.
Hollywood, CA 90038

May 29, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board,

As a business owner in the Los Angeles area, I take great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times about pollution from storm drains in the Santa Monica Bay (3/26/96, page B1), I am moved to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously stong scientific basis to support such measures. I am pleased that the business community was included in the negotiations--as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Peter Abraham

Peter Abraham
President

RECEIVED
96 JUN -3 PM 1:26
QUALITY CONTROL BOARD
LOS ANGELES REGION

c: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0050

RECEIVED
96 JUN -5 PM 1:19
CLERK
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

DIVING EQUIPMENT & MARKETING ASSOCIATION
2050 S. Santa Cruz St., Suite 1000 · Anaheim CA 92805-6816 USA · (714) 939-6399 · FAX (714) 939-6398

Sam Jackson · Executive Director
Fax (909) 621-5946

June 4, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am very concerned about the pollution of Santa Monica Bay and Southern California waters by urban runoff. This runoff degrades water quality, harming not only marine life, but the health of those who swim, surf, and dive in coastal waters and diminishing the vitality of our southern California recreation and tourist economy. The pending stormwater permit offers the only way to restore public confidence that the water is clean and safe.

The Santa Monica Bay has developed a reputation as being polluted and, as a result, visitation has declined. The epidemiological study showing conclusively that those swimming near storm drains are at risk of becoming ill could exacerbate this downward visitor trend. (see enclosed article). The epidemiological study deals only with the impact of pathogens on one-time swimmers during dry weather; it does not address the impact of regular swimmers, those who swim in wet weather when flows are greatest, or the impact of toxic pollutants (scores of which have been identified and are known or suspected carcinogens or mutagens).

The release of the epidemiological study raises many questions. If the regulatory authority has no compelling response about how to reduce pollutants from urban runoff flowing to the Bay, people will stay away. This will have enormous short and long-term economic consequences.

As the regulatory authority charged with protecting our waters, I urge you not to delay in adopting the pending stormwater permit. We are looking to the Regional Board to exercise leadership in this area. Our very Southern California identity is at stake.

Sincerely,

Sam Jackson, Executive Director
Diving Equipment & Marketing Assn.

cc: Governor Wilson
Mayor Riordan

VOL 21
0051
R0064305

13250 Jefferson Boulevard
Los Angeles CA 90094
310 822-0074
310 827-1073 Fax

Received
June 6 '96

VOL 21

0052

Maguire Thomas Partners

June 4, 1996

Mr. Michael Keston, Chair and Boardmembers
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston and Boardmembers:

Maguire Thomas Partners (MTP) is the developer of Playa Vista, a large multi-use community planned for the west side of Los Angeles In 1989, MTP assumed the lead role in guiding the planning and development of this complex project, and as a critical first step we met with many environmental and neighborhood groups in order to better understand and address community concerns regarding the project. These discussions reinforced and expanded our awareness of the importance of water quality generally, and of a healthy Santa Monica Bay specifically, and, as a result, Playa Vista includes a number of features that will enhance the water quality of the Ballona Wetlands and the Santa Monica Bay.

We believe that responsible development and environmental protection can not only coexist but are mutually dependent. We support efforts to strengthen the municipal storm water permit as an effective means of improving the water quality of the Santa Monica Bay. We urge the members of the board to further the restoration of an important economic and environmental resource by adopting the proposed permit.

Very truly yours,

Douglas J. Gardner
Senior Vice President

LAW OFFICES OF
ROBERT A. FINKELSTEIN
SUITE 800
1888 AVENUE OF THE STARS
LOS ANGELES, CALIFORNIA 90067
TELEPHONE (310) 551-4083
TELECOPIER (310) 553-3998

Received
June 6 '96

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Robert A. Finkelstein

c: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0053

CASTLE ROCK ENTERTAINMENT

Received
96 Jun 6.

June 5, 1996

Mr. Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the *Los Angeles Times* (5/7/96, front page) that people are getting sick from storm-drain-polluted waters in the Santa Monica Bay, I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations--as were representatives of all the affected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Rob Reiner

Rob Reiner

cc: Governor Pete Wilson
Mayor Richard Riordan

335 North Maple Drive, Suite 135, Beverly Hills, California 90210, Tel: 310-285-2300 Fax: 310-285-2345

VOL 21

0054

R0064308

ACT III
THEATRES

VOL 21 0055

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations--as were representatives of all the effected parties

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Robert J. Lenihan

c: Governor Pete Wilson
Mayor Richard Riordan

Received
Jun 6 '96

1999 Avenue of the Stars • Suite 500 • Los Angeles, California 90067 • 310/553-3636 • Fax: 310/553-3828

Bel-Air Bay Club
LIMITED
16801 Pacific Coast Highway
Pacific Palisades, California 90272
Area Code 310 454-1391

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Michael Hyler
General Manager

M. Hyler

c: Governor Pete Wilson
Mayor Richard Riordan

Received
June 6 '96

VOL 21 0056

R0064310

DEBRA HILL
PRODUCTIONS

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Debra Hill

cc: Governor Pete Wilson
Mayor Richard Riordan

Received
June 6 '96

VOL 21

0057

PARAMOUNT ★ 5555 MELROSE AVENUE ★ TRL. 9 ★ HOLLYWOOD, CA 90038 ★ 213/956-5336 FAX 213/862-1200

VOL 21

0058

June 7, 1996

Mr. Michael Keston
Chair and Members
California Regional Water
Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

I'm a businesswoman in the Los Angeles area and care about the quality of our coastline. The beaches are important economically to this region and we must take reasonable, cost-effective action to protect them.

The Los Angeles Times has recently written about people getting sick from storm drain polluted waters in the Santa Monica Bay, and we have been hearing about it from other sources for years. For this reason, I'm writing with a request that the Board adopt the proposed storm water permit. It is clearly a wonderfully effective means for addressing the problem, and the whole community will benefit.

Please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Betsy Thompson

Betsy Thompson

cc: Governor Pete Wilson
Mayor Richard Riordan

No Return Address.
Received Jun 6 '96

R0064312

# HG ASSOCIATES, INC.

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

c: Governor Pete Wilson
Mayor Richard Riordan

96 JUN -7 PM 1:33
QUALITY CONTROL BOARD
LOS ANGELES REGION

1999 Avenue of the Stars, Suite 500, Los Angeles, California 90067
Telephone: 310/551-4053 Fax: 310/551-4070

VOL 21 0059

R0064313

ACT III
PRODUCTIONS

June 3, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Sean Dwyer

c: Governor Pete Wilson
Mayor Richard Riordan

96 JUN -7 PM 2:04
LOS ANGELES REGION

5555 Melrose Ave • Hollywood, California 90038 • 213/956 8585 • Fax 213 86. 1185

VOL 21 00060

R0064314

ACT III
COMMUNICATIONS

VOL 21 0061

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

HAL GABA

c: Governor Pete Wilson
Mayor Richard Riordan

96 JUN -7 PM 1:33
QUALITY CONTROL BOARD
LOS ANGELES REGION

1999 Avenue of the Stars • Suite 500 • Los Angeles, California 90067 • 310/553-3636 • Fax: 310/553-3928

[redacted]

530 6th Street
Hermosa Beach, California 90254-4697
310/374-4074 • FAX 310/372-7457
800/678-7873

RECEIVED
96 JUN -7 PM 1:40
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 6, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Russ Lesser
President

c: Governor Pete Wilson
Mayor Richard Riordan

Body Glove and the Hand Design are registered trademarks of Dive N' Surf, Inc.

VOL 21 00062

R0064316

3000 W. Alameda Avenue
Burbank, CA 91523
818 840-3870

A Division of
National Broadcasting
Company, Inc.

Warren Littlefield
President

NBC ENTERTAINMENT

96 JUN -7 PM 1:39
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 6, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

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In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Warren Littlefield
President

c: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 00063

R0064317

HOMER HANDLING CORPORATION
1999 AVENUE OF THE STARS, SUITE 500
LOS ANGELES, CALIFORNIA 90067

RECEIVED
96 JUN -7 PM 1:35
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

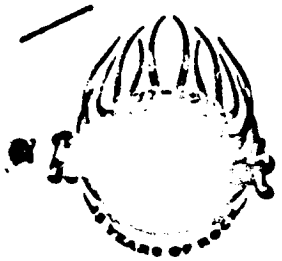
Sincerely,

c: Governor Pete Wilson
Mayor Richard Riordan

TELEPHONE (310) 551-4052 • FAX (310) 551-4070

R0064318

VOL 21 0064



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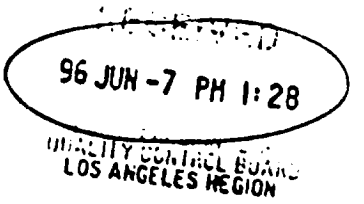
HARD ROCK AMERICA
Corporate Offices
510 N. Robertson Bl.
Los Angeles, CA. 90048
310.854.3366
Fax. 310.652.8747
mail@hardrock.com

This letterhead is printed on recycled paper




June 6, 1996

Michael Keston, Chair and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Center Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

The rain storm runoff is severely damaging our oceans.

How dare we question the need for the storm water permit? Is environmental protection and maintenance not our responsibility? Doesn't it require immediate action?

If your house had a leak in the roof and dripped "rainwater runoff" into your bed, wouldn't you have it repaired immediately? Now, imagine that it's acid rain and it's burning a hole through your bed and then through your floor. How long would it take you before you called the roofer? Not more than one day.

Thank you for your time.

Warm regards,

Dianna Friedman

Dianna Friedman

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0065

R0064319

WESTWOOD ONE
INCORPORATED

Mutual Broadcasting System
NRC Radio Networks
Westwood One Radio Networks
Unistar Radio Networks

9540 Washington Boulevard
Culver City, California 90232-2689
Tel (310) 840-4201 Fax (310) 836-0434

NORMAN J. PATTIZ
Chairman of the Board

96 JUN 11 AM 11:42

QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

July 3, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Norman J. Pattiz

cc: Governor Pete Wilson
Mayor Richard Riordan

0066

R0064320

B ✓

VOL 21

# WITT · THOMAS PRODUCTIONS

96 JUN 12 PM 1:00
LOS ANGELES REGION

July 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Nina Feinberg
Senior Vice President

cc: Governor Pete Wilson
Mayor Richard Riordan

0067

1438 NORTH GOWER STREET · HOLLYWOOD, CALIFORNIA 90028 · TEL (213) 464-1333 FAX (213) 957-0000

Steve Bornstein Consulting

VOL 21

June 7, 1996

Michael Keston Chair and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a resident and business consultant I am very interested in seeing that the quality of our coastal waters and beaches is improved. For business and asesthetic reasons I believe we must take smart, reasonable, and cost effective action to protect our resources for current and future generations.

I urge you and the Board adopt the proposed storm water permit as soon as possible. The LA Times on May 7 reported that people are getting sick from storm drain polluted waters. The permit is clearly the most effective way to address the problem with a strong scientific basis to support such measures.

I sincerely hope that you will take this opportunity to demonstrate that government can act in the interest of its constituents by adopting public policy that make good economic and environmental sense.

Thank you for your consideration in this regard.

Sincerely,

Steve Bornstein

96 JUN 12
LOS ANGELES REGION

0068

28 Avenue 28th Venice California 90291 310.305.1394 Fax 310.578.6902

R0064322

3000 West Alameda Avenue
Burbank, CA 91523
818 840 3833
Fax 818 840 4245

John J. Agoglia
President

NBC ENTERPRISES

96 JUN 13 PM 1:17

LOS ANGELES REGION

B-

VOL 21

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Members of the Board:

As a businessperson in the Los Angeles area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

John Agoglia

cc: Governor Pete Wilson
Mayor Richard Riordan

0069

R0064323

B/

VOL 21

PROSKAUER ROSE GOETZ & MENDELSOHN LLP

2121 AVENUE OF THE STARS
SUITE 2700
LOS ANGELES CA 90067-5010
(310) 557-2900
FAX: (310) 557-2193

NEW YORK
WASHINGTON DC
BOCA RATON
CLIFTON NJ
PARIS

EUROPEAN COUNSEL
DUBARRY LEVEQUE
LE DOUARIN & VEIL
PARIS-BRUSSELS

BARRY C. GROVEMAN
MEMBER OF THE FIRM
(310) 284-5667

96 JUN 13 PM 1:15
LOS ANGELES REGION

June 10, 1996

Michael Keston, Chair
and Members of the Board
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (May 7, 1996, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations - as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Very truly yours,

Barry C. Groveman

BCG:ls
cc: Governor Pete Wilson
Mayor Richard Riordan

F\3773\99999.801
163757.LA1 T61

0070

R0064324

HARRIS
AND
COMPANY

June 11, 1996

96 JUN 13 PM 1:13
REGIONAL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Chris Harris

Chris Harris

cc: Governor Pete Wilson
Mayor Richard Riordan

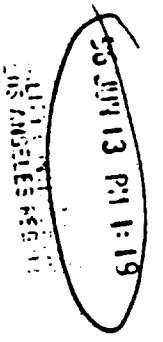
PUBLIC INFORMATION & COMMUNITY OUTREACH
100 NORTH SEPULVEDA BLVD. SUITE 300, EL SEGUNDO CA 90245
213-748-3386 310-670-8083 818-888-4153 FAX 213-748-2285

VOL 21
0071
R0064325

DELPHI

VOL 21

June 12, 1996



Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Mark Ryavec

cc: Governor Pete Wilson
Mayor Richard Riordan

Delphi Associates • 453 Rialto Avenue, Venice, CA 90291 • (310) 392-4843 • Fax (310) 396-3574

0072

B

VOL 21

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

96 JUN 13 PM 1:14
LOS ANGELES REGION

Dear Chairman Question and Members of the Board,

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measure. I am pleased that the business community was included in the negotiations--as were representatives of all the effected parties.

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Flody Suarez

cc: Governor Pete Wilson
Mayor Richard Riordan

3000 West Alameda Ave.
Burbank, CA 91523

0073

R0064327

3000 West Alameda Avenue
Burbank, CA 91523
818 840 6517
Fax 818 840 4914

A Division of
National Broadcasting
Company, Inc

Stephen A. McPherson
Vice President
Primetime Series

NBC
ENTERTAINMENT

96 JUN 13 PM 1:25
REGIONAL BOARD
LOS ANGELES REGION

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Members of the Board:

Environmental issues are of great concern to me, particularly the quality of our coastal waters. It is with this in mind that I am writing to you. We must make every effort to implement regulations that will aid in improving our waters and beaches.

Voting on new regulations that would allow for a more extensive pollution program for storm water runoff is vital in preserving our coastal economic and natural resources. The storm water permit is clearly the most effective means to reduce the hazards and ensure a safer coastline.

I urge you to adopt the proposed permit on July 15 without any further delays. This policy makes good environmental sense, please be a part of the solution.

Sincerely,

Steve McPherson
VP, Primetime Series

cc: Governor Wilson
Mayor Richard Riordan

VOL 21
0074
R0064328

National Broadcasting Company, Inc.
3000 West Alameda Avenue
Burbank CA 91523
818 840 4444

NBC

June 12, 1996

96 JUN 13 PM 1:21
CLERK
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Keston and Members of the Board,

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations--as were representatives of all the effected parties.

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Patricia Mann

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0075

R0064329

National Broadcasting Company, Inc.
3000 West Alameda Avenue
Burbank, CA 91523
818 840 4444

96 JUN 13 PM 1:21
LOS ANGELES REGION

NBC

June 10, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminated sediments, and creates boater safety hazards in ports and harbors

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles. I urge you to adopt the proposed permit on July 15th without any further delays.

Sincerely,

Michael R. Oesterlin

cc: Governor Peter Wilson
Mayor Richard Riordan

VOL 21
00076
R0064330

3000 West Alameda Avenue
Burbank, CA 91523
818 840 4250
Fax 818 840 4904

A Division of
National Broadcasting
Company, Inc

John Landgraf
Vice President
Prime Time Series

NBC
ENTERTAINMENT

96 JUN 14 PM 1:27

QUALITY CONTROL
LOS ANGELES REGION

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Keston and Members of the Board,

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

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In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

John Landgraf

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 00077

National Broadcasting Company, Inc

3000 West Alameda Avenue
Burbank, CA 91523
818 840 2583
818 840 4904 Fax

Tom Nunan
Senior Vice President
Primetime Series
NBC Studios

NBC

96 JUN 14 PM 1:2[illegible]

LOS ANGELES [illegible]

June 12, 1996

Michael Keston, Chair and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

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In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Tom Nunan

TN/plb

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 00718

Kathy Aicher

NBC ENTERTAINMENT

96 JUN 14 PM 1:1

LOS ANGELES REGION

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Keston and Members of the Board,

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In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Kathy Aicher

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0079

B

VOL 21

96 JUN 14 PM 1:14

QUALITY CONTROL
LOS ANGELES

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Members of the Board:

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Thank you for your consideration.

Sincerely,

Steven O'Neill
1867 N. Kingsley Drive
Los Angeles, Ca 90027

cc: Governor Pete Wilson
Mayor Richard Riordon

0080

Christy M. Kwon
4604 Balboa Avenue
Encino, California 91316

RECE
96 JUN 14 PM 1:06
QUALITY CONTROL
LOS ANGELES REGION

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Keston and Members of the Board,

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In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Christy M. Kwon

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0081

Corporate Communications
National Broadcasting
Company, Inc.

3000 West Alameda Avenue
Burbank, CA 91523
(818) 840-4451
Fax (818) 840-2671

Paul McGuire
Executive Director
Prime Time Program

NBC

96 JUN 14 PM 1:33

June 10, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminated sediments, and creates boater safety hazard in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles. I urge you to adopt the proposed permit on July 15th without any further delays.

Sincerely,

Paul McGuire

cc: Governor Peter Wilson
Mayor Richard Riordan

VOL 21

0082

3000 West Alameda Avenue
Burbank CA 91523
818 840 3787

A Division of
National Broadcasting
Company, Inc

Vince Manze
Senior Vice President
Advertising & Promotion

NBC ENTERTAINMENT

96 JUN 14 PM 1:3?
LOS ANGELES

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Keston and Members of the Board,

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

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In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Vincent C. Manze

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0083

R0064337

NBC Productions, Inc
330 Bob Hope Drive
Burbank, CA 91523
818 840 7532
fax 818 840 6510

JoAnn Alfano
Vice President
Prime Time Series Programs

NBC

96 JUN 14 PM 1:33

QUALITY CONTROL BD.
LOS ANGELES REGION

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Question and Members of the Board,

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After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measure. I am pleased that the business community was included in the negotiations--as were representatives of all the effected parties.

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

JoAnn Alfano

JA/bcm

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0084

NBC Productions
330 Bob Hope Drive
Burbank, CA 91523
818 840 7570
Fax 818 840 6510

NBC

96 JUN 14 PM 1:33

Rosemary Tarquinio
Manager
Current Programs

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Question and Members of the Board,

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

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In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Rosemary Tarquinio

RT/jr

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0085

R0064339

Christopher Mack
Manager
Primetime Series Programming

NBC

96 JUN 14 PM 1:32

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Question and Members of the Board,

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

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In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Mac

Christopher Mack

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0086

R0064340

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Members of the Board:

As a businessperson in the Los Angeles Area, I take great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations - as were representatives of all the effected parties.

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Lori Openden

Lori Openden
19520 Citronia Street
Northridge, Ca 91324

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 JUN 17 AM 11:05
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
00871

Burbank, CA 91523
818 840 3015
Fax 818 840-4296

National Broadcasting
Company, Inc.

Director
Primetime Series and
Saturday Morning Programs

NBC
ENTERTAINMENT

RECEIVED
96 JUN 17 AM 11:05
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Keston and Members of the Board,

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations--as were representatives of all the effected parties.

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Robin J. Schwartz

Robin J. Schwartz

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0088
R0064342

RECEIVED
96 JUN 17 AM 11:01
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Board Members;

I am a resident of and businessman in the Los Angeles Area and am concerned about improving the quality of our local coastline. Our beaches are an important economic driver for the region, and, I believe, we must take action that is smart, reasonable, and cost-effective in order to protect our resources.

After the L.A. Times article on people getting sick from storm-drain polluted waters in the Santa Monica Bay (5/7/96), I have been moved to write this letter to request that you and the Board adopt the proposed storm water permit as soon as possible.

The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations -- as were representatives of all the effected parties.

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense as well as good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Geoffrey Harris

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0089

R0064343

**Deborah L. Hamberlin**
**12:3218 Montana Avenue**
**Los Angeles, California 90049**

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Keston and Members of the Board,

As a businessperson in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations--as were representatives of all the effected parties.

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Deborah Hamberlin

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 JUN 17 AM 10:56
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0090

RECEIVED
96 JUN 17 AM 11:06
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 12, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Members of the Board:

As a businessperson in the Los Angeles Area, I take great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations - as were representatives of all the effected parties.

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Jeffrey A Meshel

Jeffrey A. Meshel
11909 Weddington Street #202
Valley Village, Ca 91607

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0091

June 13, 1996

RECEIVED
96 JUN 17 AM 11:08
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston & Members of the Board:

Environmental issues are of great concern to us, particularly the quality of our coastal waters. It is with this in mind that we are writing to you. We must make every effort to implement regulations that will aid in improving our waters and beaches.

Voting on new regulations that would allow for a more extensive pollution program for storm water runoff is vital in preserving our coastal economic and natural resources. The storm water permit is clearly the most effective means to reduce the hazards and ensure a safer coastline.

We urge you to adopt the proposed permit on July 15 without any further delays. This policy makes good environmental sense, please be a part of the solution.

Sincerely,

Valerie & Dick Arlett

Valerie & Dick Arlett
Marina del Rey Residents

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

00092

R0064346

Kit Thomas Productions
CHRISTOPHER THOMAS
15237 SUNSET BOULEVARD, SUITE 301
PACIFIC PALISADES, CA 90272

RECEIVED
96 JUN 17 AM 11:10
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Christopher Thomas

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0093

R0064347



96 JUN 17 AM 11:03

Chamber of Commerce

QUALITY CONTROL BOARD
LOS ANGELES REGION

June 13, 1996

Mr. Michael Keston, Chair
and Members
California Regional Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

The Venice Chamber of Commerce takes great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

I am writing on behalf of the Chamber to urge the Board to adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem of pollution in Santa Monica Bay, and there is obviously strong scientific bases to support such measures. We are pleased that the business community was included in the negotiations as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. We urge you to adopt the proposed permit on July 15 without any further delays.

Thank you for your consideration.

Sincerely,

James R. Merlino
President

The Venice Area Chamber of Commerce & Visitors Bureau
2904 Washington Boulevard · Suite 100 · Post Office Box 202 · Venice, California 90291 · 310-827-2366 · Fax (310) 301-2022

VOL 21 0094

R0064348

Wena Dows
Architectural Designs
Working Drawings

RECEIVED
96 JUN 17 AM 11:07
QUALITY CONTROL BOARD
LOS ANGELES REGION

10681 Ranch Road · Culver City, CA 90230

June 14, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Wena Dows

Wena Dows

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0095

The
Producers
Entertainment
Group Ltd.

RECEIVED
3 PM 1:05
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 14, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Bill Melamed

cc: Governor Pete Wilson
Mayor Richard Riordan

9150 Wilshire Boulevard, Suite 205 • Beverly Hills, California 90212-3414 • Phone (310) 285-8400 • Fax (310) 281-8585

6 V
VOL 21
0096
R0064350

Sara Wan

June 13, 1996

RECEIVED
96 JUN 18 PM 1:01
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Sara Wan
California Coastal Commission

cc: Governor Pete Wilson
Mayor Richard Riordan

22350 Carbon Mesa Rd., Malibu, CA 90265; Tel(310)456-6605;Fax (310)456-3380
e-mail: lwan22350@aol.com

VOL 21
0097
R0064351

Burbank, CA 91523
818 840 4138
Fax 818 840-4759

A Division of
National Broadcasting
Company, Inc

NBC
ENTERTAINMENT

Director
Mini-Series and
Motion Pictures for Television

96 JUN 18 PM 12:53
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 17, 1996

Chairman Michael Keston and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Members of the Board,

As a businessperson and resident in the Los Angeles area, I take great interest in the quality of our local coastline. Smart, reasonable and cost-effective action is of the essence to protect our natural resources.

It is my understanding that people are getting sick due to polluted storm drains in Santa Monica Bay (Los Angeles Times, May 7, 1996). In light of this situation, I am lodging my support for adoption of the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is strong scientific basis to support such measures.

Please take advantage of this opportunity to adopt public policy that makes good economic and environmental sense. I urge you to adopt the proposed permit on July 15, 1996.

Thank you for your consideration.

Kind regards,

Bari Carrelli

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0098

Caggetti International
4124 East Blvd. • Los Angeles, CA 90066 USA
(310) 397-1757

96 JUN 18 PM 1:02
CONTROL BOARD
LOS ANGELES REGION

June 14, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Debra Angeletti

cc: Governor Pete Wilson
Mayor Richard Riordan

B✓
VOL 21
00999
R0064353

T. A. DOLOTTA
P. O. Box 365 • Pacific Palisades • California 90272

BV

VOL 21

June 17, 1996

Mr. Michael Keston
Chairman
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I wish to strongly urge you and the other members of the RWQCB to enact the strongest possible storm-water pollution prevention regulations when you vote on this matter on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that those who swim in the Bay near the storm drains' outlets are twice as likely to get a whole plethora of terrible diseases as those who swim elsewhere. One of 25 people swimming near the drain get sick. And those who swim there often, such as L.A. County Lifeguards -- of whom my son is one -- get sick with monotonous regularity.

This is simply not acceptable. Our beaches must not be polluted.

Please protect them as best you can, no matter what special-interest pressures may be brought to bear on you and your colleagues on the RWQCB.

Thank you.

Sincerely,

Dr. T. A. Dolotta

RECEIVED
96 JUN 18 PM 12:50
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

0100

R0064354

BAYWATCH



/B

RECEIVED
96 JUN 18 PM 1:01
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

0101

BAYWATCH

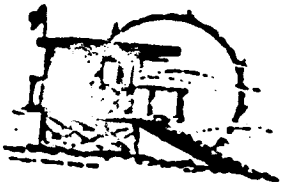


Douglas Schwartz
Executive Producer

The Baywatch Production Company
5433 Beethoven Street
Los Angeles, CA 90066
310-302-9135 • Fax 310-302-9189

The Baywatch Production Company
5433 Beethoven Street • Los Angeles, CA 90066
310-302-9135 • Fax 310-302-9189

BAYWATCH



Received
June 18

B/1

VOL 21

0102

Michael Berk
Executive Producer

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

Michael Berk

cc: Governor Pete Wilson
Mayor Richard Riordan

The Baywatch Production Company
5433 Beethoven Street • Los Angeles, CA 90066
310/302-9135 • fax 310/302-9189

GARY HOFFMAN
PRODUCTIONS INC.

B-1

VOL 21

June 14th, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Center Plaza Drive Monterey Park, CA 91754-2156

Dear Chairman Keston and Members Of The Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Gary Hoffman

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 JUN 18 PM 1:05
QUALITY CONTROL BOARD
LOS ANGELES REGION

0103

3931 PUERCO CANYON ROAD
MALIBU, CALIFORNIA 90265
PHONE (310) 456-1830 • FAX (310) 456-8866

HERBST COMMUNICATIONS

5757 WEST CENTURY BOULEVARD
SUITE 700
LOS ANGELES, CALIFORNIA 90045

TEL (310) 645-2298
FAX (310) 645-6147

June 17, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Chairman Keston and Members of the Board:

As a business owner in the South Bay area of Los Angeles County, I take great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

Our beaches are a tourism magnet. We must do everything we can to ensure that this attraction continues. After reading in the LA Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay, I am writing to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations—as were representatives of all other effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

HERBST COMMUNICATIONS

David A. Herbst
President

cc: Hon. Pete Wilson
Hon. Richard Riordan

RECEIVED
96 JUN 18 PM 1:08
WATER QUALITY CONTROL BOARD
LOS ANGELES REGION



VOL 21
0104
R0064358

CASTLE ROCK ENTERTAINMENT

96 JUN 19 PM 1:30

QUALITY CONTROL BOARD
LOS ANGELES REGION

June 18, 1996

Mr. Michael Keston
Chair and Members
California Regional Water
Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a board member of the Environmental Media Association, Heal the Bay, the Natural Resources Defense Council, and a businessman in the Los Angeles area, I am very interested in the quality of our local coastline. The beaches are an important economic asset for the region and we must take smart, reasonable, and cost-effective action to protect our natural resources.

Even the Los Angeles Times has noted that people are getting sick from storm drain polluted waters in the Santa Monica Bay. That article prompted me to write with this request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in your negotiations - as were representatives from all the affected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Alan F. Horn

cc: Governor Pete Wilson
Mayor Richard Riordan

18

VOL 21

0105

R0064359

335 North Maple Drive Suite 135 Beverly Hills California 90210 Tel 310 285-2360 Fax 310 285-2345

SABRINA S. SCHILLER ATTORNEY AT LAW
225 Santa Monica Boulevard, Suite 1001, Santa Monica, California 90401

VOL 21 0106

June 17, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

RE: SUPPORT FOR STRONG NEW STORMWATER REGULATIONS

Dear Mr. Keston,

It has come to my attention that you and the other members of the Water Quality Control Board will be voting on new controls for storm water run off in the Santa Monica Bay. I am appalled to think that I and my children may continue to be exposed to pollution associated with the storm drains at the beach. Enjoying the environment should NOT be hazardous to one's health!

I urge you to adopt strong regulations to provide the environmental protections necessary to protect those who enjoy the beach and the Bay. You are the guardians of that duty. Please consider public health over special interests when you make your decision. Affected cities can and will adjust to the demands of the law.

I look forward to hearing your views on this matter and to learn how you cast your vote.

Very truly yours,

Sabrina S. Schiller

SS/mm

Office (310) 451-1071 Telecopier (310) 451-9692

JAMES MOUNT

RECEIVED
96 JUN 19 PM 1:25
QUALITY CONTROL BOARD
LOS ANGELES REGION

JUNE 17, 1996

MICHAEL KESTON, CHAIR
REGIONAL WATER QUALITY CONTROL BOARD
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA. 91754-2156

DEAR MR. KESTON:

I AM WRITING TO URGE YOU AND OTHER MEMBERS OF THE REGIONAL WATER QUALITY CONTROL BOARD TO PASS NEW STORM WATER POLLUTION PREVENTION REGULATIONS WHEN YOU VOTE ON JULY 15TH.

THE DEGRADATION OF SANTA MONICA BAY IS HEARTBREAKING. I GREW UP IN SANTA MONICA AS DID MY CHILDREN AND NOW MY GRANDCHILDREN. OUR SUMMERS OF SURFING, FISHING AND BEACH PARTIES ARE THINGS OF THE PAST. MY GRANDSONS HAVE HAD SORE THROATS FROM BEING TAKEN TO THE BEACH -- MY SON IS ONE OF THE 'SURFER'S EAR' VICTIMS AND I LOOK AT MY BEAUTIFUL OCEAN WITH SADNESS AND APPREHENSION FOR WHAT WILL HAPPEN TO IT NEXT.

PLEASE DO WHAT YOU CAN TO NOT ONLY CLEAN UP BUT PRESERVE WHAT IS ONE OF THE MOST BEAUTIFUL BAYS IN THE WORLD.

SINCERELY,

Ruth Mount

RUTH MOUNT
SENIOR PARTNER
JAMES MOUNT, A.I.A., INC.

1201 SAN VICENTE BOULEVARD • SANTA MONICA • CALIFORNIA 90402
MEMBER EMERITUS AMERICAN INSTITUTE OF ARCHITECTS (310) 451-8736 FAX 451-1459

VOL 21 0107

R0064361

B /

# Lotus Pictures

RECEIVED
96 JUN 19 PM 1:26
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

Michele Beale

cc: Governor Pete Wilson
Mayor Richard Riordan

8489 West Third St. Suite 1041B • Los Angeles, CA 90048 • Tel: (213) 651-4411 • Fax: (213) 651-1401
8128 Tiara Cove Circle • Las Vegas, NV 89128 • Tel: (702) 255-2577 • Fax:(702) 255-7344

VOL 21 0108

# Keating & Berk Productions

RECEIVED
96 JUN 19 PM 1:27
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 16, 1996.

Sincerely,

Doris Keating Schlesinger

cc: Governor Pete Wilson
Mayor Richard Riordan

8489 West Third Street, Suite 1041B • Los Angeles, CA 90048 • Tel. (213) 651-4411 • Fax (213) 651-1401

B ✓
VOL 21
0109
R0064363

[redacted]

B

RECEIVED
96 JUN 19 PM 1:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 17, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illness. One of every 25 people that swim in front of a drain will get sick.

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please do not give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Scott Harris

SCOTT HARRIS
PRESIDENT

1999
AVENUE
OF THE
STARS
SUITE 2850
LOS ANGELES
CALIFORNIA
90067-6082
310
553 5200
FAX
310
557 2211

1776
BROADWAY
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315 4455
FAX
212
315 4688

0110

KLEIN & WEISZ
ATTORNEYS AT LAW
Suite 1450
12424 Wilshire Boulevard
Los Angeles, California 90025

Telephone
(310) 447-7000
Telecopier
(310) 447-7726

Michael S. Klein
Richard A. Weisz

OF COUNSEL
Richard H. Levin
Jerry H. Saran

B ✓

VOL 21

96 JUN 19 PM 1:36

June 17, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Re: Regional Water Quality Control Board

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,
Michael S. Klein

MSK/hr
MKWPDD WATER.LTR

This is important!

0111

R0064365

CASTLE ROCK
ENTERTAINMENT

JUN 20 PM 1:10

LOS ANGELES REGION

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles area, I take great interest in improving the quality of our local coastline. Our beaches are an important economic drive for the region and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times (May 7, 1996, front page) about people who are getting sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to request the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem and there is obviously strong scientific basis to support such measures. I am pleased the business community was included in the negotiations, as were representatives of all the affected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good environmental and economic sense.

Thank you for your consideration.

Sincerely,

Carlos Perez
Vice President Administration
Castle Rock Entertainment

cc: Governor Pete Wilson
Mayor Richard Riordan

335 North Maple Drive, Suite 135, Beverly Hills, California 90210, Tel. 310-285-2300 Fax 310-285-2345

B

VOL 21

0112

R0064366

B

VOL 21

# COLLINS, ROBILLARD & KATZ

ATTORNEYS AT LAW


Margaret T. Collins
Gail M. Robillard
Neil Barry Katz

Carol A. Glover
Richard P. Kearney

OF COUNSEL
Adina T. Derwish

Our File No. 999-MTC

ADDITIONAL OFFICE
433 No. Camden Drive
12th Floor Penthouse
Beverly Hills, California 90210


June 16, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Re: Storm Water Quality Regulations

Dear Mr. Keston:

We have been reading with great interest the recent news reports indicating that people are getting sick because of bacteria and viruses released into the ocean through storm drains. Of course this is not news to those of us who surf in the Santa Monica Bay. We have known this for years because our physicians have repeatedly told us that our earaches and sinus problems would be greatly reduced or disappear entirely if we would stay out of the ocean. In fact, we have quit surfing for the first few days after it has rained, and we pay a great deal of attention to the report card designations given to the areas near where we surf.

Whatever steps are required to remediate this situation should be taken. We need strong new storm water pollution prevention regulations and we encourage you to vote that way.

Very truly yours,

COLLINS, ROBILLARD & KATZ

Peggy Collins

MARGARET T. COLLINS


RECEIVED
96 JUN 20 PM 1:15
QUALITY CONTROL BOARD
LOS ANGELES REGION



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RECEIVED
96 JUN 20 PM 1:13
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 19, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Bruce Watkins

cc: Governor Pete Wilson
Mayor Richard Riordan

28 - 25th Ave. Ste. B Venice Beach, CA 90291 Phone/Fax 310-823-8885

VOL 21 0114

Westwood Marquis
HOTEL AND GARDENS

B

VOL 21

96 JUN 20 PM 1:13

June 19, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

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Thank you for your consideration.

Sincerely,

Bruce Watkins

cc: Governor Pete Wilson
Mayor Richard Riordan

0115

930 HILGARD AVENUE, LOS ANGELES, CALIFORNIA 90024-3025, (310) 208-0765, (800) 421-2317, FAX (310) 824-0355

R0064369

RAINFOREST ACTION NETWORK

B

June 19, 1996

96 JUN 20 PM 1:16
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

The rainforests of the world are thousands of miles away from where I sit to write this letter. The Santa Monica Bay however, is not. I can see it, and the thousands of bathers that flock to its shores annually, right from my office window.

I recently found out that people are getting sick from storm drain polluted waters in the Santa Monica Bay. This concerns me greatly. It is impossible for me to work on behalf of rainforest preservation without looking at local issues as well that are occurring in my own back yard. I am writing to ask that the Board adopt the proposed storm water permit as soon as possible. The permit is the most effective means to address the problem that is threatening our beautiful coastline, the health of the Bay, and our local tourist industry.

Please do the right thing by our environment and tourist trade, and adopt the proposed storm water permit.

Thank you for considering this request.

For the Bay,

Tamar F. Hurwitz

Tamar F. Hurwitz
Southern California Director

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0116

1431 OCEAN AVENUE, SUITE 500, SANTA MONICA, CA 90401 U.S.A. (310) 458-2068 FAX (310) 458-7348
450 SANSOME, SUITE 700, SAN FRANCISCO, CA 94111 U.S.A. (415) 398-4404 FAX (415) 398-2732

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Economic Development Corporation of Los Angeles County

Los Angeles County Federation of Labor

Together we're the best. Los Angeles.

RECEIVED
96 JUN 20 PM 1:12
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 17, 1996

Mr. Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board,

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

RBirdsell

Regina Birdsell
Executive Director

RB/pm

cc: Governor Pete Wilson
Mayor Richard Riordan



R0064371

VOL 21 0117

EMA

Environmental Media Association

B

96 JUN 20 PM 1:13

QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 19, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Ed Begley, Jr.

cc: Governor Pete Wilson
Mayor Richard Riordan

0118

R0064372

3679 Motor Ave. Suite 300 • Los Angeles, CA 90034-5701 • 310-287-2003 • FAX 310-287-2815 • E-Mail ema@epg.org

B

VOL 21

GRANT & TANI, INC.
9100 Wilshire Blvd., Suite 1000 West
Beverly Hills, California 90212-3413
Telephone: (310) 273-9494
Fax: (310) 273-0660

Warren Grant
Jane Tani
Corey Barash
Howard Altman

June 20, 1996

96 JUN 21 PM 1:26
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Dischargee within the County of Los Angeles on July 18, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

0119

GRANT & TANI, INC.
9100 Wilshire Blvd., Suite 1000 West
Beverly Hills, California 90212-3413
Telephone: (310) 273-9494
Fax: (310) 273-0660

96 JUN 21 PM 1:25

WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Warren Grant
Jane Tani
Corey Barash
Howard Altman

B✓

VOL 21

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

Renee E. Whitten.

cc: Governor Pete Wilson
Mayor Richard Riordan

0120

R0064374

GRANT & TANI, INC.
9100 Wilshire Blvd., Suite 1000 West
Beverly Hills, California 90212-3413
Telephone: (310) 273-9494
Fax: (310) 273-0660

Warren Grant
Jane Tani
Corey Barash
Howard Altman

B-1

VOL 21

96 JUN 21 PM 1:28
CALIF. REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Warren Grant

cc: Governor Pete Wilson
Mayor Richard Riordan

0121

R0064375

# Kouf // Bigelow Productions

June 21, 1996

RECEIVED
96 JUN 24 PM 1:20
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

This letter is in response to the recent USC / Santa Monica Bay Restoration Project study of the Santa Monica Bay which concluded that you've got a good chance of getting sick if you take a swim. Who wants to go jump in the water down there when you know you're plunging into a bacteria/virus spiced soup. I, for one, don't even bother going to Santa Monica Beaches any more with my kids. I travel farther north or farther south, hoping that my kids will be safer.

I urge you and the other members of the Regional Water Quality Control Board to pass strong storm water pollution prevention regulations when it votes on July 15. Please don't weaken the regulations. I want my kids to enjoy the ocean, not just look at it.

Sincerely,

Jim Kouf

Walt Disney Studios 500 South Buena Vista Street Animation Building 1A-11 Burbank, CA 91521-1608
(818) 560-5103

B
VOL 21
0122
R0064376

BLOOM, HERGOTT, COOK, DIEMER AND KLEIN, LLP
ATTORNEYS AT LAW
150 SOUTH RODEO DRIVE, THIRD FLOOR
BEVERLY HILLS, CALIFORNIA 90212

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THOMAS P. POLLOCK
FOUNDING PARTNER
THROUGH 1989

TELEPHONE (310) 859-6800
FAX (310) 859-2788

DIRECT DIAL NUMBER
(310) 859-6836

June 21, 1996

0001

John Slezak
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Re: **Storm Water Permit for the Santa Monica Bay**

Dear Mr. Slezak:

I would like you to add my name to the list of concerned citizens urging you to adopt the proposed storm water permit for the Santa Monica Bay.

Taking action on this issue is long over due. It is high time we address the environmental problems we have created through our negligence and erroneous financial concerns. This issue will have to be dealt with sooner or later. If we address it now there will be considerably less damage to kick ourselves for later.

Very truly yours,

Stuart Rosenthal

STUART M. ROSENTHAL
of BLOOM, HERGOTT, COOK, DIEMER and KLEIN, LLP

SMR:ai

96 JUN 24 PM 1:28
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0123

R0064377

Margaret E. Olsen, M.D.
DERMATOLOGY
DIPLOMATE OF THE AMERICAN ACADEMY OF DERMATOLOGY

6-21-96

Mr Michael Keston, Chair
Regional water Quality Control Board

Dear Mr Keston.

As a dermatologist I have seen, first hand, the oozing running green pus sores all over the body of someone who swam in the Santa Monica Bay by a storm drain. It was disgusting and unnecessary. (and uncivilized).

Please stop untreated pollution from storm drains into our Bay. It isn't healthy for living things. Please help heal the Bay.

Thank you

Margaret E Olsen

RECEIVED
96 JUN 24 PM 1:33
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

DISEASES AND REJUVENATION OF THE SKIN
MARGARET E. OLSEN, M.D., INC. • 11600 WILSHIRE BOULEVARD, SUITE 306 • LOS ANGELES, CA 90025
310.473.0911 • FAX 310.473.0311

VOL 21 0124

R0064378

PACIFIC HEALTH ASSOCIATES
1227 Lincoln Blvd. Suite 302
Santa Monica, CA 90401
(310) 458-8873
Fax: (310) 458-7992

JOHN K. LEE Ph.D
YUE-JIN FENG O.M.D.

June 21, 1996

Micheal Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, Ca. 91754

Dear Mr. Kester,

I am very concerned about the pollution in the Santa Monica Bay. It is of greatest urgency to me that it be cleaned up immediately. Please don't give in to pressure to weaken the regulations. Thank You.

Sincerely,

John K. Lee PhD, Director
Licensed Psychologist

96 JUN 24 PM 1:36
QUALITY CONTROL BOARD
LOS ANGELES REGION

B
VOL 21
0125
R0064379

Gretchen Struble
17 - 28th Avenue #304
Venice, CA 90291
310/301-0699

June 24, 1996

RECEIVED
96 JUN 25 PM 12:23
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Gretchen Struble

Gretchen Struble

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0126
R0064380

B

VOL 21

GROSSO·JACOBSON ENTERTAINMENT CORP.

June 20, 1996

RECEIVED
96 JUN 25 PM 12:37
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

Bob VanRonkel

cc: Governor Pete Wilson
Mayor Richard Riordan

Los Angeles 8981 Sunset Blvd. Suite 102 LA, CA 90069

NEW YORK: 767 Third Avenue 15th Floor New York, New York 10017 (212) 644-6909

0127

R0064381

**SCOPE**
**Santa Clarita Organization for Planning the Environment**
TO PROMOTE, PROTECT AND PRESERVE THE ENVIRONMENT, ECOLOGY AND QUALITY OF LIFE IN THE SANTA CLARITA VALLEY
POST OFFICE BOX 1182, CANYON COUNTRY, CA 91386

B ✓

6/23/96

Mr. Michael Keston, Chair
Regional Water Quality Board
101 Centre Plaza Dr.
Monterey Park, Ca. 91754-2156

RECEIVED
96 JUN 25 AM 10:46
QUALITY CONTROL BOARD
LOS ANGELES REGION

Re: Municipal Storm Water Permit for the County of Los Angeles (CAS614001)

Dear Mr. Keston:

We are writing to you to express our support for the passage of strong storm water pollution prevention regulations at your July 15th meeting.

Polluted storm water is of special concern to those of us in the Santa Clarita Valley because the Santa Clara River is the source of 50% to 80% of our drinking water supply. It is also the surface receiver of all the storm drains in the Santa Clarita Valley. It is imperative that storm water pollution control become a reality to insure a continued safe and reliable drinking water supply to our Valley. The cost of having to treat our ground water supplies before delivery far outweighs the expense of reducing the pollution through your regulations.

We are also concerned about pollution to the Santa Monica Bay and recent epidemiological studies indicating a link between polluted storm water and illness in swimmers. For the sake of our health, we must clean up this pollution!

Our concern, of course, extends to the effects of pollution on various riparian and marine habitats. We are part of a web of life. We cannot destroy that web's interconnectedness and remain healthy ourselves.

We request that you consider all these aspects of the new storm water permit and vote for strong regulations that will reduce pollution and its impacts on human health.

Thank-you for your time.

Sincerely,

Lynne A. Plambeck
1st Vice President

cc: Catherine Tyrrell, Assistant Executive Director, Regional Water Quality
Don Williams, City of Santa Clarita

VOL 21

0128

**SCOPE**
**Santa Clarita Organization for Planning the Environment**
TO PROMOTE, PROTECT AND PRESERVE THE ENVIRONMENT, ECOLOGY AND QUALITY OF LIFE IN THE SANTA CLARITA VALLEY
POST OFFICE BOX 1182, CANYON COUNTRY, CA 91386

RECEIVED
96 JUN 25 PM 12:37
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

6/23/96

Mr. Michael Keston, Chair
Regional Water Quality Board
101 Centre Plaza Dr.
Monterey Park, Ca. 91754-2156

Re: Municipal Storm Water Permit for the County of Los Angeles (CAS614001)

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Thank-you for your time.

Sincerely,

Lynne A. Plambeck
1st Vice President

cc: Catherine Tyrrell, Assistant Executive Director, Regional Water Quality

VOL 21
0129
R0064383

B

VOL 21

ACT III
PRODUCTIONS

June 6, 1996

RECEIVED
96 JUN 25 PM 12:37
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Ana Maria Geraldino

c: Governor Pete Wilson
Mayor Richard Riordan

0130

5555 Melrose Ave • Hollywood, California 90038 • 213/956-8585 • Fax 213/862-1185

ACT III
PRODUCTIONS

RECEIVED
96 JUN 25 PM 12:37
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

June 7, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Troy Hutchinson

Troy A. Hutchinson

c: Governor Pete Wilson
Mayor Richard Riordan

5555 Melrose Ave. • Hollywood, California 90038 • 213/956-8585 • Fax 213/862-1185

R0064385

VOL 21
0131

ACT III
PRODUCTIONS

B ✓

RECEIVED
96 JUN 25 PM 12:37
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Ginny Durkin

Ginny Durkin

c: Governor Pete Wilson
Mayor Richard Riordan

0132

5555 Melrose Ave. • Hollywood, California 90038 • 213/956-8585 • Fax 213/862-1185

B

ACT III
PRODUCTIONS

RECEIVED
96 JUN 25 PM 12:37
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

John Baskin

c: Governor Pete Wilson
Mayor Richard Riordan

5555 Melrose Ave. • Hollywood, California 90038 • 213/956-8585 • Fax 213/862-1185

VOL 21 0133

R0064387

VOL 21 0134

23715 West Malibu Road, Suite 155
Malibu, California 90265
Fax: (310) 456-7747

R0064388

B,

VOL 21

marc frederic

RECEIVED
96 JUN 26 PM 2:42
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Clark Drane
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Mr. Drane,

Please vote on July 15th for the proposed storm water permit.

I am a 56 year old businessman. I swim in our ocean a quarter mile about four times a week. I've done so all year round for the past three years. I've come to respect and love the ocean as a living being. It affords me pleasure, emotional well-being and physical fitness. It has become a part of my life-style. I wish to protect it. I am not alone in my feelings on this matter.

Thanks in advance for your consideration and affirmative vote on July 15th for the proposed water permit.

Sincerely,

Marc K. Frederic
First Vice President/
Financial Consultant

MKF/adm

0135

575 esplanade, #306, redondo beach, ca 90277

R0064389

marc frederic

RECEIVED
96 JUN 26 PM 12:43
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Mr. Coe,

Please vote on July 15th for the proposed storm water permit.

I am a 56 year old businessman. I swim in our ocean a quarter mile about four times a week. I've done so all year round for the past three years. I've come to respect and love the ocean as a living being. It affords me pleasure, emotional well-being and physical fitness. It has become a part of my life-style. I wish to protect it. I am not alone in my feelings on this matter.

Thanks in advance for your consideration and affirmative vote on July 15th for the proposed water permit.

Sincerely,

Marc K. Frederic
First Vice President/
Financial Consultant

MKF/adm

575 esplanade, #306, redondo beach, ca 90277

B

VOL 21

0136

R0064390

B.

marc frederic

RECEIVED
96 JUN 26 PM 2:42
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Dr. Rogers,

Please vote on July 15th for the proposed storm water permit.

I am a 56 year old businessman. I swim in our ocean a quarter mile about four times a week. I've done so all year round for the past three years. I've come to respect and love the ocean as a living being. It affords me pleasure, emotional well-being and physical fitness. It has become a part of my life-style. I wish to protect it. I am not alone in my feelings on this matter.

Thanks in advance for your consideration and affirmative vote on July 15th for the proposed water permit.

Sincerely,

Marc K. Frederic
First Vice President/
Financial Consultant

MKF/adm

575 esplanade, #306, redondo beach, ca 90277

VOL 21
0137
R0064391

marc frederic

RECEIVED
96 JUN 26 PM 2:42
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

John Seizak
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Mr. Seizak,

Please vote on July 15th for the proposed storm water permit.

I am a 56 year old businessman. I swim in our ocean a quarter mile about four times a week. I've done so all year round for the past three years. I've come to respect and love the ocean as a living being. It affords me pleasure, emotional well-being and physical fitness. It has become a part of my life-style. I wish to protect it. I am not alone in my feelings on this matter.

Thanks in advance for your consideration and affirmative vote on July 15th for the proposed water permit.

Sincerely,

Marc K. Frederic
First Vice President/
Financial Consultant

MKF/adm

575 esplanade, #306, redondo beach, ca 90277

VOL 21 0138
R0064392

marc frederic

RECEIVED
96 JUN 26 PM 2:42
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Charles Vernon
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Mr. Vernon,

Please vote on July 15th for the proposed storm water permit.

I am a 56 year old businessman. I swim in our ocean a quarter mile about four times a week. I've done so all year round for the past three years. I've come to respect and love the ocean as a living being. It affords me pleasure, emotional well-being and physical fitness. It has become a part of my life-style. I wish to protect it. I am not alone in my feelings on this matter.

Thanks in advance for your consideration and affirmative vote on July 15th for the proposed water permit.

Sincerely,

Marc K. Frederic
First Vice President/
Financial Consultant

MKF/adm

575 esplanade, #306, redondo beach, ca 90277

VOL 21 0139
R0064393

ACT III
PRODUCTIONS

June 4, 1996

RECEIVED
96 JUN 26 PM 12:39
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Lisa Abramowitz

c: Governor Pete Wilson
Mayor Richard Riordan

5555 Melrose Ave • Hollywood, California 90038 • 213/956-8585 • Fax 213/862-1185

R0064394

VOL 21
0140

ACT III
PRODUCTIONS

RECEIVED
96 JUN 26 PM 12:47
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 8, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Rachel Davidson

c: Governor Pete Wilson
Mayor Richard Riordan

5555 Melrose Ave • Hollywood, California 90038 • 213/956-8585 • Fax 213/862-1185

1B
VOL 21
0141
R0064395

/B

VOL 21

Shelley & Brad Billik
10394 Almayo Ave.
Los Angeles, CA 90064

RECEIVED
96 JUN 26 AM 11:56
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As citizens and business owners in the Los Angeles area, we take a great interest in protecting and improving the quality of our local environment. We are concerned about the continuing damage to the Southern California coastline, and believe that our beaches are an important economic driver for the region and should be protected through effective and economically sound practices.

After reading in the Los Angeles Times that people are getting ill from storm drain polluted waters in the Santa Monica Bay (Front Page, May 7, 1996), we are moved to write and request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there are strong scientific bases to support such measures. We are pleased that the business community was included in the negotiations, as were representatives of other affected parties.

We urge you to please take advantage of this opportunity to adopt public policy that makes good economic and environmental sense.

Thank you for your consideration.

Sincerely,

Shelley & Brad Billik

cc: Governor Pete Wilson
Mayor Richard Riordan

0142

B.

VOL 21

# *Ballona Lagoon Marine Preserve*

June 24, 1996

RECEIVED
96 JUN 26 PM 12:42
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Mr. Keston;

The board and members of the Ballona Lagoon Marine Preserve urge you and your fellow Board members to exhibit the courage and concern necessary to protect the waters and wildlife of Santa Monica Bay, and adopt the NPDES storm water runoff permit.

This organization is actively engaged in the restoration of a small wetland in Venice. Our experience has been that education is the key to understanding that leads to public stewardship of our natural resources.

And education is a key component of the subject permit. The economic argument is repeated over and over but surely the losses that will occur with the continued pollution of Santa Monica Bay will be far greater than the costs of embarking on a concerned region-wide effort to stop polluted storm water runoff.

Sincerely,
BALLONA LAGOON MARINE PRESERVE

Iylene Weiss

Iylene Weiss
President

cc: Governor Pete Wilson
Mayor Richard Riordan


*Board of Directors*
Iylene Weiss, President
Myrna Dubin, Vice President
Lenore Hukes, Secretary
Richard Hibbs, Treasurer
Jan Boker
John Conner
Sheila Goldberg
Elisha Graham
Rob Katherman
Pat McGuire
Steven Robiner
Chris Stevenson

*Legal Counsel*
Steven H. Kaufmann

*Advisory Board*
M Amens
el Amens
Bloom
Assemblywoman
Debra Bowen
Daniel M. Cohen, Ph.D.
Laddie John Dill
Sandy Elster
Ernestine Elster, Ph.D.
Rummon Fay, Ph.D.
Cathy Fitzgerald, Ph.D.
Dorothy Green
Lu Hass
State Senator
Tom Hayden
Jessica A. Laufer
Ruth Lebow
Felice Marcus
James Maston
Laura Maston
Dudley Moore
Melvin L. Nutter
Jane Parks
Gene Parks, M.D.
Morgan Radford
Robin Rose
Joe Spano
Ed Tanyd
Sandy Wohlgemuth
Fred Woocher

*Supporting Organizations*
American Oceans Campaign
Campaign to Save California Wetlands
Heal the Bay
League for Coastal Protection
Los Angeles Audubon Society
Santa Monica Bay Restoration Project
Sierra Club Angeles Chapter
Venice Historical Society
Venice Chamber of Commerce
Venice Town Council



*P.O. Box 9244, Marina Del Rey, California 90295 ~ Voice and Fax: 310 • 306 • 5078*



0143

R0064397

ARCHITECT

MATT KIVLIN

222 twenty sixth street
suite 202
santa monica
california 90402

310-395-4916

RECEIVED
96 JUN 27 PM
QUALITY CONTROL
LOS ANGELES

6/25/96

Dear Mr Keston & Water Control Board,

This letter is in regards to " storm water pollution regulations"on which you are voting on July 15.

Please pass these new regulations...help keep our children & everyone safe from swimming in hazardous ocean waters.

Thank You,

Mr & Mrs Matt Kivlin

VOL 21

0144

R0064398

B.

VOL 21

# Heitman Properties

Barry Schlesinger
Chairman

RECEIVED
96 JUN 27 PM 1:24
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

June 24, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91784-2186

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

Barry Schlesinger

cc: Governor Pete Wilson
Mayor Richard Riordan

Heitman Properties Ltd. 9601 Wilshire Boulevard Suite 200 Beverly Hills, CA 90210-5205 310 285-7222 Fax 310 550-7731

0145

R0064399

JUN 19 '96 13:37 PAGE

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96 JUN 27 PM 1:22
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0146

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

Zanne Devine, Sr. Vice President Polygram Filmed Ent.

cc: Governor Pete Wilson
Mayor Richard Riordan

PolyGram Filmed Entertainment
9348 Civic Center Dr.
Suite 300
Beverly Hills, CA 90210

JUN 19 '96 13:37 ID:

R0064400

marc frederic

RECEIVED
96 JUN 28 PM 2:47
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Charlotte Craven
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Ms. Craven,

Please vote on July 15th for the proposed storm water permit.

I am a 56 year old businessman. I swim in our ocean a quarter mile about four times a week. I've done so all year round for the past three years. I've come to respect and love the ocean as a living being. It affords me pleasure, emotional well-being and physical fitness. It has become a part of my life-style. I wish to protect it. I am not alone in my feelings on this matter.

Thanks in advance for your consideration and affirmative vote on July 15th for the proposed water permit.

Sincerely,

Marc K. Frederic
First Vice President/
Financial Consultant

MKF/adm

575 esplanade, #306, redondo beach, ca 90277

B-

VOL 21

0147

R0064401

Surfrider Foundation
CONSERVATION · RESEARCH · EDUCATION
GORDON LABEDZ, M.D.
BLUE WATER TASK FORCE
339 REGATTA WAY, SEAL BEACH, CA 90740
T (213) 861-6520 · FAX (213) 861-5502 · HOME (310) 598-0230

Surfrider Foundation

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96 JUN 28 PM 2:47
QUALITY CONTROL BOARD
LOS ANGELES REGION

B.

VOL 21

Michael Keston, President
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

June 25, 1996

Mr. Keston,

The control of urban run off pollution into Los Angeles area beaches is an immense problem that will not be solved quickly, cheaply or easily. We understand that the document **Waste Discharge Requirements for Municipal Stormwater and Urban Run Off in Los Angeles County** represents a tremendous amount of negotiation and compromise.

We endorse this document as a first small step in the long journey that will lead to cleaner beaches in our area.

We, of course, are disappointed that there is no inspection or enforcement built into this agreement. Like so many of our environmental laws, these guidelines are meaningless if they are not enforced. We look forward to more substance in the future.

For the Ocean,

Gordon Labedz, M.D.

Gordon Labedz, M.D.

0148

R0064402

B

VOL 21

Visual Vibrations

RECEIVED
96 JUN 28 PM 2:49
QUALITY CONTROL BOARD
LOS ANGELES REGION

6/27/96

Michael Keston
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston

I had to write to urge you to vote for strong storm water pollution protection regulations for our bay. I am a native of Los Angeles and I think it is insane that myself and every friend I know will not swim in our beautiful bay because of the toxicity levels and health risks. I know a surfer friend who was infected by the bacteria after a storm and suffered a severe ear infection. His illness is not an isolated incident.

Anything we can do must be done to restore the bay to a safe habitat for humans and sealife alike.

Please imagine our children and our childrens children. The stronger we fight to protect our bay today, the healthier and cleaner it will be for the generatios follow us.

Thank you very much for you attention,

Jim Hagopian

0149

R0064403

HAGOPIAN STUDIO 213 656-5888. 906 N KINGS RD. SUITE 6. WEST HOLLYWOOD. CA 90069

LAW OFFICES OF
ERIC LAWTON
A PROFESSIONAL CORPORATION
SUITE 200
1100 WILSHIRE BOULEVARD
SANTA MONICA, CALIFORNIA 90401-1113
TELEPHONE (310) 260-6068
FACSIMILE (310) 260-6069

RECEIVED
96 JUN 28 PM 2:52
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RE: Regional Water Quality Control

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Eric Lawton

EL: mp
office.bus\quality.h20

VOL 21 0150

RECEIVED
96 JUN 28 PM 2:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations--as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Laurie Peters

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0151
R0064405

*LAURIE PETERS PUBLIC RELATIONS*
*100 WILSHIRE BLVD, SUITE 800 SANTA MONICA CA 90401 PHONE: (310)260-6556 FAX: (310)260-6550*

B

VOL 21

ROGER A. BURLAGE
CHAIRMAN AND
CHIEF EXECUTIVE OFFICER

**LIVE** Entertainment Inc.

June 28, 1996

96 JUL -1 PM 2:43

QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
and Members
California Regional Water Quality
Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

RAB:sh

cc: Governor Pete Wilson
Mayor Richard Riordan

0152

R0064406

15400 Sherman Way, P.O. Box 10124, Van Nuys, CA 91410-0124 (818) 778-3220 Fax (818) 989-1383

Telephone (310) 208-3477

Robert S. Hertz, D.D.S., M.S.D., Inc.
Diplomate - Oral and Maxillo-Facial Surgery

10921 Wilshire Boulevard, Suite 608
Los Angeles, California 90024

B

VOL 21

PLEASE!

VOTE YES ON JULY 15TH

STORM WATER PERMIT -

MANY OF US - STAFF AND FAMILY, SHARE IN THE REQUEST -

RECEIVED
96 JUL -2 PM 1:32
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

0153

# CREATIVE ARTISTS AGENCY

LITERARY AND TALENT AGENCY
9830 WILSHIRE BOULEVARD
BEVERLY HILLS, CALIFORNIA 90212-1825
TELEPHONE: 310-288-4545 • FACSIMILE: 310-288-4800

June 30, 1996

Michael Keston, Chair and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff form storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the country of Los Angeles on July 16, 1996.

Sincerely,

David Styne
CREATIVE ARTIST AGENCY

STYN/kf

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0154

R0064408

# THE MALIBU FOUNDATION
## FOR ENVIRONMENTAL EDUCATION

CA Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Board Members,

Please vote YES on the Los Angeles Countywide Municipal Storm Water Permit on July 15th.

The Malibu Foundation has gone to almost 300 schools in Los Angeles and talked to 120,000 children about environmental issues. We have talked about recycling, the dangers of plastic and debris in the world's oceans, storm drains and how litter makes it way from the neighborhoods to the beaches and oceans. We get the schools and kids involved in community service recycling and Adopt-A-Beach clean-up programs. Almost 15,000 kids have actually earned their way to the beach by recycling aluminum cans for bus money. Our 3rd annual Earth Day Clean-up at Dockweiler State Beach saw 1,500 kids on the beach.

All of these children, the citizens of Los Angeles and I am sure, yourselves, share the same vision of clean beaches and ocean. You have the opportunity to take action and clean up the run-off that is polluting our Bay.

Vote YES.

Thank you very much.

Michael D. Klubock
Executive Director

96 JUL -3 PM 1:41
CS ANGELES REGION

1800 Avenue of the Stars #1190 Los Angeles, CA 90067
310-789-7238 Fax 788-0022

VOL 21 0155

R0064409

June 26, 1996

RECEIVED
96 JUL -5 PM 1:57
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life and leaves our beaches looking like trash dumps. Not to mention the contaminated material that is dumped into the ports and marina creating both environmental and boating safety hazards.

Please do not succumb to the pressures of weakening the regulations. We need you to fight for our beaches!!

Thank you for your time and efforts.

Cordially,

Amy Jordan

Amy Jordan

AMY JORDAN
Assistant to the President
JH ENTERPRISES
1. . Olympic Boulevard (310) 312-3600
Los Angeles, California 90064-1544 FAX (310) 479-3086

VOL 21 0156

R0064410

# W. DOUGLAS BREIDENBACH

ARCHITECT

VB

VOL 21

96 JUL -5 PM 1:57

July 2, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the bay, you are almost 50% more likely to get sick with a cold, sore throat, diarrhea, nausea, or other illnesses. One of every 25 people that swim in front of a drain will get sick.

This is not acceptable.

Urban runoff is toxic to marine life and leaves our beaches looking like trash dumps.

Please don't give into pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Ellen Mahoney

W. Douglas Breidenbach
Ellen Mahoney

1925 MONTANA AVE. SUITE 2
SANTA MONICA, CA 90402
310 • 576 • 7915

0157

R0064411

MICHAEL VIGNIERI & ASSOCIATES
12381 Wilshire Boulevard, Suite 201
Los Angeles, California 90025
Tele (310) 442-0076 Fax (310) 207-4444

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Rec July 8

VOL 21

0158

*Darlene A. Lancer*
J.D., M.A., M.F.C.C.
11022 Santa Monica Blvd., Suite 250
Los Angeles, California 90025
(310) 575-0562

July 3, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I hope that you and other board members will vote to pass storm drain measures on July 15 to prevent further pollution of our valuable resource, the Pacific. First fish and now humans are getting sick from swimming in the ocean along our beautiful beaches.

As a child I remember catching fresh perch off the Santa Monica pier, eating it and swimming frequently in the water. Now I and everyone I know is afraid to go into the water, not to mention eating anything caught locally. My brother used to skin dive and catch beautiful halibut at Malibu. Our ocean has become a dump for waste and chemicals.

Please do everything you can to bring back clean waters to Santa Monica, so perhaps the fish will come back, and my future grandchildren can one day feel safe to swim in our bay.

Sincerely,

Darlene Lancer

RECEIVED
96 JUL -8 PM 1:28
BOARD OF [illegible]
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0159

R0064413

B~

VOL 21

**Janelle Harley**
Attorney at Law

1262 Beryl St., Suite 18, Redondo Beach, California 90277 Tel./Fax (310) 798-4118

July 3, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when you vote on July 15.

As I'm sure you know, a recent study by USC and the Santa monica Bay Restoration Project shows that those who swim in areas where storm drains empty into the Bay are almost 50% more likely to get sick with a cold, sore throat, diarrhea, nausea, and other illnesses.

As one who loves the ocean, I find this completely unacceptable. Please help make our beaches safe for swimming by voting for stronger regulations. Thank you for your consideration.

Very truly yours,

Janelle Harley

Janelle Harley

RECEIVED
96 JUL -8 PM 1:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

0-160

DAVID C. LEDERER
ATTORNEY AT LAW

5435 BALBOA BOULEVARD, SUITE 109
ENCINO, CALIFORNIA 91316-1508

TELEPHONE (818) 789-4598
FACSIMILE (818) 789-4432

July 3, 1996

Elizabeth D. Rogers, Ph.D.
California Regional Water
Quality Control Board
Los Angeles Region
101 Center Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

The purpose of this letter is to urge to adopt the proposed storm water permit.

I am a frequent user of the Santa Monica Bay and have personally witnessed the significant improvement to water quality brought about by the Sanitation Districts' efforts in complying with the Clean Water Act.

I am also regularly afflicted with minor ailments resulting from dirty storm water being discharged into some of the best surfing areas in the Santa Monica Bay. As such, I urge you to follow the letter and spirit of the law in adopting a workable storm water permit.

It appears that the largest source of pollution in the Santa Monica Bay now comes from storm water and a storm water permit such as is on the agenda would address that issue.

Please vote to adopt the permit on July 15, 1996, and urge your fellow board members to do so too thus helping protect the health of residents and tourists who fish, swim and surf in the Santa Monica Bay.

Very truly yours,

David C. Lederer

DCL:kjt

96 JUL -8 PM 1:28
LOS ANGELES REGION

B/

VOL 21

0161

R0064415

THE SPORTS CLUB COMPANY
The Sports Club LA • The Sports Club Irvine • Reebok Sports Club NY • The Spectator Clubs • The Sports Club

RECEIVED
96 JUL -9 PM 12:05
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 2, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Phil Swain
Vice-President

cc: Governor Pete Wilson
Mayor Richard Riordan

11100 Santa Monica Boulevard • Suite 300 • West Los Angeles, CA 90025
(310) 479-5200 • Fax (310) 479-8350

VOL 21

0162

R0064416




RECEIVED
96 JUL -9 PM 12:04
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 3, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Bob Talbot

cc: Governor Pete Wilson
Mayor Richard Riordan

· 310-732-4215 ·
POST OFFICE BOX 3126 · RANCHO PALOS VERDES · CALIFORNIA · 90274 · FAX 310-832-7366

VOL 21
0163
R0064417

Union Bank

96 JUL -9 PM 12:04

July 8, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Illiana Gordillo

Illiana Gordillo

cc: Governor Pete Wilson
Mayor Richard Riordan

B/

VOL 21

0164

R0064418

# Possell Construction Co., Inc.

B/

VOL 21

96 JUL -9 PM 12:02

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 8, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

This letter is recommend that you support the issuance of a permit, July 15, 1996, calling upon the 88 cities within Los Angeles County to adopt practices that will reduce urban runoff.

This is the only way to enhance the water quality in Southern California to any degree.

As a contractor, we have come under certain jurisdictions that already require "storm water runoff pollution plans" most notable the city of Mission Viejo.

This extra effort on a job of any scope, was insignificant, and actually enhanced the housekeeping aspects of the job.

While their plan had the contractor list materials utilized, hire consultants, etc, the general idea could be brought about very easily.

Catch basins should be cut off on construction sites, and most notably packaging of materials prior to their use, and during their use, and disposal after use could easily be set up to cut off the potential pollution.

If you would like further input, or to see a site, please call.

Sincerely,

Wiley C. Possell
POSSELL CONSTRUCTION CO., INC.

encl.

cc: Govenor Pete Wilson
Mayor Richard Riordan

8101-9 Orion Avenue Van Nuys, California 91406 (818) 785-1151 Fax (818) 908-0233

0165

R0064419

NATURE CALLS
1509 W. Tedmar Ave.
Anaheim, Ca. 92802
714 527-2162

RECEIVED
96 JUL -9 PM 12:01
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

07/08/96

Micheal Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, Ca. 91754-2156

Dear Mr. Keston;

I strongly support the comprehensive pollution prevention program for water runoff to the RWQCB. I think it is very important to pass this program for the environment and for the health of all beach goers. I have lived in California for 36 years of my life and surfed for about 21 years, and to see the environmental changes of the water is incredeble. Lets make a change now and start cleaning the ocean up for us and our children.

Sincerely yours,
John Pollock, CEO
Nature Calls

0166

R0064420

MIKE POST PRODUCTIONS

RECEIVED
96 JUL -9 PM 12:00
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 3, 1996

Michael Keston - Chair and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91764-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

Mike Post

Mike Post
MIKE POST PRODUCTIONS

cc: Governor Pete Wilson
Mayor Richard Riorden

1007 W. Olive Avenue
Burbank, California 91506
818-840-8313

VOL 21 0167

KETCHUM ADVERTISING

LARRY KOPALD
EXECUTIVE VICE PRESIDENT
EXECUTIVE CREATIVE DIRECTOR

RECEIVED
96 JUL -9 P12:05
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 3, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Larry Kopald
Executive Vice-President

cc: Governor Pete Wilson
Mayor Richard Riordan

11755 WILSHIRE BLVD., SUITE 1900 / LOS ANGELES, CALIFORNIA 90025-1506 / TELEPHONE (310) 444-5134 FAX (310) 478-7236 / E-MAIL: lkopaldola ketchum.com

VOL 21
0168
R0064422

**Harriet Kimble Wrye, Ph.D.**
Psychology, Inc.
17711 Porto Marina Way, Pacific Palisades, CA 90272
Tel: (310) 454-0687; Fax: (310) 454-9464; Email: 74243,134

RECEIVED
96 JUL 10 AM 11:59
LOS ANGELES REGION

July 8, 1996

Elizabeth Rogers, Ph.D.
Calif. Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers,

As a 24 year resident of Pacific Palisades near Sunset Boulevard and Pacific Coast Highway, a homeowner who has raised a family "at the beach" I have long been concerned about the effluent that is dramatically visible on our beaches during winter storms. Sadly, my children grew up having to become increasingly aware of the health hazards of swimming in the Santa Monica Bay. They and their friends who were surfers seemed to get an inordinate number of infections.

I hope that you will add this household to your list of concerned citizens who strongly urge you to adopt the proposed storm water permit on July 15. Our Los Angeles mountains, beaches and ocean are our most precious natural resource, crucial to the physical and mental well-being of our resident community as well as those who come to take refuge at the seashore from elsewhere in the city.

Please vote to adopt the permit on July 15!!

Sincere regards,

Harriet Wrye

Harriet Kimble Wrye, Ph.D.

VOL 21 0169

R0064423

B'

VOL 21

**CHAMPION CHEVROLET**

707 N. Sepulveda Boulevard • Manhattan Beach, California 90266 • (213) 316-1234

July 8, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing to urge you and other members of the Regional Water Quality Control Board to pass strong storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of 25 people will get sick!

No one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thanks for your consideration.

Sincerely,

Christopher C. Oliver
President

RECEIVED
96 JUL 10 AM 11:58
QUALITY CONTROL BOARD
LOS ANGELES REGION

0170

R0064424

TEAM ONE ADVERTISING

1960 East Grand Avenue

El Segundo, California 90245

RECEIVED

96 JUL 10 AM 11:58

CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 08, 1996

Mr. Michael Keston, Chair and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am writing to urge you to vote to adopt the proposed storm water permit.

As CEO of an advertising agency in the Los Angeles area and as someone who is very concerned about the health of our oceans and our economy, I take a great interest in improving the quality of our local coastline.

Our agency has been involved with Heal the Bay over the past year, donating our time and services to this worthy organization. As such, I have become very aware of the pollution continually dumping out along the coast from Los Angeles storm drains. And, as I'm sure you are aware, the end result is serious contamination of the water which poses a health threat to all those who swim in it. Not to mention an economic threat, as coastal tourism and recreation businesses which generate billions of dollars annually, are largely dependent on the Bay as the primary attraction for their customers.

I am now moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means of addressing the problem. Environmental leaders have worked hard to achieve consensus on all the measures of the permit, now it's up to you.

Sincerely,

Scott

Scott Gilbert

*Co-Chairman*

*Chief Executive Officer*

B

VOL 21

0171

BORMAN
ENTERTAINMENT

June 28, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulation when it votes July 15.

I feel that due to the flow of pollution into Bay people suffer a greater chance of getting sick just by swimming in the bay. Every beach should be safe for swimming. Not only are people at risk of becoming ill, marine life suffer from the toxins that are being poured into the ocean.

Please do not weaken the regulations. These health, environmental and safety hazards deserve strong prevention regulations.

Sincerely,

Gary Borman

RECEIVED
96 JUL 10 AM 11:58
QUALITY CONTROL BOARD
LOS ANGELES REGION

1250 6TH STREET SUITE 401 SANTA MONICA, CA 90401
TEL (310) 656-3150 FAX (310) 656-3160

VOL 21

0172

R0064426

7-8-96

Michael Keston
Chair, California Regional Water Quality Control Board
Los Angeles Region
101 Center Plaza Dr.
Monterey Park, CA 91754-2156

RECEIVED
96 JUL 10 AM 11:54
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston:

Urban runoff in the Los Angeles Basin, poses one of the deadliest challenges for the near ocean coastal environment from Santa Monica, to Newport Beach. Like the flooding of the Nile, our annual storm season is beginning to establish itself as an "Epic Event," however, one of very negative and detrimental consequences to all who live in Southern California.

To surfers, beachgoers, fishermen, sailors and the tourism industry, the fast deteriorating conditions of our local public beaches and near ocean environment is a topic that is showing up on front pages of our local newspapers far too often. Since all citizens who live in the LA Basin contribute to this "Deadly Urban Brew," we must work together in all communities, both upstream, and downstream, to stop this toxic runoff to our local ocean environment!!

I urge you to support the concept of calling upon all 88 cities within LA County to adopt practices that will reduce URBAN RUNOFF. We also need to work with Ventura, Orange and San Diego Counties to make this a concerted Southern California effort to preserve our precious California Coastal Environment for future generations.

***Please support a comprehensive pollution prevention program for "Storm-Water-Runoff."***

Sincerely,
Don Slaven

Don Slaven
Executive Boardmember, Surfrider Foundation Huntington/Long Beach Chapter

cc: Governor Wilson
Mayor Riordan

450 North Roxbury Dr.
Seventh Floor
Beverly Hills, CA 90210

EV VOL 21 0173

Eppico

96 JUL 10 AM 11:57

QUALITY CONTROL BOARD
LOS ANGELES REGION

July 8, 1996

Michael Deston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Montery Park, Ca 91754-2156

Dear Mr. Deston,

This letter is to express dire need for storm water runoff reform. As a native of Southern California for forty years, I can remember swimming in coastal waters which are now unfit for human contact. We need, as a community, to seek immediate solutions to the rising problem of coastal contamination. Please let me know if there is anything I may do personally, to help this out of control situation.

Sincerely,

Jon Epstein
President

JE/mb

cc: Governor Pete Wilson
Mayor Richard Riordan

9611 CANOGA AVE. • CHATSWORTH, CA 91311 • (818) 718-3111 FAX (818) 718-3113

VOL 21 0174

R0064428

Heal the Bay

2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405
voice 310/581-4188 fax 310/581-4195
e-mail hbh@healthebay.org

96 JUL 11 PM 1:27

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Julia Louis-Dreyfus

cc: Governor Pete Wilson
Mayor Richard Riordan

Earth Share

PRINTED ON

B

VOL 21

0175

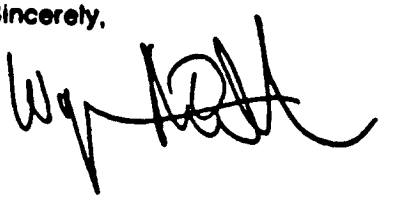
R0064429

# WYNN MILLER

VOL 21

Dear Mr. Keston,
As a life long surfer, I can't emphasize enough the importance of a comprehensive pollution prevention and storm drain runoff plan to the Regional Water Quality Control Board. The health of all of us and generations to come is directly related to the quality of our water. Please help us keep our oceans alive.

Sincerely,



96 JUL 11 PM 1:33

CALIFORNIA REGIONAL WATER QUALITY CONTROL BD.
LOS ANGELES REGION

0176

R0064430

Glencoe Avenue, Marina Del Rey, CA 90292 tel (310) 821-4948 fax (310) 827-7848

PHOTOGRAPHY

VALSURF Sport

4810 Whitsett Avenue
P. O. Box 4576
North Hollywood, CA 91617
Fax (818) 769-4318
(818) 769-6977 769-3337

96 JUL 11 PM 1:23

July 9, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am writing you to express my support of a comprehensive pollution prevention program for storm water runoff to the RWQCB. I know I am speaking for, not only myself, but for thousands that have, unfortunately, witnessed the rapid decline of water quality at our local beaches over the years. It is very disturbing to continually warn and discourage my sons from surfing the same waves at Malibu that I was able to ride and enjoy many years ago without the immediate concerns for my health. The Malibu/Santa Monica Bay continues to produce some of the best waves in California, however the probable health risks are frightening. My sons have experienced sickness after surf sessions and their surfing lives have just begun. This is not fair and something must be done now!

We should support the issuance of a permit to call upon the cities of L.A. County to adopt practices that will reduce urban runoff. New regulations are needed to implement a comprehensive pollution prevention program for storm water runoff. We owe this to this generation and the many to follow. We must act NOW!

Thank you for your time, consideration, and, hopefully, support of this program.

Sincerely,

Mark Richard

Mark Richards

MR/hs

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

01177

R0064431

Monday, July 08, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am aware of the problem of urban water runoff. I surf two to three days a week at Huntington Beach. I am very concerned and support the effort to reduce urban water runoff and to minimize its affects. That is why I believe a comprehensive pollution prevention program for storm water runoff is needed. Please vote on July 15th to issue a permit calling upon the 88 cities within Los Angeles Country to adopt practices that will reduce urban runoff. I believe the costs should be borne as close to the originating source as possible. Thanks for your attention.

Sincerely,

Mike Rivney
13725 Erwood Ave.
Norwalk, CA 90650

Yamaha Corp. of Amenia

96 JUL 11 PM 1:23

VOL 21

0178

R0064432

ENVICOM CORPORATION

Environmental Analysis & Compliance

Urban Planning & Design

Real Estate Development & Entitlement

Environmental Restoration

28328 Agoura Road

Agoura Hills, California 91301

Tel (818) 879-4700

Fax (818) 879-4711

96 JUL 11 PM 1:23

July 9, 1996

California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Attn: Michael Keston, Chair

Subj: Comprehensive Storm Water Runoff Program for Los Angeles County

Dear Mr. Keston:

I am writing you today to urge your support of a comprehensive pollution prevention program for storm water runoff in Los Angeles County. I am sure you are aware of the adverse environmental, social, and economic impacts that contaminated urban runoff has on Los Angeles County's beaches, which include but are not limited to: serious ocean water quality degradation, harm and loss of sea life, health risks to ocean users, and ultimately fewer tourists or beach users.

Please use your authority to help uphold the intent of the Federal Clean Water Act. Failure to do so may render our beaches useless, with minimal sea life, reduced recreational opportunities, and a significant loss of coastal business/tourism dollars. I also suggest that such a program include stringent monitoring, enforcement, and penalties for those who fail to comply.

Sincerely,

Geoff A. Reilly
2928 4th Street #13
Santa Monica, CA 90405

cc: Governor Pete Wilson, State Capitol
Mayor Richard Riordan, City of Los Angeles

VOL 21 0179

R0064433

B

VOL 21

NORRIS
Environmental Services, Inc.

5375 SO BOYLE AVE · P O BOX 58126
LOS ANGELES, CALIFORNIA 90058
(800) 266-7747 FAX (213) 582-6879

96 JUL 12 AM 9:39

July 10, 1996

Mr. Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Safeguarding our ocean, bays and waterways from potentially harmful storm drain runoff is vital. For economic, environmental and aesthetic reasons we simply cannot proceed with the status quo.

On July 15, the Regional Board will have an opportunity to determine the future of Los Angeles County's coastal waters. On that date, the Board will consider approval of the proposed Storm Water Pollution Prevention Permit. If adopted, the permit will require implementation of a far-reaching pollution prevention education and outreach program that will go a long way in reducing coastal pollution.

For more than 15 years, Norris Environmental Services, a Vernon-based waste treatment and recycling company, has incorporated the goals of environmental enhancement, improved public safety, and public education and communication into our corporate strategic planning. We recognize that achievement of those goals is key to helping better the quality of life in the Los Angeles region.

Because the proposed Permit will achieve similar goals, Norris Environmental Services supports approval of the Municipal Storm Water Pollution Prevention Permit and urges the Regional Water Quality Control Board to approve it on July 15.

Sincerely,

Rick Henninger

Rick Henninger
President

cc: Honorable Pete Wilson
Honorable Richard Riordan

0180

R0064434

# WC³ Westside Council of Chambers of Commerce

- Beverly Hills
- Brentwood
- Century City
- Culver City
- Hollywood
- Malibu
- Marina del Rey
- Mid-City
- Miracle Mile
- Pacific Palisades
- Santa Monica
- Venice
- West Hollywood
- West Los Angeles
- Westchester/LAX
- Westside
- Wilshire

**Executive Committee**

President
Donald Savoie, *Executive Director*
West Hollywood Chamber

Vice Presidents
Mark Olsen, *President*
Malibu Chamber

James Merlino, *President*
Venice Chamber

Loren Gubler, *Executive Director*
Hollywood Chamber

Treasurer
Mary Lou Blackwood,
*Executive Director*
Malibu Chamber

Secretary
Steve Rose, *President*
Culver City Chamber

President
Josh Pyne, *President Emeritus*
Santa Monica Chamber

RECEIVED
96 JUL 12 PM 1:39
[illegible]
LOS ANGELES REGION

July 10, 1996

Mr. Michael Keston, Chair and Boardmembers
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston and Boardmembers:

The Westside Council of Chambers of Commerce (WC³) is a consortium of 17 chambers on the Westside of Los Angeles County, and represents approximately 7,000 businesses. Some of our communities are a part of the City of Los Angeles, and others are not.

The WC³ recognizes the vitality of the business community on the Westside. We also appreciate the unique and exciting environment enjoyed by millions of residents and tourists. The WC³ believes that a thriving business community and a protected environment can coexist. In fact, tourism and other industries would benefit from a cleaner environment.

We support, in theory, the environmental protections for Santa Monica Bay sought through the proposed storm water permit. We urge you to implement protection for the Bay and our beaches.

Sincerely,

Donald W. Savoie, *President*
*Westside Council of Chambers of Commerce*

VOL 21

0181

R0064435

# Ballona Valley Preservation League

July 12, 1996

RECEIVED
96 JUL 12 PM 1:38
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Bruce Robinson
Director

cc: Governor Pete Wilson
Mayor Richard Riordan

12030 W. Washington Blvd. Suite 200 Los Angeles, CA 90066
Fax: (310) 390-0788 Tel: (310) 390-0947

VOL 21 0-182

# WITT · THOMAS PRODUCTIONS

July 12, 1996

RECEIVED
96 JUL 12 PM 1:33
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Paul Witt
Partner

cc: Governor Pete Wilson
Mayor Richard Riordan

1438 NORTH GOWER STREET · HOLLYWOOD, CALIFORNIA 90028 · TEL (213) 464-1333 FAX (213) 957-9886

VOL 21 01-83

AMERICAN OCEANS CAMPAIGN
725 ARIZONA AVE. STE. 102
SANTA MONICA CA 90401

WESTERN UNION MAILGRAM

050152000756 07/11/96 LAS1 - LASA
EM14959

CALIFORNIA REGIONAL WATER
CLARK DRANE
QUALITY CONTROL BOARD/L.A. REGION
101 CENTRE PLAZA DR
MONTEREY PARK CA 91754-2155

I URGE YOU TO SUPPORT THE PROPOSED NEW STORM WATER MANAGEMENT PLAN.
IT IS A CRITICAL STEP TO IMPROVE THE SAFETY OF OUR COASTAL WATERS.

TED DANSON, PRESIDENT
AMERICAN OCEANS CAMPAIGN

MGMCOMP 17:48 EST

RECEIVED
96 JUL 12 PM 1:40
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

To reply by Mailgram Message, see reverse side for Western Union's toll-free numbers.

R0064438

VOL 21

01-184

AMERICAN OCEANS CAMPAIGN
725 ARIZONA AVE. STE. 102
SANTA MONICA CA 90401

WESTERN UNION TELEGRAM

050152000763 07/11/96 LAS1 - LASA
EM14959

CALIFORNIA REGIONAL WATER
CHARLES C. VERNON
QUALITY CONTROL BOARD/L.A. REGION
101 CENTRE PLAZA DR
MONTEREY PARK CA 91754-2155

I URGE YOU TO SUPPORT THE PROPOSED NEW STORM WATER MANAGEMENT PLAN.
IT IS A CRITICAL STEP TO IMPROVE THE SAFETY OF OUR COASTAL WATERS.

TED DANSON, PRESIDENT
AMERICAN OCEANS CAMPAIGN

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96 JUL 12 PM 1:39
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0-185

R0064439

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AMERICAN OCEANS CAMPAIGN
725 ARIZONA AVE. STE. 102
SANTA MONICA CA 90401

WESTERN UNION MAILGRAM

350152000752 07/11/96 LAS1 - LASA
EM14959

CALIFORNIA REGIONAL WATER
JACK COE PHD
QUALITY CONTROL BOARD/L.A. REGION
101 CENTRE PLAZA DR
MONTEREY PARK CA 91754-2155

I URGE YOU TO SUPPORT THE PROPOSED NEW STORM WATER MANAGEMENT PLAN.
IT IS A CRITICAL STEP TO IMPROVE THE SAFETY OF OUR COASTAL WATERS.

TED DANSON, PRESIDENT
AMERICAN OCEANS CAMPAIGN

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STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

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R0064440

VOL 21

0-186

AMERICAN OCEANS CAMPAIGN
725 ARIZONA AVE. STE. 102
SANTA MONICA CA 90401

WESTERN UNION MAILGRAM

50152000753 07/11/96 LAS1 - LASA
EM14959

CALIFORNIA REGIONAL WATER
CHARLOTTE CRAVEN
QUALITY CONTROL BOARD/L.A. REGION
101 CENTRE PLAZA DR
MONTEREY PARK CA 91754-2155

I URGE YOU TO SUPPORT THE PROPOSED NEW STORM WATER MANAGEMENT PLAN.
IT IS A CRITICAL STEP TO IMPROVE THE SAFETY OF OUR COASTAL WATERS.

TED DANSON, PRESIDENT
AMERICAN OCEANS CAMPAIGN

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96 JUL 12 PM 1:40
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0-187

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R0064441

AMERICAN OCEANS CAMPAIGN
725 ARIZONA AVE. STE. 102
SANTA MONICA CA 90401

WESTERN UNION MAILGRAM

050152000761 07/11/96 LAS1 - LASA
EM14959

CALIFORNIA REGIONAL WATER
JOHN A. SLEZAK
QUALITY CONTROL BOARD/L.A. REGION
101 CENTRE PLAZA DR
MONTEREY PARK CA 91754-2155

I URGE YOU TO SUPPORT THE PROPOSED NEW STORM WATER MANAGEMENT PLAN. IT IS A CRITICAL STEP TO IMPROVE THE SAFETY OF OUR COASTAL WATERS.

TED DANSON, PRESIDENT
AMERICAN OCEANS CAMPAIGN

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96 JUL 12 PM 1:40
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0188

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R0064442

otion

EARTH COMMUNICATIONS OFFICE

July 10, 1996

RECEIVED
96 JUL 12 PM 1:39
QUALITY CONTROL BOARD
LOS ANGELES REGION

12021
Wilshire Blvd.
Box 557,
Los Angeles,
California
90025

Telephone
310
571
3141
Fax
310
571
3143

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board,

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit. For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations, as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Ruben Aronin

Ruben Aronin

cc: Governor Pete Wilson
Mayor Richard Riordan

Printed on 100% Post-Consumer Recycled Paper

Printed with Soy Based Ink

VOL 21

0189

R0064443

SPECTRUM ASSET MANAGEMENT, INC.
Independent Investment Counsel

July 15, 1996

96 JUL 17 AM 11:28

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Michael:

This letter is in support of a comprehensive pollution prevention program for storm water runoff.

The Regional Water Quality Control Board will vote on July 15th whether to issue a permit calling upon the 88 cities within LA County to adopt practices that will reduce urban runoff. This runoff, the primary source of coastal pollution, is filled with pathogens, toxics and debris that poison our coastal waters, contaminates fish, afflicts marine mammals, and sickens surfers and swimmers.

The new regulations are needed to implement a comprehensive pollution prevention program for storm water runoff. What is at stake is nothing less than the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches and the economic benefit of the coastal economy of Southern California.

Sincerely,

Ryan Kelly - Principal
Chairman, Surfrider Newport Chapter

cc: Governor Pete Wilson
Mayor Richard Riordan, City of Los Angeles

450 Newport Center Drive, Suite 420, Newport Beach, CA 92660 Tel: 714-955-1121 Fax: 714-721-1007

VOL 21 0190

R0064444

Rainbow Paint and Interior Design

285-5 Singingwood Orange, CA 92669 (714) 771-3344

95 AUG 23 PM 12:59

Hello Please read this

My Family and I think it is disgusting that politicians could even ponder the thought of reducing pollution controls that are already in effect & barely doing their job at that! please support a comprehensive pollution prevention program for storm water runoff to the RWQCB.

Thank you

Brian & Lou Kleder

VOL 21

0191 L

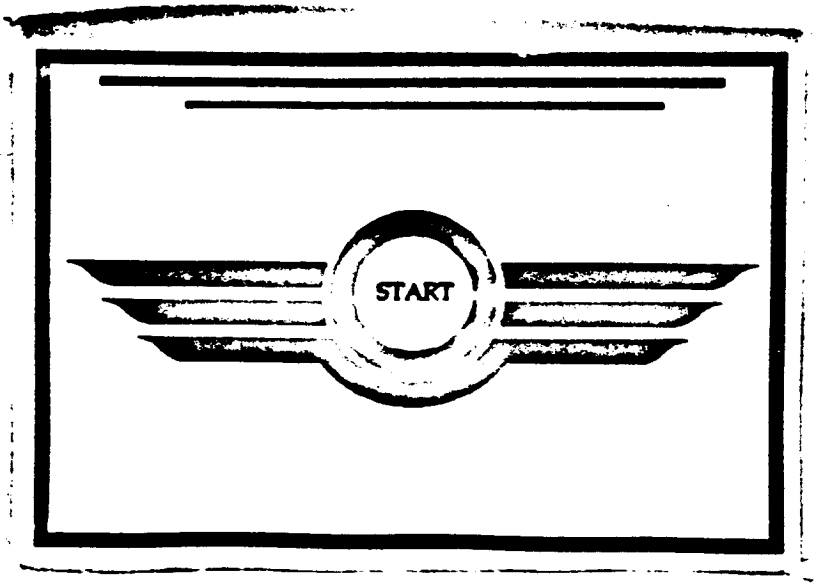
R0064445

VOL 21

Vol ~~3~~ 21
~~Item~~ 2

Binder

0192 F

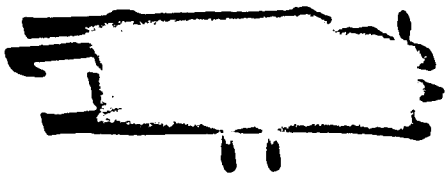


START

R0064446

VOL 21

# Stormwater Permit:



Letters

Citizen Copies

April 18 - June 24

0193

R0064447

Elaine Smithom
915 S. Citrus Ave
LA CA 90036
April 16, 1996

Michael Kaston, President
California Regional Water
Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Mr Kaston,

I urge you to help protect the marine life, local real estate, and LA County's coastal tourism economy by supporting the municipal storm Water NPDES permit for Los Angeles County.

We do not need polluted beaches and clogged catch basins.

Elaine Smithom

VOL 21

0194

LOS ANGELES

VH

R0064448

Susan Rogers
7812 Altavan Avenue
Los Angeles, California 90045

April 17, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Chairman Keston,

As a southern California beach user, scuba diver and boater, I am very concerned about the pollution in Santa Monica Bay. At least one member of our family is in our coastal waters every day in the summer.

Please protect my family's health and that of all other beach visitors. We are asking you to support the Municipal Storm Water NPDES permit for Los Angeles County.

Thank you,

Susan Rogers

VOL 21 0195

R0064449

Jerry Reger

4617 Crossfield Wall
Marina Del Rey, Ca. 90292

VOL 21

April 18, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754
Fax: (213) 266-7600

Dear Mr. Keston:

I have never written a public official before, but the **urban runoff** problem is so severe in the Santa Monica Bay that you must do something NOW to help the situation. I have lived on the beach for sixteen years, and I have seen the water deteriorate Last year, I had visitors to the beach and their two small children swam in the ocean. At the end of the day, both kids had severe blotches all over their bodies from the pollution in the Santa Monica Bay Ocean. The ocean waters are used mostly by people who do not live at the beach, but who make daily visits. It is mostly locals and tourists.

The Santa Monica Bay Restoration Plan, which will reduce stormwater pollution, is vital. The beaches and its visitors are suffering. My neighbors and my friends are afraid to swim in these polluted waters off our coast. The clogged catch basins and the urban runoff dumps huge amounts of contaminants into the L.A. River, the San Gabriel River, and Ballona Creek here close to Marina Del Rey. You must help with this problem.

Please protect me, the health of beach visitors, marine life, our local real estate, as well as our huge coastal tourism business by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

I hope you are not too far away to understand the severity of the problem. Please help.

Most sincerely,

Jerry Reger

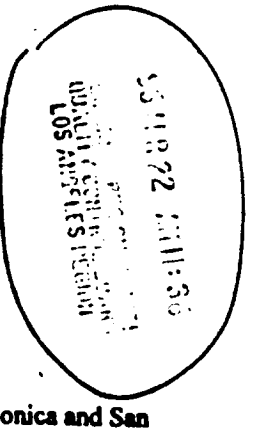
0196

Tele. (310) 306-2227 Fax (310) 305-1040

R0064450

April 18, 1996

Mr. Michael Keston, President
California Regional Water Control Board
101 Centre Plaza Drive
Monterey Park, California 91754



Dear Mr. Keston:

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution. I'm asking for your support of the Municipal Storm Water NPDES permit because:

- Los Angeles County has suffered from a reduction in beach visitors (from 80+ million to less than 50 million) due in part to water pollution
- Clogged catch basins cause property damage
- Contaminated runoff poses a health and safety risks to human and marine life

Thank you for your support in the past and your continued support.

Sincerely,

Barbara Mortson

Barbara Mortson

1460 Maple St
Burbank, CA 91505

VOL 21

0197

R0064451

April 18, 1996

Michael Keston, Chair
Calif. Reg. Water Quality Control Board
L.A. Region
101 Centre Plaza Drive
Monterey Park, Ca. 91754

Dear Mr. Keston:

As a resident of Santa Monica and an avid sailor out of Marina del Rey, I am very interested in the Board's vote on the new regulations that will implement a pollution prevention program for storm water. **Please adopt the proposed water permit system on July 15th.**

Sincerely

Linda Wheatman
2512-24th Street
Santa Monica, CA. 90405

cc. Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0198

R0064452

Barbara Kohn
222 Surfview Drive
Pacific Palisades, California 90272

April 22, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am concerned about an article in the Los Angeles Times (3/26/96) that describes the debate about cleaning up the region's urban runoff. I urge you to deal with this situation by adopting the stormwater permit now undergoing review and comment.

As the article notes, urban runoff is the primary source of pollution in Santa Monica Bay. Urban runoff results from a vast array of activities and we must begin to address these systematically or lose the tremendous ecological and economic benefits deriving from Southern California's coast. The stormwater permit offers the only reasonable method to ensure the continued enjoyment of these benefits.

I am looking to the Regional Board to exercise leadership in this area.

Sincerely,

Barbara Kohn

cc Governor Wilson
Mayor Riordan

VOL 21 0199

R0064453




Ms Jean Howell
817 25th Street
Santa Monica, Calif.
90403
(310) 829-2436

April 21, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Dr
Monterey Park CA 91754

Dear Mr. Keston:

I am the volunteer Chairperson of HEAL THE BAY's Speakers Bureau, which means I train new speakers and schedule dates for talks. These fine citizens, mostly full time professionals busy with their own careers, donate their time and talented effort to address approximately 25,000 people, each year.

The primary point we make in our program is that storm drains run straight from the gutter to the beach and into the ocean. We tell them there are many ways they can help -- don't litter, tell ten other people, report full catch basins, Adopt A Beach, come to International Beach Clean Up Day, join our Gutter Patrol volunteers who have stenciled warning signs on 65,000 catch basins Do Not Dump This Drains To Ocean, remember to Reduce, Reuse Recycle.

Many of the people to whom we speak are students. We get letters, and pictures, thank you notes, and vows to do better.

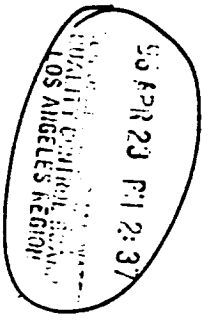
I believe our government should do as well.

Please help us by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Yours truly,

Jean Howell

Jean Howell
Chairperson Speakers Bureau




VOL 21

02000

R0064454

No Return Address

4.21.96

DEAR CHAIRMAN KESTON,
URBAN RUNOFF IS THE LARGEST SOURCE OF COASTAL POLLUTION TO SANTA MONICA AND SAN PEDRO BAYS. AS YOU KNOW THE SANTA MONICA BAY RESTORATION PLAN TARGETS REDUCING STORM WATER POLLUTION AS THE PLAN'S MOST IMPORTANT GOAL. LOS ANGELES COUNTY HAS SUFFERED THROUGH A DRASTIC REDUCTION IN THE NUMBER OF BEACH VISITORS (FROM OVER 80 MILLION PER YEAR TO LESS THAN 50 MILLION) TO L.A. COUNTY BEACHES LARGELY BECAUSE MANY PEOPLE ARE AFRAID TO SWIM IN THE RUNOFF POLLUTED WATERS OFF OUR COAST. ALSO, CLOGGED CATCH BASINS CAUSE HUNDREDS OF THOUSANDS OF DOLLARS IN PROPERTY DAMAGE EVERY YEAR. URBAN RUNOFF DUMPS TONS OF CONTAMINATED SEDIMENTS AT THE MOUTHS OF THE L.A. AND SAN GABRIEL RIVERS AND BALLONA CREEK NEXT TO MARINA DEL REY. THE END RESULT IS A BIOTER SAFETY PROBLEM AND A CONTAMINATED SEDIMENT HOT SPOT PROBLEM THAT POSES SEVERE HEALTH RISKS TO LOCAL MARINE LIFE AND COSTLY SITE REMEDIATION PROBLEMS.
PLEASE PROTECT THE PUBLIC HEATH, MARINE LIFE, LOCAL REAL ESTATE

→ VAN

VOL 21

0201

R0064455

APR 23
QUALITY CONTROL
LOS ANGELES

VOL 21

AND the County's $12 billion a yr Coastal tourism economy by supporting the Municipal Storm Water NPDES permit for the Los Angeles County.

Sincerely
Robin Shean, RN

0202

LOS ANGELES REGION
QUALITY CONTROL BOARD
96 APR 23 PM 2:36

R0064456

OUR NATIONAL P
ARE NOT FOR SA

Congress has targeted our National Parks and other public lands for sale to commercial interests. NRDC is mobilizing millions of Americans to halt this raid on our natural heritage.

Cynara Allison
1018 11th St
Manhattan Bch, Ca

Harry S Truman
USA 20c

Dear President Keston
Please protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles ...

Michael Keston, President
Calif. Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, Ca.
91754

NATURAL R
40 W. 20th Street
Phone Carr Clifton

VOL 21

0203

R0064457

April 19, 1996

Michael Keston, Chairman
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I urge you to adopt the STORMWATER PERMIT now under review.

Urban runoff is the primary source of pollution in Santa Monica Bay, (the Los Angeles Times noted on 3-26-96).

I urge you to safeguard the water bodies from urban runoff contamination.

I urge the Regional Board to take action and exercise leadership.

"The Coast" is Southern California's international identity. Let us not lose the tremendous ecological and economic benefits derived from "The Coast". Let us not be identified as, "The Sewer".

Sincerely,

Janet B. Toot

14000 Leedy Avenue
Sylmar, CA 91342-1755
818-362-7387

cc. Governor Wilson
Mayor Riordan

96 APR 23 P1 2:37
QUALITY CONTROL BOARD
LOS ANGELES REGION

JBPC(sewer496)

VOL 21 0204

R0064458

April, 20, 96
Mr. Michael Keston, President
California Regional Water
Quality Control Board
101 Centre Plaza Dr.
Montery park, CA 91754

Dear Mr. Keston,

Urban runoff is the largest source of costal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles county has suffered through a drastic reduction in the number of beach visitors (form over 80 million per year to less than 50 million) to LA County beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of LA and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remdiation problems.

Please protect the public health, marine life, local real estate, and the county's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit or Los Angeles County.

Sincerely,

Brent Matschke

737 Pier Ave #2
Santa Monica, CA 90405

96 APR 23 P 2:37
QUALITY CONTROL
LOS ANGELES REGION

VOL 21 0205
R0064459

April 23, 1996

Michael Keston, President
California Regional Water
Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

96 APR 24 AM 10:39
QUALITY CONTROL
LOS ANGELES REGION

Dear Mr. Keston:

I live on the Santa Monica Bay and have for nearly 40 years. I am a member of Heal the Bay because I would like to see this body of water as clean as it is beautiful. It would certainly help if urban runoff could be reduced and it seems as though the most logical step is approval of the County storm water permit in July.

Please support the Municipal Storm Water NPDES permit for Los Angeles County.

Thank you,

Charles E. Bloomquist
214 - 4th Avenue
Venice, CA 90291

VOL 21 0206

Russell Kohn
333 So. Doheny # 306
Los Angeles, CA 90048

April 22,1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 917544-2156,

Dear Chairman Keston:

I am concerned about an article in the Los Angeles Times (3/26/96) that describes the debate about cleaning up the region's urban runoff. I urge you to deal with this situation by adopting the stormwater permit now undergoing review and comment.

As the article notes, urban runoff is the primary source of pollution in Santa Monica Bay. Urban runoff results from a vast array of activities and we must begin to address these systematically or lose the tremendous ecological and economic benefits deriving from Southern California's coast. The stormwater permit offers the only reasonable method to ensure the continued enjoyment of these benefits.

I am looking to the Regional Board to exercise leadership in this area.

Sincerely,

Russell Kohn

cc Governor Wilson
Mayor Riordan

VOL 21 02071

R0064461

Bob - [illegible]
This was forwarded to you from Charlotte.
Winnie - please add to file on [illegible]

Dear Charlotte:

I am dropping off the letter my daughter, Madelyn Glickfeld sent me regarding the run off of waste water in L.A. County.

We would really like to get together with you regarding this matter, we feel it is so very important for the health of our family in the L.A. area and for tourism in our own county.

My phone number is 484-5585 and Madelyn's telephone is - 310-589-2850

Yours Truly
Gerald Banchik
4117 Village #4
Camarillo, Ca 93012

PS.
I have every confidence that knowing you, you'll do the right thing to [illegible]

:CHARGE
FOR
JNTY?

:rmit is a part of the
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the Regional Water
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or storm drains from
lled "urban runoff".

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ds and to the ocean.
: swim and fish. How
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Over 50 million people visit just the beaches in Santa Monica Bay alone each year. The coastal tourism business is worth about $2 billion dollars per year. People don't want to swim, surf or fish in polluted beach areas. People who do go swimming in these areas, have a risk of illness from pollution, a risk that is becoming clearer as research on health effects progresses. People who eat certain kinds of sportfish caught in San Pedro and Santa Monica Bay are also at

VOL 21

0208

R0064462

protect our environment. I just got back from South America + saw what pollution can do to their beaches. Please, protect our beaches.

VOL 21 0209

R0064463

96 APR 26 PM 12:59
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Central Plaza Drive
Monterey Park, CA 91754-2156

April 24, 1996

Dear Chairman Keston:

I am concerned about an article (3/26/96) appearing recently in the Los Angeles Times that describes the debate about cleaning up the region's urban runoff. I therefore want to urge you to deal with this problem by adopting the stormwater permit now undegoing review and comment.

As the article notes, urban runoff is the primary source of pollution in Santa Monica Bay. Urban runoff results from a vast array of activities and we must begin to address these systematically or lose the tremendous ecological and economic benefits deriving from Southern California's coast. The stormwater permit offers the only reasonable method to ensure the continued enjoyment of these benefits.

Despite the reluctance of cities to take on new responsibities, it is imperative for our economic well-being, our health, and our very identity to take action to safeguard our waterbodies from the contaminated runoff to which we all contribute.

We are looking to the Regional Board to exercise leadership in this area. Our future depends on it.

Sincerely,

Sharon Robinson
4204 Laurelglen Dr.
Moorpark, CA 93021

cc. Governor Wilson
Mayor Riordan

VOL 21 0210

R0064464

VOL 21

Dear Chairman Keston,

4/25/96

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles has suffered through a drastic reduction in the number of beach visitors ( from over 80 million per year to less than 50 million ) to L.A. County beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Ray. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the Country's $2 billion a year coastal tourism economy by supporting the Municipal Storm water NPDES permit for Los Angeles.

sincerely,

Jemma & John Wildermuth
Santa Monica,CA.

2939 16th St.
Santa Monica, CA 90405

0211

Received

R0064465

Mark and Cassandra Pierson
P.O. Box 38246
Hollywood, CA 90038
213/469-8354

26 April, 1996

Michael Keston, President
California Regional Water
Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Michael Keston,

The largest source of coastal pollution to Santa Monica and San Pedro Bays is urban runoff. The Santa Monica Bay Restoration Project's goal is to reduce storm water pollution from many cities in the County, allowing beach visitors to enjoy the beauty of our beaches instead of being afraid of polluted waters.

Urban runoff dumps tons of contaminated sediments into the L.A. and San Gabriel Rivers resulting in health problems for beachgoers, boaters, and marine life.

Please help protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy. We urge you to support the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely,

Mark and Cassandra Pierson

VOL 21 0212

R0064466

527 Midvale #313
Los Angeles, CA 90024

April 26, 1996

Michael Keston, President
California Regional Water Quality
Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Chairman Keston,

As you are aware, a storm water management permit for Los Angeles County is up for approval by the Regional Water Quality Control Board on July 15th. It is important to the physical, environmental and economic health of our state that the proposal receive your full support. The health of beachgoers, the beauty of our coastal lands, marine life that people eat or admire, and money and jobs created by the tourist industry are all put at risk if storm water pollution is not reduced.

Because urban runoff is the largest source of coastal pollution to the Santa Monica and San Pedro Bays, the Santa Monica Bay Restoration Plan targets reducing this source as the plan's most important goal. Because people are afraid to swim in the runoff contaminated waters, Los Angeles County has seen the number of beach visitors fall by over 30 million. Clogged catch basins cause hundreds of thousands of dollars in property damage each year, and urban runoff dumps tons of contaminated sediments at the mouths of the LA and San Gabriel Rivers and Ballona Creek near Marina Del Rey. Boater safety is threatened and a contaminated hot spot problem is created that poses severe health risks to local marine life and creates costly site remediation problems.

Please support the Municipal Storm Water NPDES Permit for Los Angeles County and help protect public health, marine life, local real estate and the County's $2 billion a year coastal tourism economy.

Thank you,

Stacie Greene

Stacie Greene

APR 30 '96

VOL 21 0213

R0064467

4010F Highland Ave.
Manhattan Beach, CA 90266
April 27, 1996

Michael Keston, President
California Regional Water
Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Chairman Keston:

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L.A. County beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely,

Sharon L. Adcock

Sharon L. Adcock

MAY 1 '96

VOL 21 0214

R0064468

April 30, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, Calif. 91754

Dear Chairman Keston,

Urban runoff is the largest source of costal pollution to the Santa Monica Bay. I have been unable to swim in the bay for the past two years because of ear infections. The Santa Monica Bay Restoration Plan targets urban runoff contamination that poses the biggest health risk to the bay.

Please protect the public health, marine life, local real estate, and Los Angeles County's $2 billion a year costal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Dale Schirman
3112 Hermosa Ave.
Hermosa Beach, Ca. 90254

VOL 21

0215

May 3, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Chairman Keston,

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L. A. County beaches largely because people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely,

Amy J. Gardner
574 1/2 Rosecrans Ave.
Manhattan Beach, CA 90266

VOL 21

0216

VAV

R0064470

Jean Howell Thor
817 25th Street
Santa Monica, Calif.
90403

May 6, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Dr
Monterey Park CA 91754

Dear Mr. Keston:

Urban runoff is the largst source of coastal pollution to Santa Monica and San Pedro Bays. The Santa Monica Bay Restoration Plan targets reduction of this mess, highest priority. Without help, we go on loaing tourist business as well as our own quality of life. Clogged catch basins cause problems when it rains. Contaminated sediments foul the mouths of rivers and interfer with boating. Urban runoff is a health risk to us all.

Please protect the public health, marine life, local real estate, and the County's $2 Billion a year coastal tourism economy by giving your support to the Municipal Storm Water NPDES permit for Los Angeles County. Conferees have worked long and hard to make it into a win-win game.

Sincerely,

Jean Howell Thor

Jean Howell Thor

VOL 21

0217

R0064471

May 3, 1996

Dear Michael Keston:

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L.A. County beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County $2 million a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely,

Rebecca [illegible]

Bruce [illegible]

Kimberly Burke

Sandie Campbell

VOL 21

0218

R0064472

Received
Wed. May 8, 1996

VOL 21 0219

Joy Dittberner
126 Galleon Street A
Marina del Rey, CA 90292

May 8, 1996

Michael Keston, President
California Regional Water Quality Control
Board
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Mr. Keston:

The largest source of coastal pollution to the Santa Monica and San Pedro Bays is urban runoff. The most important goal of the Santa Monica Bay Restoration Plan is to reduce storm water pollution.

Visitors to our beaches in Los Angeles are starting to realize that the pollution in the bay is a danger to their health and putting local marine life at risk. A large part of this pollution comes from contaminated sediments from urban runoff.

Please protect the public health, and the precious marine life by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely,

Joy Dittberner

Joy Dittberner

A concerned taxpayer of Marina del Rey

cc: Governor Pete Wilson

DPC

430 Ahbot Pl
Venice CA 90291
May 7 1996

Dear Pres. Heston

Please help protect public
health, marine life, private
property value and tourism
economy by
supporting the Municipal
Storm Water NPDES permit
for L.A. County.

Thanks,
K Cordy ?

VOL 21

02220

R0064474

Jeffrey S. Klinger
255 S. Grand Avenue #2410, Los Angeles, 90012

RECEIVED
96 MAY -9 PM 1:18
REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 6, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Mr. Keston:

Regarding the Los Angeles NPDES permit, I must tell you that I live in the City of Los Angeles, yet I always drive to the beaches of Ventura County to enjoy surfing and SCUBA diving in cleaner waters. I will not step foot in the Santa Monica Bay as it unfortunately is a threat to my health. No chance would I eat anything that dwells in the bay either. In telephone conversations, my friend in Germany tells me that he has read and seen on German television how polluted the Bay is. The Santa Monica Bay needs immediate action.

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the Plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million per year) to L.A. County beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel rivers, and Balona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hotspot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health and welfare, local marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely,

Jeffrey S. Klinger, M.A.
Environmental Scientist
L.A. Native & Resident

VOL 21
0221
R0064475

Michael Osland
722 Hill Street
Santa Monica, CA 90404

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

April 20, 1996

Dear Chairman Keston:

I am writing to express my agreement with the Los Angeles Times editorial titled "Clean It Up, Now"—referring to the runoff polluting Santa Monica Bay.

As the editorial states, this pollution jeopardizes marine life, the health of swimmers, and our tourism-dependent economy. We cannot afford *not* to take action.

The Regional Water Quality Board must use its authority to ensure that cities assume responsibility for educating their residents and businesses about good housekeeping practices related to runoff.

Respectfully,

Michael Osland

cc. Governor Wilson
Mayor Riordan

RECEIVED
96 MAY 10 AM 11:00
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

02222

R0064476

May 8, 1996

RECEIVED
96 MAY 10 AM 11:00
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Mr. Keston,

Please support the Municipal Storm Water NPDES permit for Los Angeles County. The Santa Monica Bay Restoration Plan cannot succeed without a strong storm water permit in place. The restoration of the Santa Monica Bay is happening! The positive impact of a clean and healthy bay on public health, the economy, and the environment cannot be measured. All the progress that has been made to clean up the bay will be down the drain if the permit is not approved. No pun intended. This isn't a laughing matter! Your support is desperately needed and will be greatly appreciated.

Sincerely,

A Cortina

Ann Cortina
2006 #B Graham Ave.
Redondo Beach, CA 90278

VOL 21
0223
R0064477

Michael L. Weber
228-1/2 South Juanita Avenue
Redondo Beach, California 90277-3438

TEL: 310-316-0599
FAX: 310-316-8509

Email: MLeoWeber@aol.com

9 May 1996

RECEIVED
96 MAY 10 AM 11:00
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing to urge adoption of the stormwater permit that has been under consideration by your board. The recently released epidemiological study regarding the health effects of stormwater only adds to the evidence supporting action without further delay.

I write as a recently returned California native and as a long-time student of marine and coastal pollution. One of the principal reasons my wife and I have settled in Redondo Beach is access to Santa Monica Bay for recreation. Continued stormwater pollution compromises our ability to enjoy the bay and undermines the attractiveness of the bay to tourists, whose expenditures are so important to the local economy.

In researching my book, *The Wealth of Oceans: Environment and Development on Our Ocean Planet*, I found overwhelming evidence that a chief problem facing recreation and fishing in coastal areas is runoff, including litter, oil, pet droppings, garden chemicals, and grass clippings, that are collected in stormdrains and discharged into coastal waters. This problem is the cumulative result of decisions by millions of people, who do not practice basic housekeeping at home or at work, often because they don't see the connection between their individual actions and pollution of coastal waters.

Although engineering better sewer systems can remove some of the pollutants in this runoff, it cannot cost-effectively remove most of the 160 toxic chemicals that have been found in stormwater flowing into Santa Monica Bay. Furthermore, it appears that proposed efforts to divert stormwater to the Hyperion Plant will not include several major storm channels, including Ballona Creek, and will divert stormwater only during the summer months when flows are low. We need a basinwide approach that will reduce pollution at its source, not simply afterwards.

VOL 21 0224

People will continue to disregard the cumulative effects of their individual decisions to pollute, unless there is an aggressive public education and outreach campaign, and there is authority to compel good housekeeping by those who resist, for whatever reason. I believe that the stormwater permit that has been developed meets these two important criteria. For this reason, I urge your swift adoption of the permit.

Let's get on with helping people change their behavior. The Los Angeles area can draw upon educational and public outreach materials and approaches that have proved successful in other areas of the country. We don't have to start from scratch.

Sincerely,

Michael L. Weber

Frances Spivy-Weber

cc. Honorable Pete Wilson
Honorable Richard Riordan
Honorable Jane Harman
Honorable Debra Bowen

VOL 21 0225

VOL 21

0226

RECEIVED
96 MAY 10 AM 11:00
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

April 20, 1996

Dear Chairman Keston:

I am very concerned about the pollution of Santa Monica Bay and the effect of that pollution on the health not only of the Bay but on the health of our economy. I encourage you to adopt the pending stormwater permit. It offers the only way to restore the Bay to health and to ensure the prosperity of coastal and tourism businesses.

The Bay has developed a reputation as being polluted and, as a result, visitation has declined. The soon-to-be released epidemiological study showing the health effects of swimming near storm drains could exacerbate this trend. I understand that the epidemiological study deals only with the impact of pathogens on one-time swimmers during dry weather; it does not address the impact of regular swimmers, those who swim in wet weather when flows are greatest, or the impact of toxic pollutants (scores of which have been identified and are known or suspected carcinogens or mutagens). The release of the epidemiological study is likely to raise many questions. If the regulatory authority has no compelling response about how to reduce pollutants from urban runoff flowing to the Bay, people will stay away. This will have enormous short and long-term economic consequences.

As the regulatory authority charged with protecting our waters, I urge you not to delay in adopting the pending stormwater permit.

Sincerely,

xx R. Saledo

Richard Saledo, 1546 Golden Gate Ave #202, Los Angeles, CA 90026

cc. Governor Wilson
Mayor Riordan

R0064480

RECEIVED
96 MAY 14 AM 11:50
CALIF REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

May 14, 1996

Michael Keston, President
California Regional Water
Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Mr. Keston:

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L.A. County beaches largely because many people are afraid to swim in runoff polluted waters of our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County's 2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Please let me know your feelings on this important matter.

Sincerely,

David Gardner
2525 Beverly Ave #8
Santa Monica, CA 90405

VOL 21 0227

R0064481

RECEIVED
96 MAY 15 PM 1:18
QUALITY CONTROL BOARD
LOS ANGELES REGION

AMY H. OTA
3914 1/2 Huron Avenue
Culver City, CA 90232

May 13, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Re: Proposed Stormwater Permit

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Amy Ota

VOL 21
0228
R0064482

RECEIVED
96 MAY 15 PM 1:15
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 14, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Norma June Bell
1969 S Concrest St.
Monterey Park CA 91754

VOL 21
0229
R0064483

VOL 21

[illegible] Keston, [illegible]
[illegible] Regional [illegible]
[illegible] Centre Plaza Drive
[illegible] Park, CA 91754-2156

[illegible] Keston:

[illegible] Stormwater is the [illegible] It contains toxics, [illegible] and debri[illegible] with an array of ailments.

[illegible] cities are concer[illegible] cooperation [illegible] citie[illegible] considerably. [illegible] ordinary, good [illegible] keeping practice.

Without leadership from the Board in addre[illegible] stormwater, growth and development will lead to increased degradation of coastal waters. More ill[illegible] each closure, and heart-rending ailments among marine mammals will result. Such degrad[illegible] our economic prosperity and our very identity as Southern Californians.

Sincerely,

Lloyd Bridges

Lloyd Bridges
225 Loring Ave
Los Angeles CA 90024-2638
American Diabetes Association

LOS ANGELES, CA
FM
1996

Mr. Michael Keston
101 Centre Plaza Dr.
Monterey Park, Cal.
91754-2156

RECEIVED
96 MAY 15 PM 1:02
QUALITY CONTROL BOARD
LOS ANGELES REGION

Calif Regi

0230

R0064484

VOL 21

0231

J. Gordon Bateman, M.D.
5809 Corso di Napoli
Long Beach, CA 90803

May 12/96

Dear Mr. Kestor:

Let me urge your Board to issue the proposed stormwater permit.

More people means more storm water pollution of the ocean. Already, we cannot eat the costal fish that surf fishermen catch. A bad reputation for the local ocean water hurts every city.

Sincerely,

J. Gordon Bateman M.D.

RECEIVED
96 MAY 16 PM 2:40
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

R0064485

RECEIVED
96 MAY 16 PM 2:41
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0232

May 13, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Mr. Keston:

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L.A. county beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely,

Laurie Gooch

Laurie Gooch
28721 Conejo View
Agoura Hills, CA 91301

R0064486

RECEIVED
96 MAY 16 PM 2:
REGIONAL
QUALITY CONTROL BO
LOS ANGELES REGI

May 14, 1996

Mr. Michael Keston
Calif. Regional Water Quality Control Board
101 Centre Drive
Monterey Park, CA 91754 - 2156

Dear Chairman Keston,

I am writing to ask that you support the proposed stormwater permit. Stormwater is a terrific contaminator of our coastal and bay waters. It is damaging marine life and causing swimmers to catch all matter of bacterial and viral infections.

Without leadership from the Board on the issue of stormwater, our coastal waters will grow more and more polluted. More illness will occur in both the marine life and humans and beach closures will hurt our tourist industry. And I will not be able to enjoy sailing or SCUBA diving as much. Please help save our coastal waters.

Sincerely,

Joan Tyler
124 Coventry Pl.
Glendale, CA 91206

VOL 21

0233

VBC 5/16

R0064487

Dana L. Bonda
4800 Bonvue Avenue
Los Angeles, CA 90027

RECEIVED
96 MAY 16 PM 2:40
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 14, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rendiing ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Dana L. Bonda

DLB/me

VOL 21 0234

RECEIVED
96 MAY 16 PM 2:41
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Thomas J. Wiley
4800 Bonvue Avenue
Los Angeles, CA 90027

May 14, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rendiing ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Thomas J. Wiley

DLB/me

VOL 21

0235

dbc
s/n

R0064489

RECEIVED
96 MAY 16 PM 2:39
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 15, 1996

Michael Keston, President
California Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754
Fax: (213) 266-7600

Dear Mr. Keston:

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the Plan's most important goal.

Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to the County's beaches largely because many people are afraid to swim in the runoff-polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Yours truly,

Suzanne L. Veneblaan
14010 Captains Row #350
Marina del Rey CA 90292

cc: Governor Pete Wilson

VOL 21 0236
R0064490

Susan Y. Adams
163 Paseo De La Concha #4
Redondo Beach, CA 90277

RECEIVED
96 MAY 16 PM 2:40
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Susan Adams

0237

R0064491

Suzy Broeg
624 Calle Miramar
Redondo Beach, CA 90277

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Suzy Broeg

RECEIVED
96 MAY 17 PM 1:03
CALIF REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0238
R0064492
VBL 5/17

Laura A. Hunter
753 1/2 N. Gramercy Pl.
Los Angeles, CA 90038

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

RECEIVED
96 MAY 17 PM 12:56
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0239
R0064493

VOL 21

0240

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Karen Kuehne

350 N. Glenoaks Blvd. #208
Burbank, CA 91502

RECEIVED
96 MAY 17 PM 12:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

R0064494

VOL 21

0241

# JEROME HELLMAN

RECEIVED
96 MAY 17 PM 12:52
CALIF REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION

May 15, 1996

Mr. Michael Keston, Chair
California Regional Water Quality
Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Jerome Hellman

JH:df

9300 Hazen Drive
Beverly Hills, CA 90210

R0064495

May 14, 1996

Michael Keston
President
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear President Keston,

About a week ago Tuesday my wife and I drove out to Santa Monica to take a walk along the ocean just south of Pico Blvd. We both find the ocean to have great restorative powers and never tire of watching and listening to the waves come rolling in.

Although the shoreline has become progressively trashy over the years, we were appalled on this recent trip by the amount of litter that ran along the high tide border -- an uninterrupted line of plastic and paper containers of every description -- the worst we could ever recall seeing in all our years of shore strolling. (We're both natives of Los Angeles.)

It was so bad that I stopped at one of the lifeguard stands to ask what had caused it. The guard said it largely came from the storm drains. "Whatever goes down the storm drain comes out here," he said. As it hadn't rained for some time I was surprised by that answer, but he said the garbage keeps pouring out of the drains regardless of the rain. The weekend crowds contribute to the litter, he said, but as this was Tuesday, it would not seem that this was a major factor in the string of filth that lined the seashore. I can't imagine anyone seeing that sickening sight who would want to get into the water.

This example of desecration underscores the need for the adoption of the Storm Water Management program for the Santa Monica and San Pedro Bays. There must be some way to control that urban runoff. The destruction of the aesthetic appeal of the seashore is readily apparent. The invisible damage to the quality of the water and the life in it must assuredly be every bit as severe. Please do all you can to restore one of the simplest but most satisfying pleasures that Southern California has to offer -- a stroll along the surf, without the unsightly scars of urban pollution.

Sincerely,

Harold D. Watkins
12055 Mound View Place
Studio City, CA 91604

cc: Governor Wilson

QUALITY CONTROL BOARD
LOS ANGELES REGION
96 MAY 17 PM 12:56
RECEIVED

VOL 21 0242

R0064496

96 MAY

QUALITY CONTROL BRANCH
LOS ANGELES REGION

May 15, 1996

Karen Lockwood
7007 Pomelo Drive
West Hills, CA 91307

VOL 21 02493

R0064497

Ronald Vincent Amen, Esq.
4041 E. Massachusetts Street
Long Beach, CA 90814-2826

May 15, 1996

RECEIVED
96 MAY 17 PM 2:32
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Governor Pete Wilson
1st Floor State Capitol
Sacramento, CA 95814

Dear Governor Wilson,

Please support the Municipal Storm Water NPDES permit for Los Angeles County. It is necessary to protect the public health, marine life, local real estate and the County's $2 billion/year coastal tourism economy.

Urban runoff into the bay is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reduction of storm water pollution as the Plan's most important goal.

L.A. County has suffered through a drastic reduction of beach visitors because people are afraid to swim in the bays. Clogged catch-basins cause costly damage to property each year. And urban run-off dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek near Marina Del Rey. The end result is beach unsafety, contaminated sediment deposits, and severe health risks for residents and visitors.

Thank you for your consideration of this matter.

Ronald Amen

cc: Michael Kashiwada, Exec. Officer
CA Regional Water Quality Control Board

VOL 21

0244

R0064498

Nancy Jones
4269 Bakman Avenue
North Hollywood, California 91602

May 15, 1996

Dear Chairman Keston:

Please support a strong storm water permit to reduce pollution to Santa Monica Bay. When I was growing up in Manhattan Beach people flocked to Calif for the sun, sand and water. If we can return our beaches to their pristine state people will come again. Tourism is good for Calif — and beautiful beaches are good for real estate. Please support the municipal Storm Water NPDES permit for L.A.

Thank you. Nancy Jones

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION

VOL 21 0245

R0064499

VOL 21

0246

R0064500

Mr. and Mrs. Arnold W. Messer
1146 Summit Drive
Beverly Hills, CA 90210

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
SEPT 17 PM 2:33
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Arnold and Sharon Messer

Board

VAL 5/17 56

Lindsay Weiss
465 25th Street
Santa Monica, California 90402

RECEIVED
98 MAY 20 PM 1:44
REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens out economic prosperity and our very identity as Southern Californians.

Sincerely,

Lindsay Weiss

VOL 21 0247

R0064501

Terry Maglietto
1233 W. 187th Place
Gardena, CA 90248

RECEIVED
96 MAY 20 PM 1:56
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, President
California Regional Water
Quallity Control Board
101 Center Plaza Dr.
Monterey Park, CA 91754

Dear Chairman Keston,

Urban runoff is the largest source of Coastal pollution to the Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L.A. beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Balona Creek next to Marina Del Rey. The end Result is a boater safety problem that poses severe health risks to local marine life and costly site remediation problems.

PLEASE PROTECT OUR CHILDREN WHO WILL ATTEMPT TO SWIM AND SURF AT OUR BEACHES NO MATTER HOW POLLUTED THEY BECOME!

Protect the public health, marine life, local real estate and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES for Los Angeles County.

Thank you for your support.

Sincerely,

Terry Maglietto

VOL 21 0248

R0064502

Diane Lander-Simon
10745 Chalon Road
Los Angeles, CA 90077

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Sincerely,

Diane Lander-Simon

RECEIVED
96 MAY 20 PM 2:03
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0249

R0064503

Al Villar
1847 Roscomare Rd.
LA. CA 90077

RECEIVED
96 MAY 21 PM 1:27
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 14, 1996

Michael Keston, President
California Regional Water
Quality Control Board
Monterey Park, CA 91754

Dear Chairman Keston:

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PLEASE PROTECT OUR CHILDREN WHO WILL ATTEMPT TO SWIM AND SURF AT OUR BEACHES NO MATTER HOW POLLUTED THEY BECOME!!!

Protect the public health, marine life, local real estate and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES for Los Angeles County.

Thank you for your support.

Sincerely,

Amanda D. Hill

VOL 21 0250

SABRINA FOX

RECEIVED
96 MAY 21 PM 1:14
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

May 20, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Sabrina Fox

Sabrina Fox

1260 LAGO VISTA PLACE
BEVERLY HILLS, CA 90210
PHONE: 310.285.0072 FAX: 310.285.0080

VOL 21 0251

R0064505

VERDON-CEDRIC PRODUCTIONS, INC.
9350 WILSHIRE BOULEVARD
SUITES 310-311
BEVERLY HILLS, CALIFORNIA 90212
(310) 276-7252

RECEIVED
96 MAY 21 PM 1:01
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

MR. MICHAEL KESTON, CHAIR
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156

Dear Chairman Keston,

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California Coastal waters. It contains toxics, pathogens, and debris that harm marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine animals (AND HUMANS) will result. Such degradation threatens our economic prosperity, our health, and our very identity as Southern Californians.

Sincerely,

S. Garrison
Santa Monica resident

VOL 21
0252
R0064506

VERDON-CEDRIC PRODUCTIONS, INC.
9336 WILSHIRE BOULEVARD
SUITES 310-311
BEVERLY HILLS, CALIFORNIA 90212
(310) 274-7255

MR. MICHAEL KESTON, CHAIR
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156

RECEIVED
96 MAY 21 PM 1:01
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston,

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California Coastal waters. It contains toxics, pathogens, and debris that harm marine life and afflicts swimmers with an array of ailments.

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Sincerely,

K. Ralston
Marina del Rey resident

VOL 21
0253
R0064507

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Sincerely,

Gwendolyn J. Crawford
810 Edgewood St., #102
Inglewood, CA 90302
(310) 671-3929

RECEIVED
96 MAY 21 PM 1:00
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0254
R0064508

*Doug Riffenburgh*
*5030 Ledge Ave.*
*Burbank, CA 91505*
*(818) 980-7501*

May 19, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 MAY 21 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed storm water permit. Storm water is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Without leadership from the Board in addressing storm water, growth and development will lead increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

VOL 21 0255

*Tricia Riffenburgh*
*5030 Ledge Ave.*
*Burbank, CA 91505*
*(818) 980-7501*

RECEIVED
96 MAY 21 PM 1:10
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 19, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed storm water permit. Storm water is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Sincerely,

VOL 21 0256

VOL 21

0255

R0064511

Ingrid Broman
705 A S. Adams St.
Glendale, CA 91205

96 MAY 24 PM 1:12

LOS ANGELES REGION

MR MICHAEL KESTON, CHAIR
CALIFORNIA REGIONAL WATER QUALITY BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK
CA 91754-2156

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

96 MAY 28 AM 10:55

LOS ANGELES REGION

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Ingrid Broman

Carlos Ramos
4030 58th Street
May Wood Ca 90.

RECEIVED
96 MAY 24 PM 1:17
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 18, 1996

Mr. Michael Keston, Chairman
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754 - 2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among the cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

VOL 21
0258
R0064512

RECEIVED
96 MAY 28 PM 1:21
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0259

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Vida J. Negrete

Vida Negrete
1507 Indiana Ave.
S. Pasadena, CA 91030

R0064513

~~LOS~~ ANGELES
3000 West Olympic Boulevard
Building 5, Suite 2250
Santa Monica, California 90404
Phone 310/264-4214
Fax 310/264-4291

IDAHO
516 Bank Street
Wallace, Idaho 83873
Phone 208/752-2024
Fax 208/752-5045

C-

VOL 21

May 21, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I would like to add my voice to those that are urging the Water Board to issue the proposed stormwater permit. As you are aware, stormwater is the single greatest polluter of Southern California's coastal waters. It contains toxic materials, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments, from mild irritants to potentially life-threatening illnesses.

I am aware that some cities are concerned about the cost of this but cooperation among cities will reduce costs considerably. The permit simply encourages education and a practical approach to dealing with potential pollutants.

I would encourage the Water Quality Control Board to address stormwater issues so that there is not increased degradation of coastal waters. Illness, beach closures, and diseases among marine mammals will result if we do not pay attention these issues. Such degradation threatens our economic prosperity and the future of Southern California.

Thank you for your attention to this matter.

Sincerely,

Gale Anne Hurd

Gale Anne Hurd

LOS ANGELES REGION
QUALITY CONTROL BOARD
96 MAY 28 PM 1:22

02600

May 24, 1996

RECEIVED
96 MAY 28 PM 1:21
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional
Water Quality Control Board,
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

The intent of this letter is to urge the California Regional Water Quality Control Board to issue the proposed storm water permit. Storm water is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit calls for education and ordinary, good housekeeping practices, something we all should want.

Without leadership from the Board in addressing storm water, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Joan Forman

Joan Forman
1743 Axenty Way
Redondo Beach, CA 90278

VOL 21
0261
R0064515

RECEIVED
96 MAY 28 PM 1:22
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0262

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed storm water permit. Storm water is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing storm water, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Jeanne Blackstone
8808 Chatsworth Dr
West Hills Ca 91304
818 888 6004

R0064516

*Emilia Parrish*
*24708 Via Valmonte*
*Torrance, CA 90505-6803*

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerened about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Emilia Parrish

RECEIVED
96 MAY 28 PM 12:39
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0263

RECEIVED
96 MAY 28 PM 12:41
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0264

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed storm water permit. Storm water is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing storm water, growth and development will lead to increased degradation of coastal waters. More Illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Robert J Clark
6649 Royer Ave
West Hills, CA
91307
818-710-9852

R0064518

IN WILDNESS IS THE PRESERVATION OF THE WORLD.
— HENRY D. THOREAU

Heather Brovsky
6697 Whitley Terrace
LA, CA 90068

MAY 17 1996

MIKE KESTON, CHAIR
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2126

RECEIVED
96 MAY 28 AM 10:56
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

RE: RUNYON CANYON PARK CRISIS

DEAR MR. KESTON:

The actions of the MTA in Runyon Canyon Park, draining the water essential to the life of the park and planning to tunnel beneath the canyon, are unconscionable. I am shocked the permission to destroy one of our valuable natural treasures [illegible] been granted by the very officials responsible for its preservation.

There is no question that the fragile ecosystem of the area [illegible] not survive the monstrous violations the MTA intends: already signs of distress are evident. I question the greed and indifference that must motivate those who feign blindness to the true nature of their actions and their inevitable consequences.

We are all charged with the care and healing of the Earth w[illegible] sustains us — all around us and within us the signs of neg[illegible] can no longer be ignored. We must begin to take responsibility [illegible] ourselves in our environment, and value those things which [illegible] our soul as highly as those which serve a function in our material world. Los Angeles is a city desperately need[illegible] balance, and Runyon Canyon is the kind of beautiful have where it is found, walking at sunset through sage-swept hil[illegible] listening to the wind... here we remember who we are, and our connection to each other and our world becomes clear.

Walk through the silence as twilight falls soft all around it will be easy then to choose reverence over destructio[illegible]

Please use your office wisely, and save Runyon Canyon Park.

Respectfully,

HEATHER BROVSKY
6697 WHITLEY TERRACE
LOS ANGELES, CA 90068

VOL 21

0265

R0064519

duplicate

VOL 21

0266

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Norma Jean Bell
1909 S. Doncrest St
Monterey Park, CA 91754

Received
May 28 '96

Sender Duplicate.

R0064520

Extra
The entertainment Magazine
1840 Victory Boulevard.
Glendale, CA 91201

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Ken Davis
1126 ATLEE Drive
La Canada, Ca 91011

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0267

R0064521

C

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Sincerely,

1129 Lincoln Blvd
Santa Monica, CA 90403

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

0268

R0064522

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Kelly Murphy

Kelly Murphy
1840 Victory Blvd
Glendale, CA 91201
818-972-0635

RECEIVED
96 MAY 28 PM 1:10
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0269
R0064523

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Ronald D. Mackovich

Ronald D. Mackovich
12721 Moorpark #204
Studio City CA 91604

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0270

R0064524

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

KEVIN LOPEZ
2320 SYLVAN LN.
GLENDALE, CA.
91208

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0211

R0064525

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

MJ Roark

M.J. ROARK
5447 ZELZAH Ave 104
ENCINO, CA 91316

RECEIVED
96 MAY 28 PM 1:12
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0272
R0064526

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Mary Harrison
219 S. Barrington Ave, #119
LA, CA 90049

RECEIVED
96 MAY 28 PM 1:12
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0213

R0064527

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Scott S

Scott [illegible]
1215 S[illegible] Ave.
Los Angeles, CA 90069

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

0274

R0064528

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Robert Fried
18423 Linnet
Tarzana, CA 91356

RECEIVED
96 MAY 28 PM 1:12
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0275

R0064529

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

ERIC B. COOKSON
17500 TUSCAN DR.
GRANADA HILLS, CA 91344

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0216

R0064530

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely, 5/20/96

Jennifer Fitzpatrick
3128 Miramar Rd
Santa Ca 93821
5938 Calfax
N Hollywood Ca
91601

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

0277

R0064531

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Scott Jones

Scott Jones
529 Garfield
South Pasadena, Ca 91030

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0218

R0064532

Not added ?

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Katie E. Bot ?.

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

0279

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Kristi Horgan

2835 Sheffield Rd
San Marino CA 91108

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0280
R0064534

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Andra N. Giancoli
1006 N. Doheny Dr. #6
L.A. CA 90069

RECEIVED
96 MAY 28 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

0281

R0064535

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Earnest Winborne

Earnest Winborne
6214 Commodore Sloat Dr
LA, CA 90048
213/930-2202

RECEIVED
96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

0282

R0064536

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Sincerely,

Tom Wilbur
1390 Kelton Ave
LA CA 90024

RECEIVED
96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0283

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Pete Hammond

304 N. Poinsettia Ave
Manhattan Beach, Ca.
90266

RECEIVED
96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION

VOL 21
0284

R0064538

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Sincerely,

447 Sycamore Rd
Santa Monica CA
90402

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96 MAY 28 PM 1:11
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0285
R0064539

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

1254 S. Salter Ave #104
CA, CA. 90025

RECEIVED
96 MAY 28 PM 1:11
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0286
R0064540

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Diana Bayless

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96 MAY 28 PM 1:11
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 02871

R0064541

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Diane Dingman

DIANE DINGMAN
1840 Victory Blvd.
Glendale, CA 91201

RECEIVED
96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

C
VOL 21
0288
R0064542

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Karen Baker

1121 Stanford Ave
Redondo Beach, CA
90278

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96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

C ✓

VOL 21

0289

R0064543

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Rob Biggar

ROB BIGGAR
1627 MONTEREY BLVD
HERMOSA BEACH CA
90254

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96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

C
VOL 21
0290
R0064544

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

1230 N. Horn Ave.
#301
West Hollywood, CA 90069

RECEIVED
96 MAY 28 PM 1:11
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0291

R0064545

May 17, 1996

RECEIVED
96 MAY 28 PM 1:11
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Gavin Nex

GAVIN NEX
14031 Addison St
Sherman Oaks CA 91423

Furthermore, primary treatment of effluent with chlorine + ammonia is a pitiful effort that only reduces bacteria counts. This is Not an acceptable substitution for reducing contaminated water as it only adds to the chemical load in Santa Monica Bay. Do not allow this treatment level to take the place of actually removing the bacteria and chemicals.

VOL 21 02992

Not added C

VOL 21 0293

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

RECEIVED
96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION

R0064547

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Arthel Neville Lassic
1840 S. VICTORY BOULEVARD
GLENDALE, CA 91201

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96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0294
R0064548

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Joseph Welcher

Joseph Welcher

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96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0295

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Annette G. Gray

RECEIVED
96 MAY 28 PM 1:11
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0296

R0064550

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Jerilyn Goodman

JERILYN GOODMAN
1957 PARNELL AVE.
LA, CA 90025

RECEIVED
96 MAY 28 PM 1:11
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0297

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

DAVID FRIEND
1840 VICTORY BLVD
GLENDALE CA 91201

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96 MAY 20 PM 1:11
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0298

R0064552

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Sherry Rundl

Sherry Rundl
646 S. Barrington Ave Apt 214
Los Angeles, CA 90049

RECEIVED
96 MAY 28 PM 1:11
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0299
R0064553

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Megan Fouts

Megan Fouts
646 S. Barrington ave #214
LA, CA 90049

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96 MAY 28 PM 1:11
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
03000

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

A Bravo

ANGELA BRAVO
11684 Ventura Bl #153
Studio City CA 91604

RECEIVED
96 MAY 28 PM 1:11
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0301

R0064555

VOL 21

C/

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Dan Kraemer

1840 Victory Blvd.
Glendale, CA 91201
Dan Kraemer

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

03802

R0064556

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Kim Bryant

Kim Bryant
428 N. Catalina St.
Burbank, CA 91505

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0303

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Linda Kane

LINDA KANE
10443 ASHTON AVE
LOS ANGELES, CA 90024

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0304

R0064558

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Lisa Kane

Lisa Kane
517 N Brighton St.
Burbank, CA 91506

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

0305

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Glenn Clarke
517 N. Brytonst
Burbank, CA 91506

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION

0306

R0064560

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

RICHARD CHAMBLIN
616 VETERAN AVE # 114
LOS ANGELES, CA 90024

RECEIVED
96 MAY 28 PM 1:10
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

03007

VOL 21

0308

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

RUSSELL A. JACKSON
1230 N HORN AVE #301
W HOLLYWOOD CA 90069

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

CHRISTINE CUDANES
4134 LEBOURGET AVE.
CULVER CITY, CA 90232

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0309

R0064563

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Abel Pinedo Jr.
1840 Victory Blvd.
Glendale, CA 91201

RECEIVED
96 MAY 28 PM 1:11
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0310

R0064564

VOL 21

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

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Sincerely,

Peter Nissen

PETER NISSEN
126 N. KINGS RD
LOS ANGELES, CA 90048

RECEIVED
96 MAY 28 PM 1:10
QUALITY CONTROL BOARD
LOS ANGELES REGION

0311

R0064565

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

John DeTemple

John DeTemple
1010 Esplanade #9
Redondo Beach, CA 90277
(310) 540-9066

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0312
R0064566

VOL 21

0313

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

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Sincerely,

Tracy Gulandi
2222 Beachwood Dr.
Los Angeles, CA
90068

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

R0064567

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Stephen M. Szybor

1317 N San Fernando Blvd #
LA CA 90068

RECEIVED
96 MAY 28 PM 1:10
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0314

VOL 21

0315

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Andrew Lavey 5/20/96

ANDREW LAVEY
7965 FOUNTAIN AVE
LOS ANGELES CA 90046

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Charles G. Latibeaudiere

CHARLES G. LATIBEAUDIERE
948 19TH ST. #4
SANTA MONICA, CA 90403

RECEIVED
96 MAY 28 PM 1:10
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0316
R0064570

RECEIVED
96 MAY 28 PM 1:10
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 17, 1996

Mr. Michael Keston
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of costal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,



Brian Richardson
3949 Los Feliz #518
Los Angeles, CA 90027

VOL 21

03117

RECEIVED
96 MAY 29 PM 1:14
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

320 S. Arnaz Drive #202
Los Angeles, California 90048

May 28, 1996

Mr. Michael Keston, Chair
California Regional Water Quality
Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am a volunteer for the American Oceans Campaign ("AOC") and am concerned about our oceans.

I am writing to urge the Water Board to issue the proposed stormwater permit. I am informed by the AOC that stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harm marine life and afflict swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

B. Silver

VOL 21
0318
R0064572

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Homer Tom

Homer Tom
2121 Valderas Dr. Apt 79
Glendale, CA 91208-1362

May 29 '96

VOL 21

0319

5/14/96

RECEIVED
96 MAY 29 PM 1:16
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Kleston, Chair
California Regional Water Board, L.A. Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Kleston,

I am writing to urge the Water Board to issue the proposed Stormwater permit. Stormwater is the single greatest contributor of Southern CA. coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing storm water, growth and development will lead to increased degradation of coastal waters. More illnesses, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Tammy Schuster
24369 Clipstone St.
Woodland Hills, CA 91367

VOL 21

03200

R0064574

Michael Keston, President
California Regional Water
Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754
Fax: (213) 266-7600

96 MAY 29 PM 2:17
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

Dear Chairman Keston

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L.A. County beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Beth Ansel-Burke
129 Manhattan Ave.
Hermosa Beach CA 90254

0321

R0064575

May 15, 1996

RECEIVED
96 MAY 30 PM 1:23
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, buy opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Scott Wenguer
4150 Prasa
Woodland Hills, CA 91364

VOL 21
0322
R0064576

Gertrude Caban, A.R.T.
5117 West 134th Street
Hawthorne, CA. 90250
(310) 679-5635

96 MAY 30 PM 1:23
QUALITY CONTROL BOARD
LOS ANGELES REGION

May 18, 1996

Mr. Michael Keston, Chairman
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754 - 2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxins, pathogens and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among the cities reduce costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Gertrude Caban

VOL 21
0323
R0064577

6/2/96

RECEIVED
JUN 2 15
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Kesten, Chair
California Regional Water Quality Control Board
L.A. Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Chairman Kesten:

I am writing to urge the Water Board to issue the proposed Stormwater permit. Stormwater is the single greatest contributor to pollution of Southe. California coastal waters. It contains toxics, pathogens and debris that harms marine life and peop

Some cities are concerned about the costs, but opportuniti for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More beach closures and human and animal illnesses will result. Such degradation threatens our economic prosperity and our very identity as Southern California

Sincerely,

Carlos Van Natter
3138 Griffith Park Bl.
L.A., CA 90027

CARLOS VAN NATTER
3138 Griffith Park Blvd, Los Angeles, CA 90027-3812

VOL 21 0324

R0064578

VOL 21

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN -4 PM 2:13
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely, Lawrence Boisvert

0325

Larry Boisvert
1645 Clark Ave Unit 117
Long Beach CA 90815-3807

PM
01 JUN

Mr. Michael Keston, Chair
California Regional Water Qual
Board, Los Angeles, Region
101 Center Plaza Drive
Monterey Park, CA 91754-2156

91754/2156

R0064579

R0064580

0260

VOL 21

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN -4 PM 2:18
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Sincerely,

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN -5 PM 1:15
REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston:

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Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely, Barbara Blaine

B. Blaine
417 Winchester
Glendale, Ca.
91201

Mr Michael Keston
Cal. Regional Water Board
101 Centre Plaza Drive
Monterey Park, Ca
91754-2156

VOL 21

0327

VOL 21

0328

July 3, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Esme Janss Gregson

Received
June 6 '96

cc: Governor Pete Wilson
Mayor Richard Riordan

LAURIE PETERS PUBLIC RELATIONS
100 WILSHIRE BLVD, SUITE 800 SANTA MONICA CA 90401 PHONE: (310)260-6556 FAX: (310)260-6550

VOL 21

0329

June 6, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

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In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Michael Shuken

cc: Governor Pete Wilson
Mayor Richard Riordan

Winkler Films
211 So. Beverly Dr. Suite 200
Beverly Hills, CA 90212

Received June 6 '96

R0064583

VOL 21

0330

June 6, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Boerd:

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Thank you for your consideration.

Sincerely,

Lisa Steen

Lisa Steen

cc: Governor Pete Wilson
Mayor Richard Riordan

Winkler Films
211 So. Beverly Dr. Suite 200
Beverly Hills, CA 90212

Received June 6 '96

R0064584

Emily Shirbroun
2145 E. Linfield
Glendora, CA
91740

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Emily Shirbroun

Received
June 6 '96

VOL 21 0331

R0064585

JUN 6 96 3:02PM CHIAT & DAI 7331 P.1/1

C ✓

VOL 21

Michael Keston
California Regional Water
Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

June 6, 1996

Dear Mr. Keston,

As you know, urban runoff is the largest source of pollution to the ocean. The Santa Monica Bay Restoration Plan is aiming at reducing storm water pollution. Urban runoff dumps tons of contaminated sediment into the Santa Monica Bay. I surf in the Bay almost every day, and I am constantly plagued with illness and infections.

Please protect the marine life, public health, and tourism by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely,

Rebecca Wells

0332

No Return Add.

R0064586

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

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Sincerely,

[redacted]

724 N. Florence
Burbank, 91505

Received
June 7 '96

VOL 21

0333

Mr. Michael Keston
California Regional Water Control
101 Centre Plaza Dr
Monterey Park, CA. 91754-2156

R0064587

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

99 JUN 11 PM 2:03
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Lloyd Bridges (and) family: My wife Dorothy, my children Beau, Jeff & Cindy & their spouses and 14 grandchildren.

AMERICAN OCEANS CAMPAIGN
*725 Arizona Avenue, Suite 102*
*Santa Monica, CA 90401*

Non-profit Org.
U.S. Postage Paid
Permit # 445
Santa Monica

Mr. Michael Keston
Calif. Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey, Park, Calif
91754-2156

VOL 21

0334

R0064588

AMERICAN OCEANS CAMPAIGN

# ACTION ALERT

May 6, 1996

VOL 21

***PROTECT SOUTHERN CALIFORNIA WATERS FROM POISONED RUNOFF !!!***

***PLEASE XEROX OR TYPE LETTER ON REVERSE SIDE ON YOUR LETTERHEAD AND SEND IT!***

## Stormwater

Water washes pollutants from land into streams and stormdrains. This "stormwater" is a lethal cocktail of toxics, pathogens, and debris that collects in coastal waters; it is the single greatest menace to the ocean.

This cocktail consists of contaminated petroleum products and heavy metals that flow from streets and parking lots; industrial wastes from illicit connections to storm drains; paint and residues cleaned from buildings and cars; pesticides used in agriculture and landscaping; construction rubble, infectious human, animal, and food wastes, etc.

It ruins the beauty of our beaches; smothers, ensnares and poisons marine life escalating rates of cancer among marine mammals; and afflicts swimmers with an array of strange ailments.

Population growth and development are worsening contaminated runoff; and although discharges from industrial facilities and sewage treatment plants are carefully regulated, **runoff is not!**

## The Permit Controversy...

The Los Angeles Regional Water Quality Control Board is responsible for issuing a stormwater permit that would apply to the 85 cities in Los Angeles County. The proposed permit calls on cities to develop educational programs, consult with businesses, and adopt practices themselves to reduce runoff.

Some cities object to the costs; others maintain that cooperation among cities can dramatically reduce costs.

We must act now to sway the Water Board! At stake is the health of our coast, a several billion dollar coastal tourism industry, and the source of our distinctively Southern California identity.

0335

R0064589



*725 Arizona Avenue, Suite 102, Santa Monica, California 90401*
*235 Pennsylvania Avenue SE, Washington, DC 20003*

*(310) 576-6162 FAX (310) 576-6162*
*(202) 544-3526 FAX (202) 544-5625*

RECEIVED
96 JUN 11 PM 1:16
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 10, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Kelli Abraham

No Address
Not avail.

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0336

VOL 21

0337

June 6, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

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Thank you for your consideration.

Sincerely,

Megan Dahlman

8203 Blackburn Ave Apt. H
Los Angeles, CA 90048

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 JUN 11 PM 1:12
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

RECEIVED
96 JUN 11 PM 1:13
QUALITY CONTROL BOARD
LOS ANGELES REGION

6/9/96

*Dear Chairman Keston,*

*I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.*

*Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.*

*Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.*

*Sincerely,*

Robert Stillwell

*Robert Stillwell*
1010 N. Kings Rd. #108
W. Hollywood, CA 90069

VOL 21
0338
R0064592

c ✓

VOL 21

0339

WENDY RAEBECK
51 OZONE AVE 10
VENICE CA 90291
Tel. 310-450-5905

June 11, 1996

Dear Mr. Keston -

On behalf of hundreds of friends, neighbors and beach-goers, I urge you to please support the Municipal Storm Water NPDES permit for Los Angeles Co. This permit is a critical step in the on-going process of restoring our precious ocean in the city limits.

I'm one who has continued to swim despite the years of warnings + the withdrawal of some of my companions. But I never go in after a rain storm, for at least 3 days, because the ocean is literally filthy. It is brown + dirty + literally full of sewage.

For me, the ocean has always been one of the best things in life, and continues to be. It is like the sky or the earth or the sun: essential. Please use your respected power to protect and preserve our beautiful Pacific.

Thanking you in advance,

Wendy Raebeck

96 JUN 13 PM 1:25
CITY CONTROL BOARD
LOS ANGELES REGION

R0064593

ANN & LARRY MORTEO
6260 Radford Avenue
N. Hollywood, CA 91606
(818) 840-3749

96 JUN 13 PM 1:23
LOS ANGELES REGION

June 12, 1996

Michael Keston, Chair and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2186

Dear Chairman Keston and Members of the Board,

As a long time resident in the Los Angeles Area, I am extremely interested in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take intelligent, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am writing to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures..

In an era when government is so often criticized for not taking actions, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Ann & Larry Morteo

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0340
R0064594

VOL 21

0341

June 12, 1996

96 JUN 13 PM 1:23
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Members of the Board:

As a long time resident in the Los Angeles area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96 front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense. I urge you to adopt the proposed permit on July 15th without any further delays.

Thank you for your consideration.

Sincerely,

Christine Slenzak

Christine Slenzak
4303 Bellingham Avenue
Studio City, CA 91604

cc: Governor Pete Wilson
Mayor Richard Riordan

June 10 '96

Mr. Michael Keston, Chair
Calif. Regional Water Quality
Control Board, L.A. Region
101 Centre Plaza Dr
Monterey Park CA 91754

Dear Chairman Keston -
I'm writing to urge the Water Board to issue the proposed stormwater permit. I understand stormwater is the greatest contributor to pollution of S.C. coastal waters. It contains toxics, pathogens, and debris that harms marine life. It also affects swimmers with an array of ailments.
Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply

Received
June 13

VOL 21

0342

R0064596

calls for education and ordinary good housekeeping practices. Without leadership from the Board in addressing storm-water growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity & our very identity as Southern Californians.

Sincerely,

Mark Heller
5929 Blairst Dr.
Culver City Ca
90232

VOL 21 0343

R0064597

LISA ANGELA DAY
3663 KEYSTONE AVENUE #1 LOS ANGELES, CA 90034

RECEIVED
JUN 14 PM 1:12
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 10, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board,

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit. For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations, as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Lisa Day

Lisa Day

cc: Governor Pete Wilson
Mayor Richard Riordan

C ✓
VOL 21
0344
R0064598

DIANE LANE
c/o GARY COHEN
1901 Ave. of the Stars, #1245
Los Angeles, CA 90067-6013

c ✓

VOL 21

Mr. Michael Keston, Chair
California Regional Water Quality Control Bo
101 Center Plaza Drive Los Angeles Regio
Monterey Park, CAL 91754-2156

June 12, 96

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN 14 PM 1:12
QUALITY CONTROL
LOS ANGELES REGION

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,

Diane Lane

0345

R0064599

VOL 21

0346

June 12, 1996

RECEIVED
96 JUN 14 PM 1:30
QUALITY CONTROL
LOS ANGELES REGION

Michael Keston & Board Members
Cal. RWQCB
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Chairman Keston & Members of the Board:

Our beautiful coastline deserves to be one of the best places to visit in the world--but not enough is being done to protect this resource.

Not only is protection of the ocean and the beaches needed, but we cannot as a society allow dangers to the health and safety of our fellow citizens to continue unabated.

Please adopt the proposed storm water permit immediately. You have a duty to all of us and to future generations of Angelenos to do nothing less.

Sincerely,

Carol Kurtz

Carol Kurtz
1747 Kelton Avenue
Los Angeles, CA 90024

June 12, 1996

Michael Keston, Chair
and Members
RWQCB
101 Centre Plaza Dr.
Monterey Park CA 91754-
2156

Dear Board Members:

Adopt the storm
water permit — for
the health of the sea
and our citizens, especially
the children.

Sincerely,
Carol Kurtz

R0064601

VOL 21 03488

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drai
make you sick, is toxic to marine life, and is the main cause of pollution in Sant
Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property dama
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Fact: The tentative municipal storm water permit is cl most effe
reduce storm water pollution.

Fact: Approve the municipal storm water permit and yo publi
reduce storm water pollution, and ensure a strong co onom

Please do your part to clean up the Bay and approve Discharg
Requirements for the Municipal Storm Water Disch the County
Angeles. I urge you to adopt the proposed permit on J without any fu
delays.

Sincerely,

Elizabeth Corrales

cc: Governor Pete Wilson
Mayor Richard Riordan

91-59

R0064602

RECEIVED
96 JUN 17 AM 11:07
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

PAULA POUNDSTONE

cc: Governor Pete Wilson
Mayor Richard Riordan

1027 Chelsea Ave.
Santa Monica, CA 90403

VOL 21 0349

RECEIVED
96 JUN 18 PM12:56
REGIONAL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 17, 1996

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable! I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Sally Reeder

Mrs. Sally Reeder
4935 Carpenter Ave.
Valley Village, CA
91607-3206

VOL 21
0350
R0064604

Heal the Bay

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN 18 PM 1:13
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Nancy Goehe 43803 Victor Place
Lancaster, Ca 93

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0351

R0064605

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Nora Jean Rosen

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
LOS ANGELES
96 JUN 18 PM 1:15

VOL 21 02352

R0064606

VOL 21

0353

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

96 JUN 18 PM 1:13

Dear Chairman Keston and Members of the Board:

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**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do **your** part to clean up the Bay and **approve** the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Ina Pearson

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064607

VOL 21 0354

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

96 JUN 18

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Vanessa Hernandez

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064608

VOL 21

0355

June 13, 1996

RECEIVED
96 JUN 18 PM 1:13
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Andres Cano
S.I.U. Neste Subcommittee Consultant
Angeles Chapter, Sierra Club

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064609

VOL 21

0356

June 13, 1996

RECEIVED
96 JUN 18 PM 1:13
CA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

GRACE PAECK

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064610

Heal the
2701 Ocean Park Blvd
Suite 150
Santa Monica, CA 90405

VOL 21 0351

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN 18 PM 1:13
LOS ANGELES

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Danielle Levine

cc: Governor Pete Wilson
Mayor Richard Riordan

H

2

Santa

VOL 21

0358

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2166

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective measure to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064612

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN 18 PM 1:13
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Robin A. Simon

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0359

R0064613

VOL 21

June 13, 1996

96 JUN 18 PM 1:15

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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**Fact:** The tentative municipal storm water permit is clearly the most effective [illegible] reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Windy Abshez

cc: Governor Pete Wilson
Mayor Richard Riordan

0360

R0064614

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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Please do **your** part to clean up the Bay and **approve** the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Michelle Carson

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0361

R0064615

June 13, 1996

RECEIVED
96 JUN 18 PM 1:13
CLERK
LOS ANGELES

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centro Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Shelly Gault 9/B/A Karate Raider

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

03602

RECEIVED
96 JUN 18 PM 1:13
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 03663

VOL 21 0364

June 13, 1996

RECEIVED
96 JUN 18 PM 12:12
AIR QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and enhance a strong coastal economy.

Please do your part to the Board and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 19

Sincerely,

Joe Montgomery

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064618

June 13, 1996

Rec Date 10

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2186

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for Municipal Storm Water Discharges within the County of Los Angeles on June 13.

Sincerely,

cc: Governor Wilson
Mayor Riordan

VOL 21

00365

R0064619

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** The tentative municipal storm water permit is clearly the most effective way to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Andy Darnell

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 03666

R0064620

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains ca... make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monic Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** The tentative municipal storm water permit is clearly the most effective me... reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public he... reduce storm water pollution and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges w... the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wils...
Mayor Richard Riorda...

VOL 21 03671

R0064621

VOL 21

RECEIVED
96 JUN 18 PM 1:13
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

03688

R0064622

VOL 21 03699

June 13, 1996

RECEIVED
96 JUN 18 PM 1:13
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064623

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0370

R0064624

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is currently the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges from the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 03711

R0064625

443 Mesa Road
Santa Monica CA 90402

RECEIVED
95 JUN 18 PM 1:13
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a thriving coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Michael Jones

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 03712

R0064626

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN 18 PM 1:13
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and create a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064627

VOL 21 0313

June 13, 1996

RECEIVED
96 JUN 18 PM 1:13
REGIONAL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution and ensure a strong coastal economy.

Please do your part to clean up the Bay and **approve** the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0314

R0064628

VOL 21 0315

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm dr... make you sick, is toxic to marine life, and is the main cause of pollution in San ... Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leadin... to property dama... contaminates sediments, and creates boater safety hazards in ports and harb...

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**Fact:** Approve the municipal storm water permit and you protect public hea... reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Ba... and <u>approve</u> t... Waste Discharge Requirements for the Municipal Storm Water Discharges within the County o... Angeles on July 15, 1996.

Sincerely,

PLEASE, DO THE RIGHT THING

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064629

Heal the Bay

VOL 21

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drain[s] can make you sick, is toxic to marine life, and is the main cause of pollution in Santa [Monica] Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property d[amage], contaminates sediments, and creates boater safety hazards in ports and harbo[rs].

**Fact:** Reduce storm water pollution and you take the single large[st] step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the m[ost] reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect p[ublic] health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

0376

R0064630

RECEIVED
96 JUN 18 PM 12:53
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Heather McRae

cc: Governor Pete Wilson
Mayor Richard Riordan

California League Conservation Voters
10951 W. Pico Blvd. Suite 201
LA, CA 90064

VOL 21 03717

R0064631

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbor[illegible]

**Fact:** Reduce storm water pollution and you take the single largest step you can [illegible] protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal [illegible] permit is clearly [illegible] reduce storm water pollution.

**Fact:** Approve the municipal storm [illegible] permit and you [illegible] reduce storm water pollution, and [illegible] a strong coastal [illegible]

Please do your part to clean up th[illegible] approve th[illegible] Requirements for the Municipal St[illegible] Discharges [illegible] Angeles, I urge you to adopt [illegible] permit on July [illegible] out any [illegible] delays.

Sincerely,

Rich Thiagen

cc: Governor Pete Wilson
Mayor Richard Riordan

TMP World[illegible]
10635 San [illegible] Blvd Suite 360
LA, CA 90025

VOL 21

0378

R0064632

VOL 21 03719

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Mark Rivera

cc: Governor Pete Wilson
Mayor Richard Riordan

Floormart Commercial Systems
440 N. Los Feliz Rd.
Glendale, CA 91204

R0064633

RECEIVED
96 JUN 18 PM 12:57
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Lisette A. Bauscho

cc: Governor Pete Wilson
Mayor Richard Riordan

829 Pine St.
Santa Monica, CA 90405-3922

VOL 21

03800

RECEIVED
96 JUN 18 PM 12:57
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Frank Gold

cc: Governor Pete Wilson
Mayor Richard Riordan

828 Pine St.
Santa Monica, CA 90405-3922

VOL 21

0381

Seinfeld
4024 Radford Ave. Bldg #5
Studio City Calif. 91604

RECEIVED
96 JUN 10 PM 1:11
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Laura David

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0382

VOL 21

0383

RECEIVED
96 JUN 18 PM 1:11
CALIF. REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Bryan Gordon (Bryan Gordon)

cc: Governor Pete Wilson
Mayor Richard Riordan

Seinfeld
4024 Radford Ave. Bldg #5,
Studio City, CA 91604

R0064637

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centro Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact**: Scientific studies have proven that contaminated runoff from storm dr... make you sick, is toxic to marine life, and is the main cause of pollution in S... Bay from Malibu to Palos Verdes.

**Fact**: Storm drain runoff pollution causes flooding leading to property dam... contaminates sediments, and creates boater safety h...ards in ports and h...

**Fact**: Reduce storm water pollution and you tak... single large ... protect public health at the beach and clean up th...

**Fact**: The tentative municipal storm water p... ...y the need of... reduce storm water pollution.

**Fact**: Approve the municipal storm wate... ...mit and yo... pro... publ... reduce storm water pollution, and ... ...tal econo...

Please do your part to clean up th... ...Waste D... Requirements for the Municipal S... ...r Di... ...within the Co... Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 03804

R0064638

Not added C

VOL 21

Received June 18

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Heidi Hallel

and my children Jordan & Shana & Matisse !
5 3 2 months

cc: Governor Pete Wilson
Mayor Richard Riordan

Seinfeld
4024 Radford Ave. Bldg #5
Studio City, CA 91604

0385

R0064639

RECEIVED
96 JUN 18 PM 1:12
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Seinfeld
4024 Radford Ave. Bldg #5
Studio City, CA 91604

VOL 21 0386

Not added

VOL 21

RECEIVED
96 JUN 18 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Seinfeld
4024 Radford Ave Bldg #5
Studio City, CA 91604

cc: Governor Pete Wilson
Mayor Richard Riordan

03871

R0064641

Not added

VOL 21

June 27, 1996

RECEIVED
96 JUN 18 PM 1:12
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Seinfeld
4024 Radford Ave. Bldg #3
Studio City, CA 91604

0388

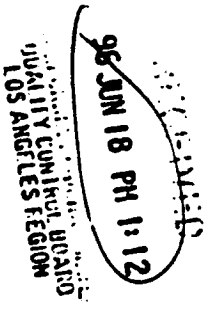
R0064642

Seinfeld

Not added

VOL 21

July 9, 1996




Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Seinfeld
4024 Radford Ave. Bldg #15
Studio City, CA 91604

0389

R0064643

K. Alexandra Irvin
3670 Glendon Ave., #111
West Los Angeles, CA 90034
310/ 836-8171

RECEIVED
96 JUN 18 PM 1:04
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 17, 1996

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Coe:

Please add my name to the list of concerned human beings urging you to adopt the proposed storm water permit for the Santa Monica Bay.

I believe that we must face the fact that protecting the environment is not an issue that will disappear over time. We must realize that this issue will ultimately have to be dealt with; the sooner the better. Please don't fight the inevitable future and cast your vote to adopt the storm water permit on July 15, 1996. Our lives depend on it.

Cordially,

K. Alexandra Irvin

VOL 21 0390

K. Alexandra Irvin
3670 Glendon Ave., #111
West Los Angeles, CA 90034
310/ 836-8171

June 17, 1996

John Slezak
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Slezak:

Please add my name to the list of concerned human beings urging you to adopt the proposed storm water permit for the Santa Monica Bay.

I believe that we must face the fact that protecting the environment is not an issue that will disappear over time. We must realize that this issue will ultimately have to be dealt with; the sooner the better. Please don't fight the inevitable future and cast your vote to adopt the storm water permit on July 15, 1996. Our lives depend on it.

Cordially,

K. Alexandra Irvin

RECEIVED
96 JUN 18 PM 1:05
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0391

K. Alexandra Irvin
3670 Glendon Ave., #111
West Los Angeles, CA 90034
310/ 836-8171

June 17, 1996

Clark Drane
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Drane:

Please add my name to the list of concerned human beings urging you to adopt the proposed storm water permit for the Santa Monica Bay.

I believe that we must face the fact that protecting the environment is not an issue that will disappear over time. We must realize that this issue will ultimately have to be dealt with; the sooner the better. Please don't fight the inevitable future and cast your vote to adopt the storm water permit on July 15, 1996. Our lives depend on it.

Cordially,

K. Alexandra Irvin

RECEIVED
96 JUN 18 PM 1:09
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0392

K. Alexandra Irvin
3670 Glendon Ave., #111
West Los Angeles, CA 90034
310/ 836-8171

June 17, 1996

RECEIVED
96 JUN 18 PM 1:01
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Charlotte Craven
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Ms. Craven:

Please add my name to the list of concerned human beings urging you to adopt the proposed storm water permit for the Santa Monica Bay.

I believe that we must face the fact that protecting the environment is not an issue that will disappear over time. We must realize that this issue will ultimately have to be dealt with; the sooner the better. Please don't fight the inevitable future and cast your vote to adopt the storm water permit on July 15, 1996. Our lives depend on it.

Cordially,

K. Alexandra Irvin

VOL 21
0393
R0064647

8231 Delongpre #4
Los Angeles, CA 90046

VOL 21

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

M. A. R. Morgan A. Rumpf

cc: Governor Pete Wilson
Mayor Richard Riordan

Received
June 18

0394

R0064648

June 17, 1996

Mr. Charles Vernon
California Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754

Dear Mr. Vernon:

I am a concerned resident of Santa Monica, urging you to adopt the proposed storm water permit.

I understand that there are financial considerations involved, but we cannot put a price on our physical safety and the health of our children -- of our entire community -- and we cannot wait to act, while conditions worsen.

You are in a position to do a great thing for our area. Please support this vital step toward a cleaner and healthier bay by voting to adopt the permit on July 15.

Sincerely,

Avery Cobern
2602 Washington Avenue
Santa Monica, CA 90403

RECEIVED
96 JUN 18 PM 1:09
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

VOL 21 0395

R0064649

VOL 21

0396

June 17, 1996

Mr. John Slezak
California Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754

Dear Mr. Slezak:

I am a concerned resident of Santa Monica, urging you to adopt the proposed storm water permit.

I understand that there are financial considerations involved, but we cannot put a price on our physical safety and the health of our children -- of our entire community -- and we cannot wait to act, while conditions worsen.

You are in a position to do a great thing for our area. Please support this vital step toward a cleaner and healthier bay by voting to adopt the permit on July 15.

Sincerely,

Avery Cobern

Avery Cobern
2602 Washington Avenue
Santa Monica, CA 90403

RECEIVED
96 JUN 18 PM 1:10
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

R0064650

Name added only once.

96 JUN 19 PM 1:30

WATER CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 17, 1996

Ms. Charlotte Craven
California Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754

Dear Ms. Craven:

I am a concerned resident of Santa Monica, urging you to adopt the proposed storm water permit.

I understand that there are financial considerations involved, but we cannot put a price on our physical safety and the health of our children -- of our entire community -- and we cannot wait to act, while conditions worsen.

You are in a position to do a great thing for our area. Please support this vital step toward a cleaner and healthier bay by voting to adopt the permit on July 15.

Sincerely,

Avery Cobern

Avery Cobern
2602 Washington Avenue
Santa Monica, CA 90403

03971

R0064651

RECEIVED
96 JUN 19 PM 1:36
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 17, 1996

Ms. Elizabeth D. Rogers
California Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754

Dear Ms. Rogers:

I am a concerned resident of Santa Monica, urging you to adopt the proposed storm water permit.

I understand that there are financial considerations involved, but we cannot put a price on our physical safety and the health of our children -- of our entire community -- and we cannot wait to act, while conditions worsen.

You are in a position to do a great thing for our area. Please support this vital step toward a cleaner and healthier bay by voting to adopt the permit on July 15.

Sincerely,

Avery Cobern
2602 Washington Avenue
Santa Monica, CA 90403

VOL 21 0398

C

VOL 21

June 17, 1996

Mr. Clark Drane
California Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754

Dear Mr. Drane:

I am a concerned resident of Santa Monica, urging you to adopt the proposed storm water permit.

I understand that there are financial considerations involved, but we cannot put a price on our physical safety and the health of our children -- of our entire community -- and we cannot wait to act, while conditions worsen.

You are in a position to do a great thing for our area. Please support this vital step toward a cleaner and healthier bay by voting to adopt the permit on July 15.

Sincerely,

Avery Cobern
2602 Washington Avenue
Santa Monica, CA 90403

96 JUN 19 PM 1:24

0399

R0064653

RECEIVED
96 JUN 19 PM 1:24
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 17, 1996

Mr. Jack J. Coe
California Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754

Dear Mr. Coe:

I am a concerned resident of Santa Monica, urging you to adopt the proposed storm water permit.

I understand that there are financial considerations involved, but we cannot put a price on our physical safety and the health of our children -- of our entire community -- and we cannot wait to act, while conditions worsen.

You are in a position to do a great thing for our area. Please support this vital step toward a cleaner and healthier bay by voting to adopt the permit on July 15.

Sincerely,

Avery Cobern

Avery Cobern
2602 Washington Avenue
Santa Monica, CA 90403

VOL 21 04000

R0064654

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

19601 CANTARA ST
RESEDA CA 91335
818-773-4644

June 19

R0064655

C/

Michael Keston, Chairman
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

June 18, 1996

Dear Mr. Keston,

I would like to urge you and the Regional Water Quality Control Board to take strong action against the flow of polluted water from storm drains into the Santa Monica Bay. I and many, many others in my neighborhood and around the city will be watching with great interest the results of your vote on July 15. You have a great responsibility to do the right thing for our beaches and for our city.

I entertained a group of youngsters visiting from the midwest, and I took them to see the Pacific Ocean for the first time, here by my house in Santa Monica Canyon. Excited, they took off their shoes and waded in the surf. But the water was filled with paper and plastic debris, which clung to their feet. God knows where it came from or what it was. It was truly sickening.

This region is blessed with magnificent resources, and the beach is one of our most beautiful. Please do your part to help maintain it and keep it, because if you don't I don't know who else will.

Sincerely,

David Tausik

David Tausik
374 Sycamore Rd.
Santa Monica, CA 90402

96 JUN 19 PM 1:25
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
04002
R0064656

RECEIVED
96 JUN 19 PM 1:27
QUALITY CONTROL BOARD
LOS ANGELES REGION

R0064657

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Dr. Yousef Ardeny
3432 Vigilance Drive
Rancho Palos Verdes, CA
90275-6126

C

VOL 21

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

June C 19

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Scott Radick

11680 Wilshire #100
LA, CA 90025

el Keston, Chair
al Water Quality Control Board
entre Plaza Drive
rey Park, CA 91754-2156

LOS ANGELES, CA 90010

0404

R0064658

MARY BETH LOWMAN
335 28TH AVENUE
VENICE, CALIFORNIA 90291

RECEIVED
96 JUN 19 PM 1:27
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 18, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Re: Heal The Bay

Dear Mr. Keston:

I am the mother of a six year old named Kathleen. We live in Venice and we spend every weekend at the beach. Kathleen loves going to the beach, and she's an avid boggie boarder! Nothing makes her happier than playing in the water and collecting sea shells and rocks. She prides herself on being a "planeteer" and picks up any trash that she finds floating in the water. I can't imagine having to tell her that she can't play in the ocean because of harmful bacteria and pollution, it would break her heart.

Because of her and all the other children who go to the beach and find it one of the last places they are allowed to run free, I am writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when you vote on July 15. I understand that a recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick. One of every 25 people that swim in front of a drain will get sick!

That is simply unacceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming. Please don't give in to pressure to weaken the regulations. Please think of the children, some of who will have no other place to run wild in the surf than at our local beaches. And no child should run the risk of becoming sick from a day of playing at the beach.

Very truly yours,

Mary Beth Lowman

cc: Heal the Bay

C 1
VOL 21
0405
R0064659

96 JUN 19 PM 1:28

REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Cindy L. Bruss

cc: Governor Pete Wilson
Mayor Richard Riordan

10345 Almazo Ave.
LA, CA - 90064

C

VOL 21

0406

R0064660

RECEIVED
96 JUN 19 PM 1:29
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact**: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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**Fact**: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact**: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do **your** part to clean up the Bay and **approve** the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Robert J. Caggia

Caggia

This is important stuff
Please don't let the
cities weaken the
permit. Keep
the beach clean

cc: Governor Pete Wilson
Mayor Richard Riordan

20505 Big Rd
Malibu, CA 90265

VOL 21

0407

R0064661

96 JUN 19 PM 1:29
LOS ANGELES REGION

June 17, 1996

Michael Keston, Chair
Regional Water Quality Control Board
1010 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston;

I am writing to urge you and other board members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea, nausea or other illnesses. One out of 25 people that swim in front of the drain will get sick.

It is simply unacceptable that someone suffers a risk to getting sick simply because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life. It leaves our beaches looking like trash dumps, and leaves contaminated material in the ports and marina that pose both environmental and boating safety hazards.

Please do not give in to pressure to waken the regulations. Thank you for your consideration.

Sincerely,

David Gardner
2525 Beverley Ave #8
Santa Monica, CA 90405

VOL 21
0408
R0064662

C ✓

VOL 21

0409

RECEIVED
96 JUN 19 PM 1:35
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 18, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Mr. Keston,

I am writing to urge you and other members of the Regional Water Quality Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick. One of every 25 people that swim in front of a drain will get sick! I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations.

Thank you for your consideration.

Sincerely,

Jay W. Philbrick
247 34th St.
Hermosa Beach, CA 90254

R0064663

C /

VOL 21

2411 Prospect Ave. #309
Hermosa Beach, CA 90254
(310) 376-9344

June 17, 1996

96 JUN 19 PM 1:36

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dar Mr. Keston,

I am writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

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Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Jan Schwab

Jan Schwab

0410

R0064664

June 18, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

96 JUN 19 PM 1:36
LOS ANGELES REGION

Dear Mr. Keston,

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Please don't give in to pressure to weaken the regulations.

Thank you for your consideration.

Sincerely,

Carolyn A. Malkus

Carolyn A. Malkus
247 34th St.
Hermosa Beach, CA 90254

VOL 21
0411
R0064665

95 JUN 20 PM 1:12

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Tom Rodden

cc: Governor Pete Wilson
Mayor Richard Riordan

8020 Franklin Ave.
LA, CA 90069

VOL 21 0412

C

VOL 21

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Laura B Rhodes

cc: Governor Pete Wilson
Mayor Richard Riordan

8020 Franklin Ave.
LA, CA 90069

0413

R0064667

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Tara V. Solomon

cc: Governor Pete Wilson
Mayor Richard Riordan

8020 Franklin Ave
LA, CA 90069

VOL 21 0414

R0064668

R. GRANT RAMEY
118 WADSWORTH AVE #3
SANTA MONICA, CA 90405-3536
(310) 399-8982

96 JUN 20 PM 1:13
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0415

18 JUNE 1996

MICHAEL KESTON, CHAIR
REGIONAL WATER QUALITY CONTROL BOARD
101 CENTRE PLAZA DRIVE
MONTEREY PARK CA 91754-2156

DEAR MR KESTON:

I FAVOR STRONG NEW STORM WATER POLLUTION PREVENTION REGULATIONS WHICH I WANT YOU AND THE REGIONAL WATER QUALITY CONTROL BOARD TO PASS WHEN YOU VOTE AT THE BOARD MEETING JULY 15.

I GREW UP ON THE WESTSIDE AND REMEMBER DISCOVERING THE BEACH AND BODY SURFING WHEN I WAS 10. I TOOK THE #7 BUS DOWN PICO EVERY DAY THAT SUMMER AND SPENT HOURS IN THE WATER. I CONTINUED SURFING FOR 25 YEARS BUT NOW I AM FIFTY, LIVING RIGHT AT THE SAME BEACH IN SANTA MONICA, AND AM RELUCTANT TO GO IN THE WATER DUE TO THE POLLUTION. THAT IS A SAD STATEMENT ABOUT ONE OF THE GREATEST NATURAL RESOURCES IN LOS ANGELES COUNTY.

I HAVE JOINED HEAL THE BAY TO VOLUNTEER MY HELP BUT THE VOTES OF THE REGIONAL WATER QUALITY CONTROL BOARD I CAN SEE ARE CRITICAL TO CONTINUE IMPROVING CONDTIONS OF THE OCEAN IN SANTA MONICA BAY.

THANKS FOR YOUR CONSIDERATION, BUT EVEN MORE THANKS FOR YOUR VOTES TO KEEP REGULATIONS STRONG TO LIMIT BAY POLLUTION.

SINCERELY,

R. Grant Ramey

R. GRANT RAMEY

R0064669

John Theodore
643 Hill St., Apt. C
Santa Monica, CA 90405

RECEIVED
96 JUN 20 PM 1:09
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 18, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am writing to you regarding the storm water permit vote. I urge you and other members of the Board to vote on my behalf to pass strong new storm water pollution prevention regulations when the Board votes on July 15.

As an avid swimmer and surfer, I am concerned about my health and the health of others like me. I grew up near the ocean and I have always enjoyed swimming in the ocean. As I became interested in surfing, I began to enter the water during the wet months, when the waves are often at their best.

I became ill after swimming in the Santa Monica Bay once, flu-like symptoms plagued me for three days. I wasn't sure whether or not it was the Bay that made me sick or not, but I had a strong feeling that it was due to the pollution in the Bay. After reading the L.A. Times article about the recent epidemiological study of the health affects of swimming in the Bay, I realized my conscience was correct. So, I am writing this letter to you because I believe that the Board can make the Bay safe by passing strong storm water pollution prevention regulations.

Our society's attitude towards pollution, particularly ocean pollution, is in a sad state of affairs. We have businesses that dump paint and oil down storm drains that lead directly to the ocean without concern. There are also businesses that are disposing of all kinds of toxins illegally via the storm drains without concern. And we have community members that aren't concerned with the pollution they create through their illegal sewage hook-ups. You and the other Board members have an opportunity to change this. You can show these people that they should be concerned about the health of their fellow community members.

In addition to the health issues, the pollution is making an enormous impact on the ocean and the beaches, the largest tourist attraction in our area. Our community is showing poor economic judgment when we pollute our most valuable resource. We don't want tourists leaving L.A. and spreading the word that they got sick from swimming in the Santa Monica Bay and that the beaches look like trash dumps.

I hope this short letter urging you and the Board to vote for strong storm water pollution prevention regulations on July 15 works. My health and the health of our community is depending on it. Thank you for your consideration.

Sincerely,

John Theodore

VOL 21 0416

# Write a letter!

C

RECEIVED
JUN 20 PM 1:1
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Your letter to the Regional Water Quality Control Board could help persuade the Board to stop the flow of pollution from storm drains into the Bay. Please feel free to modify this sample letter, but please send it soon – the Board will vote July 15 at the L.A. County Supervisors' Hearing Room.

**If you'd like to attend the July 15 hearing to show your support of a clean and healthy Bay, please contact Heal the Bay at 1-800-HEALBAY for the location and directions.**

## Sample Letter:

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Lawrence Halperin

Mr. Lawrence Halperin
1434 Jonesboro Dr
Los Angeles, CA 90049-3827

## Send your letter to:

**Michael Keston, Chair**
**Regional Water Quality Control Board**
**101 Centre Plaza Drive**
**Monterey Park , CA 91754-2156**

**Over →**

VOL 21

0417

June 15, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in from of a drain will get sick.

That is simply not acceptable. No one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated materal in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Denis Bozulich

2426 Marathon st.
LA, CA 90026

96 JUN 20 PM 1:15
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0418
R0064672

2117 Eric Drive
Los Angeles, CA 90049

June 19, 1996

C

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick. One of every 25 people that swim in front of a drain will get sick! That's simply not acceptable. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marinas that poses both environmental and boating safety hazards.

Please, don't give in to pressure to weaken the regulations. "Thank You" for your consideration.

Sincerely,
Ruth Wagner

VOL 21

0419

JUN 20 PM 1:15
LOS ANGELES REGION

R0064673

*Vikki S. McMahon*
*856 6th Street*
*Manhattan Beach, CA 90266*

C

June 18, 1996

96 JUN 20 PM 1:13
LOS ANGELES REGION

Michael Keston,
Chair, Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

Please, please, please -- I am urging you and other members of the Board to pass the new storm water pollution prevention regulations when it votes on July 15th.

I have been working with the water quality coordinator of Manhattan Beach on ways to inform residents about storm drain runoff. We have been publishing articles in our local paper called "Tips from the Gutter." The response from the articles have been incredibly positive. People are genuinely concerned about the ocean and would like to see as much done as possible to ensure that the ocean is clean and safe -- not only for us, but for all the creatures that live and rely on the many resources the ocean provides.

I believe that if there is not immediate action taken to divert the runoff, more people will become sick, more marine life will die, real estate values will decline, and our environment will look trashy.

I urge you, please vote for a clean, safe environment. Do it for the future generations so that they may enjoy the beaches we have all come to know and love.

Sincerely,

Vikki McMahon

VOL 21 0420

Susan Salomon Neiman

June 18, 1996

RECEIVED
96 JUN 20 PM 1:11
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One out of every 25 people who swim infront of a drain will become ill.

This is simply not acceptable. I believe that no should risk the chance of becoming sick because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, makes our beaches look like trash dumps, and puts comtaminated material in the ports and marina which causes both environmental and boating hazards.

Please think of our children and do not give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

S. S. N.

605 Hanley Way, Los Angeles, California 90049 (310) 472-6926

VOL 21 0421

R0064675

RECEIVED
96 JUN 20 PM 1:11
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 18, 1996

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One out of every 25 people who swim infront of a drain will become ill.

This is simply not acceptable. I believe that no should risk the chance of becoming sick because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, makes our beaches look like trash dumps, and puts comtaminated material in the ports and marina which causes both environmental and boating hazards.

Please think of our children and do not give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Phillip Neiman

605 Hanley Way
LA, CA 90049

VOL 21 0422

R0064676

C

RECEIVED
96 JUN 20 PM 1:11
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 18, 1996

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One out of every 25 people who swim infront of a drain will become ill.

This is simply not acceptable. I believe that no should risk the chance of becoming sick because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, makes our beaches look like trash dumps, and puts comtaminated material in the ports and marina which causes both environmental and boating hazards.

Please think of our children and do not give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Jillian Ling

Siniges

605 Hanley Way

LA, CA 90049

VOL 21

0423

R0064677

June 18, 1996

RECEIVED
96 JUN 20 PM 1:12
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One out of every 25 people who swim infront of a drain will become ill.

This is simply not acceptable. I believe that no should risk the chance of becoming sick because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, makes our beaches look like trash dumps, and puts comtaminated material in the ports and marina which causes both environmental and boating hazards.

Please think of our children and do not give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Heather Siniger

605 Hanley Way
LA, CA 90049

VOL 21
0424
R0064678

C

VOL 21

RECEIVED
96 JUN 20 PM 1:12
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Michelle Brown

cc: Governor Pete Wilson
Mayor Richard Riordan

143 S. Hayworth #102
LA, CA 90048

0425

R0064679

RECEIVED
96 JUN 20 PM 1:11
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Shannon

cc: Governor Pete Wilson
Mayor Richard Riordan

SHANNON ROMANO
1920 HOLLY DR.
LA, CA. 90068

VOL 21 0426

*Kathleen M. West*
*1101 Pearl Street*
*Santa Monica, CA. 90405-2517*
*phn: (310) 452-5710*
*fax: (310) 452-5857*

RECEIVED
96 JUN 20 PM 1:12
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 17, 1996

Michael Keston, Chair
Regional Water Quality Control Brd.
101 Centre Plaza Drive
Monterey Park, Ca. 91754-2156

Dear Mr. Keston,

I am writing as a resident of Santa Monica with three young boys. Because we live less than a mile from the beach in the Sunset Park/Ocean Park area, we use the beach as an almost daily part of our lives---for recreation, science education, exercise, spiritual reflection, etc. My family and neighbors are all really dismayed that the health of the Bay has gotten so bad that we can't allow our young children to freely play in it without negative health repercussions. Although a study has recently come out that has shown health problems, we have had firsthand experience of these and feel ashamed and horrified that our rich and powerful City and County governments have let things get this bad.

My family and I therefore urge you to pass and enforce the propsed storm water pollution prevention regulations that will help to correct and prevent the unhealthy state of our Pacific coast beaches that are so beautiful in appearance, but deceptively so...

Please know that you have the support of thousands of residents of our neighborhood and those of like-minded citizens throughout the City and County... even though not everyone will write you a letter. DON'T cave in to the pressures that want the strong regulations weakened. Thank you for taking my perspective into account and helping to make the shoreline and coastal waters healthy places for my young children and our future generations to enjoy and explore our natural treasures.

Sincerely,

Kathleen West

VOL 21 0427

R0064681

1/C

MR. Keston, 6-20-96

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15, 1996. I have been surfing in the South Bay for 35 years and I would like my two young boys to be able to enjoy the same water that I did as a child.

Thank you

Bo Webber
2448 Myrtle Ave.
Hermosa Beach, CA 90254
(310) 379-4367

RECEIVED
96 JUN 21 PM 1:22
WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0428

R0064682

VOL 21

0429

732 12th Street
Manhattan Beach CA 90266-4830
June 24, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park CA 91754-2156

Dear Mr. Keston,

I am writing to ask you and the other members of the Regional Quality Control Board to find and adopt an effective method to prevent storm water pollution when you meet on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That is simply not acceptable. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please do not yield to pressure to weaken the regulations until a more effective and economically efficient method is adopted which transfers the costs of cleaning up the pollution to the entities responsible for creating the pollution.

Sincerely,

LeRoy E Nelson

LeRoy E. Nelson

QUALITY CONTROL BOARD
LOS ANGELES REGION
96 JUN 21 PM 1:27

David and Nancy Holloman
642 Muskingum Avenue
Pacific Palisades, CA 90272
(310) 454-0156

June 20, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing in regard to the July 15 meeting of the Regional Water Quality Control Board to urge the Board to pass strong storm water pollution prevention regulations at that meeting.

I believe that every beach should be safe for swimming and that swimmers and surfers have a right to enjoy the water without getting sick from pollution. I am also worried about marine wildlife, not to mention the appearance of our beaches and safety of our harbors.

The study I have read about indicates serious problems around storm drains and regulating what goes into those drains seems basic good sense.

Thank you for your consideration and I want to thank you and your fellow board members for your public service.

Very truly yours,

Nancy Holloman

Nancy Holloman

96 JUN 21 PM 1:23
LOS ANGELES REGION

VOL 21
0430
R0064684

C

VOL 21

Mr. Michael Keston, Chair
California Regional Water Quality Control Board, Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN 21 PM 1:31
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston:

I am writing to urge the Water Board to issue the proposed stormwater permit. Stormwater is the single greatest contributor to pollution of Southern California coastal waters. It contains toxics, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduce costs considerably. The permit simply calls for education and ordinary, good housekeeping practices.

Without leadership from the Board in addressing stormwater, growth and development will lead to increased degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely, Mrs. Richard H. Anderson

MRS. RICHARD H. ANDERSON
27611 AVENIDA LARGA
SAN JUAN CAPISTRANO CA 92675-3005

Mr Michael Keston
Cal. Reg. Water Control Board, L.A.
101 Centre Plaza Dr
Monterey Park Ca 91754-2156

0431

R0064685

VOL 21 0432

96 JUN 21 PM 1:31
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 19,1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Center Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

My family and I urge you to pass strong storm water pollution regulations when you vote on July 15,1996. I plead with you to take a stand to protect our beaches, our children's safety and the environment.

I live in Venice and walk on the beach daily. However, it's become such a burden as it breaks my heart to constantly see dead wildlife and trash beyond description. I now walk with tennis shoes, gloves and a trash bag in order to protect myself as well as pick up all the trash I possibly can. Nevertheless, their is so much trash, that it is overwhelming. One day alone I picked up 1,541 Styrofoam cups, and still there were thousands more littering the beach Also, I have also come across three sea birds wrapped in plastic bags, and six hypodermic needles. Now my children and I must wear shoes in order to protect our feet from this and other hidden dangers.

What world is it that children have to wear shoes, and trash litters the beach as far as the eye can see? I tell you it is one I do not wish to live in. I pay my taxes and I resent the fact that my government cares so little about our health and the environment. If we do not fix this problem now, I promise you in the future it will be impossible to so.

If you and the Quality Control Board do not step up to the plate and correct this problem, then you better be ready to explain to our children why. The only reason you could possibly give is money, and that is not good enough! As a tax payer I demand that my hard earned money be accounted for.

God gave us a beautiful world, and it is up to us to keep it that way. Please vote to have Los Angeles's Storm Drains redirected to Hyperian, and pass new laws to protect us from illegal dumping. If you do not see the urgency of this plea, then I invite you to walk on the beach with me before July 15th and see for yourself what Los Angeles citizens, and the environment have to live with every day.

Please feel free to contact me at: (310) 568-1237.

Sincerely Yours,

Jennifer Hagaman

MCI Telecommunications Corp.
6601 Center Drive West
Suite 200
LA, CA 90045

C✓

VOL 21

0433

RECEIVED
96 JUN 21 PM 1:31
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

3014 Bentley Ct.
Santa Monica, CA 90405
June 19, 1996

Mr. Michael Keston
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you & the members of the Regional Water Quality Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

Recent studies show that swimming near storm drains causes illness. This is unacceptable and avoidable. In addition to humans; marine life and ~~our~~ our beaches are marred by runoff.

We must and can prevent this danger. Please don't give into pressure to weaken regulations.

Sincerely,
Don Gentile

R0064687

RECEIVED
96 JUN 21 PM 12:42
QUALITY CONTROL BOARD
LOS ANGELES REGION

C

VOL 21

0434

June 20, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Nancy Lindsey

Nancy Lindsey
333 Swarthmore Ave. #8
Pacific Palisades, CA 90272

96 JUN 21 PM 1:16

LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Carly Breitbart

cc: Governor Pete Wilson
Mayor Richard Riordan

30600 Las Estrellas Dr.
Malibu, CA 90265-3127

VOL 21 0435

R0064689

June 16, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

96 JUN 21 PM 1:16
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Re: Storm Water Quality Regulations

Dear Mr. Keston:

I understand that the Regional Water Quality Control Board will be voting on new storm water pollution regulations soon. I want to encourage you to pass the strongest legislation you can. For years my doctor has attributed my chronic sinus problems to the fact that I surf in the Santa Monica Bay. Now I read news reports of a scientific study which supports my doctor's conclusion.

It is each of our duty to clean up the environment we live in. Please vote to require storm drain runoff to be diverted away from the ocean.

Thank you.

Steve Cocks
5411 Manitowac Dr.
Rancho Palos Verdes, CA 90275

c ✓

VOL 21

0436

R0064690

CATHY GOLDINGER
201 Ocean Avenue #1704B
Santa Monica, CA 90402

RECEIVED
96 JUN 21 PM 1:16
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 19, 1996

Mr. Michael Keston, Chair
REGIONAL WATER QUALITY CONTROL BOARD
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project discloses that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

This is simply not acceptable. I feel that people should not suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps and dumps contamimated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations.

Thank you for your consideration.

Sincerely,

Cathy Goldinger

C
VOL 21
0437
R0064691

PERIHELION, INC.

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LOS ANGELES REGION

333 Swarthmore Ave., Suite #8
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Fax: (310) 455-0326
Lic. #473668

June 20, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

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Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Scott Simril

Scott Simril

VOL 21
0438
R0064692

June 19, 1996

96 JUN 21 PM 1:19
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Mr. Keston,

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Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Gina Garcia

817 11th St. #1
Santa Monica, CA 90403

C ✓

VOL 21

0439

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park , CA 91754-2156

C 1

VOL 21

0440

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

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Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Karen Witter

96 JUN 21 PM 1:19

LOS ANGELES REGION

Karen Witter

2348 Hermits Glen
LA, CA 90046

R0064694

SHIRLEY SHAPIRO C

20 June 1996

Dear Mr. Keston,

When you vote on July 15 I urge you & other members of the Regional Water Quality Control Board to pass strong new regulations to prevent storm water pollution.

The reality of our Santa Monica Bay being unsafe to swim in is horrifying & shameful. We all know that "urban run-off" is toxic & that it ends up in our bay. There should be no excuse for not dealing with it immediately so that all of us can safely use our beaches & so that marine life can thrive.

Do not weaken the regulations.

Thank-you

Shirley Shapiro
252 Avondale Avenue
Los Angeles, CA 90049

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REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0441

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LOS ANGELES REGION

June 11, 1996

PSOMAS

Psomas and Associates
3420 Ocean Park Boulevard
Santa Monica, California 90405
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Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a resident of the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the affected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Jacob Lipa

cc: Governor Pete Wilson
Mayor Richard Riordan

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0442

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QUALITY CONTROL BOARD
LOS ANGELES REGION

June 14, 1996

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Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Tony Custodio

cc: Governor Pete Wilson
Mayor Richard Riordan

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R0064697

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LOS ANGELES REGION

June 11, 1996

PSOMAS

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Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

John Alajov

John Alajov

cc: Governor Pete Wilson
Mayor Richard Riordan

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LOS ANGELES REGION

June 11, 1996

**PSOMAS**

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Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Mary Nastronero

cc: Governor Pete Wilson
Mayor Richard Riordan

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WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 14, 1996

PSOMAS

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310/450-1217

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Mike Kremer

cc: Governor Pete Wilson
Mayor Richard Riordan

Engineers
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Los Angeles
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VOL 21
0446
R0064700

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QUALITY CONTROL BOARD
LOS ANGELES REGION

June 11, 1996

PSOMAS

Psomas and Associates
3420 Ocean Park Boulevard
Santa Monica, California 90405
310/450-1217

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Haydee Lefont

Haydee Lefont

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

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Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Susan Pascal

Susan Pascal

cc: Governor Pete Wilson
Mayor Richard Riordan

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QUALITY CONTROL BOARD
LOS ANGELES REGION

June 11, 1996

**PSOMAS**

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3420 Ocean Park Boulevard
Santa Monica, California 90405
310/450-1217

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

John Chiappe

cc Governor Pete Wilson
Mayor Richard Riordan

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QUALITY CONTROL BOARD
LOS ANGELES REGION

June 11, 1996

PSOMAS

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3420 Ocean Park Boulevard
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Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Henry Aldredge

cc: Governor Pete Wilson
Mayor Richard Riordan

Engineers
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Costa Mesa
Los Angeles
Riverside
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VOL 21 0450

R0064704

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June 14, 1996

Norman and Associates
3420 Ocean Park Boulevard
Santa Monica, California 90405
310 450 1212

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Phil Riordan

cc Governor Pete Wilson
Mayor Richard Riordan

Engineers
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LOS ANGELES REGION

June 11, 1996

**PSOMAS**

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3420 Ocean Park Boulevard
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Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Jose Gama

cc: Governor Pete Wilson
Mayor Richard Riordan

Engineers
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 11, 1996

**PSOMAS**

Psomas and Associates
3420 Ocean Park Boulevard
Santa Monica, California 90405
310/450-1217

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Ida Shusterman

cc: Governor Pete Wilson
Mayor Richard Riordan

Engineers
Surveyors
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Costa Mesa
Los Angeles
Riverside
Sacramento
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Portland, OR

C/ VOL 21 0453

R0064707

96 JUN 21 PM 1:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 14, 1996

PSOMAS

Psomas and Associates
3420 Ocean Park Boulevard
Santa Monica, California 90405
310/450-1217

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Tony Saade

cc: Governor Pete Wilson
Mayor Richard Riordan

Engineers
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Costa Mesa
Los Angeles
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C/ VOL 21 0454

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QUALITY CONTROL BOARD
LOS ANGELES REGION

**PSOMAS**

Psomas and Associates
3420 Ocean Park Boulevard
Santa Monica, California 90405
310/450-1217

June 14, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Richard Dwelle

Richard Dwelle

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Terry Reutter

Terry Reutter

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0456

R0064710

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VOL 21

**PSOMAS**

Psomas and Associates
3420 Ocean Park Boulevard
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310/450-1217

June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Charles Geiger

cc: Governor Pete Wilson
Mayor Richard Riordan

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**PSOMAS**

Psomas and Associates
3420 Ocean Park Boulevard
Santa Monica, California 90405
310/450-1217

June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Thank you for your consideration.

Sincerely,

Matthew Rowe

cc: Governor Pete Wilson
Mayor Richard Riordan

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3420 Ocean Park Boulevard
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June 14, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Tom Baine

Tom Baine

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

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Thank you for your consideration.

Sincerely,

Ross Barker

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

Michael Keston, Chair and
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California Regional Water Quality Control Board
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101 Centre Plaza Drive
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Thank you for your consideration.

Sincerely,

Ronald Vinje

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

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Los Angeles Region
101 Centre Plaza Drive
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Thank you for your consideration.

Sincerely,

Roy Higa

cc: Governor Pete Wilson
Mayor Richard Riordan

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Michael Keston, Chair and
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California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
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Thank you for your consideration.

Sincerely,

Joel Miller

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

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Members
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Los Angeles Region
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Thank you for your consideration.

Sincerely,

Peggy O'Donnel

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
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Thank you for your consideration.

Sincerely,

Matthew Caraway

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

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Los Angeles Region
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Thank you for your consideration.

Sincerely,

Romeo Jaramillo

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

Michael Keston, Chair and
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Los Angeles Region
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Thank you for your consideration.

Sincerely,

Harumi Noon

cc: Governor Pete Wilson
Mayor Richard Riordan

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**PSOMAS**

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3420 Ocean Park Boulevard
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June 11, 1996

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Los Angeles Region
101 Centre Plaza Drive
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Thank you for your consideration.

Sincerely,

Kim Stratton

Kim Stratton

cc: Governor Pete Wilson
Mayor Richard Riordan

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0469

**PSOMAS**

Psomas and Associates
3420 Ocean Park Boulevard
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June 14, 1996

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Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Wayne Smith

cc Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

William C. Ting

Bill Ting

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

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Thank you for your consideration.

Sincerely,

Robert Wheeler

cc: Governor Pete Wilson
Mayor Richard Riordan

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Thank you for your consideration.

Sincerely,

Dalin Webster

Dalin Webster

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

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Thank you for your consideration.

Sincerely,

Faryda Lakha

Faryda Lakha

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 14, 1996

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Thank you for your consideration.

Sincerely,

Sharon Kaplan

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

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Thank you for your consideration.

Sincerely,

Jennifer Kurlak

Jennifer Kurlak

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

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Michael Keston, Chair and
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Thank you for your consideration.

Sincerely,

Luis Aguilar

cc Governor Pete Wilson
Mayor Richard Riordan

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Thank you for your consideration.

Sincerely,

Pieter de Monchy

cc: Governor Pete Wilson
Mayor Richard Riordan

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Sacramento
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VOL 21 0477

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LOS ANGELES REGION

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3420 Ocean Park Boulevard
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June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a resident of the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem and there is obviously strong scientific basis to support such measures. I am pleased that the business community was included in the negotiations-as were representatives of all the affected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Jason Fukumitsu

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0478

R0064732

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LOS ANGELES REGION

**PSOMAS**

Psomas and Associates
3420 Ocean Park Boulevard
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310/450-1217

June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

William Nailling

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0479

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STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

**PSOMAS**

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June 11, 1996

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Members
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Los Angeles Region
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Thank you for your consideration.

Sincerely,

William Brown

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0480

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June 11, 1996

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Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Douglas Howard

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0481

R0064735

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LOS ANGELES REGION

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June 14, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Steve Gregerson

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0482

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LOS ANGELES REGION

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310/450-1217

June 14, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Robert Olson

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

David Holguin

cc: Governor Pete Wilson
Mayor Richard Riordan

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LOS ANGELES REGION

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June 14, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Pascal Apotheloz

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

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Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Gurli Koch

Gurli Koch

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Thank you for your consideration.

Sincerely,

Frederick Mueller

cc: Governor Pete Wilson
Mayor Richard Riordan

Engineers
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Costa Mesa
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LOS ANGELES REGION

June 11, 1996

**PSOMAS**

Psomas and Associates
3420 Ocean Park Boulevard
Santa Monica, California 90405
310/450-1217

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Los Angeles Region
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Thank you for your consideration.

Sincerely,

Cindy Morales

Cindy Morales

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

Michael Keston, Chair and
Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
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Thank you for your consideration.

Sincerely,

Gilbert Galdo

cc: Governor Pete Wilson
Mayor Richard Riordan

Engineers
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LOS ANGELES REGION

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June 14, 1996

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Members
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Los Angeles Region
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Thank you for your consideration.

Sincerely,

Paul Thompson

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0490

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LOS ANGELES REGION

**PSOMAS**

Psomas and Associates
3420 Ocean Park Boulevard
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Thank you for your consideration.

Sincerely,

Robert Sherman

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0491

R0064745

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REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 11, 1996

PSOMAS

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Santa Monica, California 90405
310/450-1217

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Thank you for your consideration.

Sincerely,

Blake Murillo

Blake Murillo

cc: Governor Pete Wilson
Mayor Richard Riordan

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June 11, 1996

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Thank you for your consideration.

Sincerely,

Gina Brekke

Gina Brekke

cc: Governor Pete Wilson
Mayor Richard Riordan

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LOS ANGELES REGION

PSOMAS

Psomas and Associates
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June 14, 1996

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Thank you for your consideration.

Sincerely,

Sandra Torres

cc: Governor Pete Wilson
Mayor Richard Riordan

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VOL 21 0494

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LOS ANGELES REGION

PSOMAS

Psomas and Associates
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June 14, 1996

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Thank you for your consideration.

Sincerely,

Rose Castro

cc: Governor Pete Wilson
Mayor Richard Riordan

Engineers
Surveyors
Planners

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Los Angeles
Riverside
Sacramento
Santa Monica
Portland, OR

R0064749

VOL 21 0495

Cynthia Harrell-Horn

No address attached

June 19, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Thank you for your consideration.

Sincerely,

C Harrell-H

Cindy Harrell-Horn

c: Governor Pete Wilson
Mayor Richard Riordan

c/

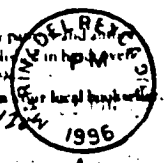
VOL 21

0496

No Return Address

C ✓

Casting the Featherman's Fate, oil 35" x 27", by [illegible] and [illegible] Duncan Regehr. From The Dragon's Eye publishing in hardcover by Journey Editions. Available September, 199[illegible]. Look for more Journey Editions books from your local bookseller.





MARINA DEL REY CA 1996

6/2[illegible]

20

Elizabeth,

I ~~[illegible]~~ a surfer getting infection in the ocean. Please adopt the proposed storm water permit

We need a cleaner ocean.

Thanks

A surfer,

Richard Tuggle

Elizabeth Rogers
Calif. Water Quality Control
Los Angeles Region
101 Centre Plaza Drive
Monterey Park
California 91754-2156

Rec June 24

JOURNEY EDITIONS
Published by Charles E.

C

VOL 21

0497

R0064751

Rec. June 24 C

Dear Mr. Keston,

I'm writing to urge you & the other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

Sincerely,
Barbara Anshen

Barbara Anshen
10511 Missouri Ave.
LA, CA 90025-5941

R0064752

BRET R. CARTER
1223 Wilshire Blvd., #861
Santa Monica, CA 90403
(310) 572-5762

RECEIVED
96 JUN 24 PM 1:19
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Re: Support for Strong New Storm Water Pollution Regulations

Dear Mr. Keston:

This is to urge you and the other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15, 1996. A recent study by USC and the Santa Monica Bay Restoration Project proves that if people swim in areas where storm drains empty into the Bay, they are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea, nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That is simply not acceptable. I believe no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life and leaves our beaches looking like trash dumps. Worse yet, the run off sends material into the ports and marina which magnify the environmental and safety hazards.

Do not give in to pressure to weaken the regulations. We are counting on you to do the <u>right thing</u>!

Very truly yours,

BRET R. CARTER

c:\bret\corres\keston.ltr

VOL 21
0499
R0064753

June 21, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea, and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

It is so important that we stop abusing the environment for the sake of corporate financial gain (i.e. Chevron dumping toxic waste into the Bay with minimal fines). Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Shelley Clark

8402 Barnsley Ave.
LA, CA 90045

QUALITY CONTROL BOARD
LOS ANGELES REGION
96 JUN 24 PM 1:19
RECEIVED

C-

VOL 21

0500

# Write a letter!

Your letter to the Regional Water Quality Control Board could help persuade the Board to stop the flow of pollution from storm drains into the Bay. Please feel free to modify this sample letter, but please send it soon – the Board will vote July 15 at the L.A. County Supervisors' Hearing Room.

RECEIVED
2 JUL 24 PM 1:20
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

**If you'd like to attend the July 15 hearing to show your support of a clean and healthy Bay, please contact Heal the Bay at 1-800-HEALBAY for the location and directions.**

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Rebecca Schulman

Rebecca Schulman
Apt 101
9940 Grand View Blvd
Los Angeles CA 90066-4536

**Send your letter to:**

**Michael Keston, Chair**
**Regional Water Quality Control Board**
**101 Centre Plaza Drive**
**Monterey Park , CA 91754-2156**

Heal The Bay
I am using consent letter to respond.

**Over →**

R0064755

VOL 21
0501

June 21, 1996

RECEIVED
96 JUN 24 PM 1:24
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Re: Santa Monica Bay

Dear Mr. Keston:

I am writing you to tell you and the other powers that be, to pass new strong storm drain pollution regulations when you vote on July 15.

Urban runoff is one of the largest sources of pollution in the Santa Monica Bay. Government should do all it can to reduce urban runoff and keep the Bay clean.

Don't cave in to special interests, do the right thing and keep Santa Monica Bay clean and safe to swim in.

Thanking you in advance for your efforts to keep the bay clean.

Brube Dembo
9595 Wilshire Boulevard
Beverly Hills, CA 90212

C VOL 21 0502

R0064756

June 19, 1996

Dear Mr. Keeton

Please pass new stormwater pollution prevention regulations when it votes on July 15th.

What choice do we have as human beings – if our quality of life is threatened much more, nothing will matter.

Thank you for your time.

Sincerely,
Lynn Leatart

No Return Address

RECEIVED
96 JUN 24 PM 1:27
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0503
R0064757

1631 South Barry Avenue, #3,
Los Angeles, CA 90025
June 21, 1996

96 JUN 24 PM 1:27
LOS ANGELES REGION

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm pollution prevention regulations when it votes on July 15, 1996.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illness. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations.

Thank you for your consideration.

Sincerely,

Linda M. Kaplan

Linda M. Kaplan

LMK

VOL 21 0504

R0064758

VOL 21

0505

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Lisa Crossley
and PATRICK M DOBBINS

cc: Governor Pete Wilson
Mayor Richard Riordan

594 S. Seaward
Ventura, CA 93003

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
96 JUN 24 PM 1:30

6/20/96

Dear Mr. Keston,

In July 15 please save our beloved ocean! Don't let us be victims anymore! Please pass strong storm water pollution prevention measures when it comes time to vote. As an avid surfer and ocean lover, too many times I have seen the devastating effects that storm runoff can have. A friend of mine contracted hepatitis after repeated surfing at Will Rogers State Beach. We, as a community, have made great strides in improving our water quality over the last decade - let's continue to do so. More than any other ecosystem, the ocean is our bellweather of planetary health. If we screw it up - were all dead. - period.

Consider that.

Sincerely.

Greg Schell
1274 N. Crescent Hts. #11
LA, CA 90046

RECEIVED
96 JUN 24 PM 1:30
CA. REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0506

R0064760

June 21, 1996

Dear Mr. Keston,

This letter on behalf of my wife, myself and the concerned citizens of Santa Monica, strongly urge you and the members of the Regional Water Quality Control Board to put through new legislation to prevent storm water pollution.

I understand that recent studies show that swimming in areas where storm drains empty into Santa Monica Bay a swimmer has more than a fifty percent chance of getting seriously ill. Speaking for myself, I have reliquished the pleasure of ocean swimming because I don't like the odds of protracting diarrhea, fever, nausea or something more serious. Our beaches are meant for people to use and enjoy in safety; not to be used as trash dumps filled with contaminated material. Not only is that poisonus material harmful to we humans, but it also fouls marine life and scews up the eco-system.

Finally, Mr. Keston, I appeal to you to be of firm resolve and not dilute the current regulations.

Sincerely,

Michael R. David

Michael R. David
1508A Harvard Street
Santa Monica, 90404

RECEIVED
96 JUN 24 PM 1:35
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
05077
R0064761

*DAVID MISCH*
*429 18th ST.*
*SANTA MONICA, CA 90402-2429*
*(310) 576-7727*

Duplicates.

June 21, 1996

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Par, CA 91754-2156

Dear Mr. Coe:

I wish to be counted among those who are urging you to adopt the proposed storm water permit. I believe that citizens not only don't mind spending money on such measures, but consider them vital to our civic as well as environmental health.

Please vote to adopt the permit on July 15.

Sincerely —

David Misch

96 JUN 24 PM 1:34
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0508

R0064762

*DAVID MISCH*
*429 18th ST.*
*SANTA MONICA, CA 90402-2429*
*(310) 576-7727*

June 21, 1996

John Slezak
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Par, CA 91754-2156

Dear Mr. Slezak:

I wish to be counted among those who are urging you to adopt the proposed storm water permit. I believe that citizens not only don't mind spending money on such measures, but consider them vital to our civic as well as environmental health.

Please vote to adopt the permit on July 15.

Sincerely —

David Misch

RECEIVED
96 JUN 24 PM 1:30
LOS ANGELES REGION

VOL 21 0509

*DAVID MISCH*
*429 18th ST.*
*SANTA MONICA, CA 90402-2429*
*(310) 576-7727*

June 21, 1996

Charles Vernon
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Par, CA 91754-2156

Dear Mr. Vernon:

I wish to be counted among those who are urging you to adopt the proposed storm water permit. I believe that citizens not only don't mind spending money on such measures, but consider them vital to our civic as well as environmental health.

Please vote to adopt the permit on July 15.

Sincerely —

David Misch

96 JUN 24 PM 1:35
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0510

R0064764

*DAVID MISCH*
*429 18th ST.*
*SANTA MONICA, CA 90402-2429*
*(310) 576-7727*

June 21, 1996

Elizabeth Rogers
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Par, CA 91754-2156

Dear Dr. Rogers:

I wish to be counted among those who are urging you to adopt the proposed storm water permit. I believe that citizens not only don't mind spending money on such measures, but consider them vital to our civic as well as environmental health.

Please vote to adopt the permit on July 15.

Sincerely —

David Misch

96 JUN 24 PM 1:35

R0064765

DAVID MISCH
429 18th ST.
SANTA MONICA, CA 90402-2429
(310) 576-7727

QUALITY CONTROL BOARD
LOS ANGELES REGION

June 21, 1996

Charlotte Craven
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Par, CA 91754-2156

Dear Mr. Craven:

I wish to be counted among those who are urging you to adopt the proposed storm water permit. I believe that citizens not only don't mind spending money on such measures, but consider them vital to our civic as well as environmental health.

Please vote to adopt the permit on July 15.

Sincerely —

David Misch

EX VOL 21 0512

96 JUN 24 PM 1:43

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Cynthia & Howard Riordan

cc: Governor Pete Wilson
Mayor Richard Riordan

640 Ocampo Dr.
Pacific Palisades, CA 90272

VOL 21 0513

R0064767

July 9, 1996

96 JUL 24 PM 1:43

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Carol Ann Blake
Paramount Pictures
5555 Melrose Ave.
Hollywood, CA 90038-3197

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0514

RECEIVED
96 JUN 24 PM 1:43
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 21, 1996

Mr Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I have two sons and five grandsons who spend a lot of time at the beach in Santa Monica. We are all members of the Bel Air Bay Club. The boys are in the water a lot, and it worries me. As you must know, a person is 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea or other illnesses if he/she swims in Santa Monica Bay than if he/she doesn't.

How different from when I was a child. We didn't have to worry about illnesses from the water then. We are not (yet) a third world country. Let's keep out coastal waters clean enough to swim in. Please don't weaken any regulations. Work to strengthen them. Thank you.

Best regards,

Ann Alper

1043 Maroney Lane.
Pacific Palisades, CA
90272

96 JUN 24 PM 1:43
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0515

RECEIVED
96 JUN 24 PM 1:43
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Dear Mr. Keston,

Now that the scientific evidence is in, it's time to take swift and effective action. I urge you and the other members of the Regional Water Quality Control Board to pass stringent new storm water pollution prevention regulations when you vote on July 15.

Living and playing near and in the ocean was a big part of my childhood. As a new father, I feel it's vitally important to leave a healthy and vital ocean as a legacy to the next generation. If you don't, who will? Certainly not private industry. The bottom line is this: children should not have to risk illness of any sort in order to play and swim on our coastline.

I urge you to adopt strict measures greatly limiting urban runoff, and to resist the pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Brad Gann
Studio City

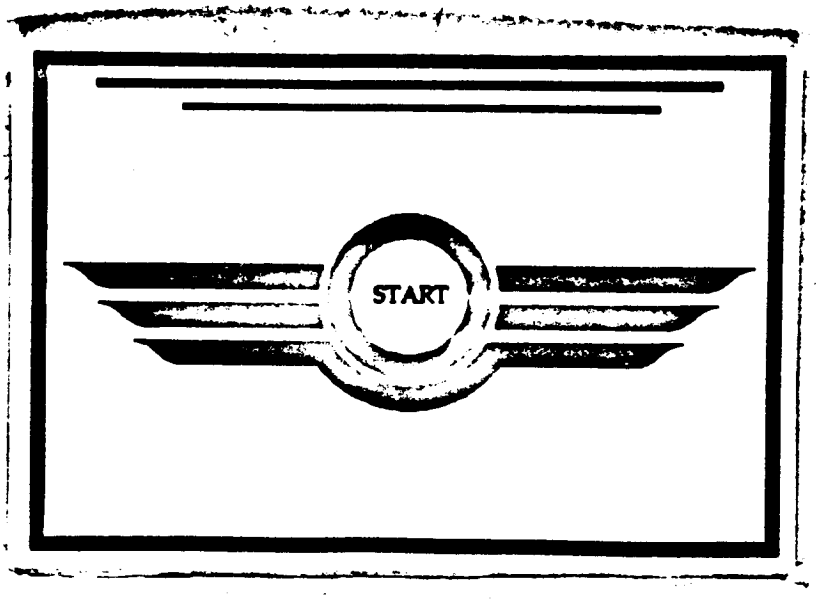
LAW OFFICES OF
NORMAN A. LEWIN
3280 WILSHIRE BOULEVARD
SUITE 1730
LOS ANGELES, CALIFORNIA 90010

VOL 21
0516
R0064770

Vol 20

21

START



VOL 21

0517 F

R0064771

VOL 21

# Citizen Copies

June 25 - July 5

~~Item~~ 3
Binder

0518

R0064772

C ✓

VOL 21

Received June 25

Mr. & Mrs. James L. Denison
6931 E. 11th St.
Long Beach CA 90815

LONG BEACH CA
PM
24 JUN
1996

C

Teach Respect for the Earth and All Living Creatures

Michael Keston, chair
Regional Water Quality Control Board

101 Centre Plaza Drive
Monterey Park, CA 91754-2156

0519

James L. Denison Received June 25

June 24, 1996.

Dear Mr. Keston

We are among the millions of Californians who enjoy using our beaches -- that's why we live here. And we are very concerned about the flow of pollution from storm drains into our bays & beaches.

We urge you and other members of the Regional Water Quality Control Board to pass strong, new storm water pollution prevention regulations when you vote on July 15.

No one should suffer a greater chance of getting sick just because they want to swim in the bay. Every beach should be safe for swimming.

Urban run-off is also toxic to our marine life & leaves beaches looking like contaminated trash dumps. Please don't give in to pressure to weaken the regulations.

Thank you.

Sincerely,

Mr. & Mrs. J. L. Denison

JUN 25 AM 11:15 ANGELES

VOL 21

0520

R0064774

C

Rec June 25

VOL 21

OUR NATIONAL PARKS ARE NOT FOR SALE! 6/23/96

Congress has targeted our National Parks and other public lands for sale to commercial interests. NRDC is mobilizing millions of Americans to halt this raid on our natural heritage.

Dear Mr Keston & Boards:

It's scary that I have to pressure you to pass a strong storm water pollution ban when it's been scientifically shown it's hurting the bay environment & making people sick. Water should be safe for boating & swimming. So make it so!

Sincerely,

Barbara Kerbel PhD

Ms Barbara Goldstein
11337 Nebraska Ave Apt 106
Los Angeles CA 90025-4280

COUNCIL

Michael Keston, Chair
Regional $H_2O$ Qual Control Board
101 Centre Plaza Dr.
Monterey Park, CA
91754-2156

Recycled paper

0521

R0064775

Mary Ellen Clark
5429 Selmaraine Dr.
Culver City, CA 90230
June 24 1996

RECEIVED
96 JUN 25 PM 12:22
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr Keston,

What is the use of having beautiful beaches if the young people can't go in the water. If that water is unhealthy, fences should be built along the bike path with fancy piers built out into the water a little way, so I can take my grandchildren out to at least look at the waves, without the danger of them going in the water.

The ocean was source of great fun and education to my three children growing up in the Seventies. They used to go to "Toes Beach" It is the section south of the La Ballona Creek. When they were littles, we could look for crabs and other sea life among the rocks

VOL 21

05222

R0064776

lining the creek. If we crossed the stone bridge we could watch the sailboats in the adjacent channel. Now, I think of that whole area as blighted, and the people who go there as risk takers.

We have to drive to Leo Carrillo before I feel the water is clean enough to go into. Even that is probably dangerous after a storm as more and more building is going on in the Malibu area.

Each year I help the school children clean up the La Ballona drainage channel. I see the debris coming out of the visible drainage pipes.

How many fines were handed out this year for dumping and pollution in the Culver City area? If none, it's because no one is in charge of patrolling and citing violators.

VOL 21 0523

R0064777

3.

a while, until people stopped polluting. Fines could finance a lot of clean up projects at the beach. Like the kids, especially middle school age, to go out in teams and pick up the trash. Sift the sand with machinery, especially area close to the boardwalk and volleyball courts. A friend of mine was seriously injured while playing volleyball so he can't walk for a while. Some one broke a bottle and threw it in the sand.

Glass bottles should be prohibited in beach areas.

I have heard that the water is so bad that $\frac{1}{3}$ to $\frac{1}{2}$ of people who swim near a storm drain will get sick.

The industrial coast from Culver City to Redondo and San Pedro on South is even worse

VOL 21 0524

R0064778

Santa Monica
People get sick from the bottom fish that eat the pollated foods. "Crabbing" is a thing of the past.

Urban runoff is not only bad for the beaches but we need the water. It needs to be channelled into low spots in the county where it can sink into the ground water and leave its impurities behind in the sand and clay. Someday we may be smart enough to recycle that soil and extract the mercury and lead. But shunting it out to the ocean every year is poisoning our local marine life.

The regulations should be increased not relaxed. Please do the right thing for the people now, and for the next generation.

Thank you -

Mary Ellen Clark

VOL 21
0525
R0064779

6-22-96

RECEIVED
96 JUN 25 PM 12:30
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

My name is Tyler Ladinsky, and I've been surfing in the Santa Monica Bay for almost four years now. I'm writing to encourage you and other members of the Regional Water Quality Control Board to pass regulations on storm water prevention, when it is voted on July 15. I know that I personally have gotten sick from surfing Topanga, Malibu and other parts of the bay. The water quality is so bad at Surfrider Beach, in Malibu, that my parents will not let me surf surfrider. The water at Bay Street is even worse, I have heard that a couple of lifeguards that worked at Bay Street now have cancer. Some say that the cancer is not related to the water quality, but a study by USC shows that people who swim near storm drains are 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and other sicknesses. I hate to get sick, but I love to surf. I know that there are thousands like me, who will surf through this water, yet at the age of sixty will have some mysterious illness. Why should I have to risk my heath to surf in the Santa Monica Bay?

I remember one time when I was surfing Topanga, I was about to duck-dive under a wave, when I glanced up at the lip of the wave. I paused in the middle of the duck dive, and froze with disgust. The lip of the wave was completely black, from some type of oil or chemical. After I saw that lip I paddled into the beach and stood under the shower for a while.

This must stop! Nobody should walk down to the beach after traveling all the way from Ohio and see a huge sign reading beach closed from dangerous run-off or getting sick in the middle of their vacation. The pier and the Santa Monica Bay attract thousands of people, when they find out how dirty the water is, maybe they'll go to Hawaii or some other place and Los Angles will lose tourists.

Please make the runoff have some kind of limits, if their is no limits, people will get sick, sea animals will die and Los Angles may lose tourists. Thank you for taking time to read my letter.

Sincerely,

Tyler Ladinsky

Tyler Ladinsky

P.S. My whole family and many of my friends feel as I do, but I was the only one who had time to write a letter.

17420 Vereda de la Montura
Pacific Palisades, CA 90272

C ✓

VOL 21

0526

**James T. Conlon**
15530 Bowdoin Street
Pacific Palisades, CA 90272
310 454 8466

RECEIVED
96 JUN 25 PM 12:23
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 22, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

It is essential that when the Regional Water Quality Control Board meets to vote on July 15th that it pass strong storm water pollution prevention regulations. I am writing to urge you and other members of the Board to do so in the interest of the health and recreational needs of the beach going public.

The recent USC / Santa Monica Bay Restoration Project study showed that if you swim in areas where storm drains empty into the Bay, you are significantly more likely to get sick and one in 25 that swim in front of a drain will get sick. As a person who swims in Santa Monica Bay every summer, this study only confirmed what I have already experienced.

People are being subjected to this because of irresponsible and negligent behavior with respect to LA basin-wide storm drain usage. Urban runoff is also toxic to marine life and leaves trash on our beaches.

It is your responsibility, and the responsibility of the other board members, to introduce and enforce strict and adequate regulations that will control and reverse this unacceptable situation and behavior. I urge you to do so on July 15th.

Sincerely yours,

Jim Conlon

VOL 21 0527

L. A. Today CUSTOM TOURS

Elinor Oswald 14964 Camarosa Drive, Pacific Palisades, California 90272 (310) 454-5730

June 24, 1996

Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Attention: Mr. Michael Keston, Chairman

Dear Mr. Keston:

I urge you and the Regional Water Quality Control Board to pass effective storm water pollution prevention regulations on July 15.

As you know, the recent USC study shows that those who swim near storm drains that empty into the Santa Monica Bay are in strong danger of getting sick.

We must prevent this dreadful condition.

We must keep our ocean waters clean not only for our residents but for the thousands of visitors who come here to enjoy our Southern California amenities. Swimming in the ocean is high on their lists of activities to include. If they thought they were to enter polluted waters, they would stay away in droves.

We have a strong tourist industry here. Let's keep those visitors coming in!

Please prove we're civilized and vote to control the pollution.

With thanks,

Elinor Oswald

RECEIVED
96 JUN 25 PM 12:23
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0528

Madeline Farris
835 Ashland Avenue, #6
Santa Monica, CA 90405
310/392-7301

RECEIVED
96 JUN 25 PM 12:22
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 23, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15th.

A recent study by USC and the Santa Monica Bay Restoration Project shows that swimmming in areas near storm drains increases the likelihood of getting sick by almost 50%. I personally have become ill from swimming in Santa Monica Bay and have not been in the water since. Having spent all my summers at the beach as a child, it saddens me to feel I can no longer swim in the ocean for fear of becoming ill.

My concern not only extends to the human population but to the effects on marine life. As a resident of Santa Monica, a city heavily depended on tourist dollars, I am also concerned about the effect on our tax base should you fail to take strong measures to clean up the bay. It would be extremely short sighted indeed!

Please do not give in to pressure to weaken the regulations. Your future and that of your children is at stake.

Sincerely,

Madeline Farris
Concerned Citizen

C
VOL 21
0529

RECEIVED
96 JUN 25 PM 12:22
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 22, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I'm writing to urge you and other members of the Board to pass strong new storm water pollution prevention regulations on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that swimmers and surfers who frolic near storm drains that empty into our Bay are almost 50% more likely to contract colds, sore throats, fevers, diarrhea and nausea than those who swim away from storm drains. One out of every 25 swimmers gets sick!

That's unacceptable. No one should suffer a greater chance of becoming ill just because they swim in the Bay. Every beach should be safe for swimming.

Additionally, urban runoff is toxic to marine life, leaves our beaches looking like trash heaps and causes environmental and boating safety hazards in our ports and marina.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Laurie Gooch

Laurie Gooch
28721 Conejo View Drive
Agoura Hills, CA 91301

VOL 21 0530

RECEIVED
96 JUN 25 PM 12:21
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chairman
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

I'm writing to you to urge you and the other members of the Regional Water Control Board to pass strong new storm water pollution regulations when you vote on July 15.

My family and I live close to the ocean. My grandchildren and their parents and friends spend many days at the beach and in the water. We do as much as we can to keep the gutters clean because we know what ever goes into the gutters will end up in the ocean. They do not want to swim in a sewer.

We strongly support Heal The Bay and their efforts to keep Santa Monica Bay clean. But I cannot police all of Southern California. It is up to you and the members of the RWQB to issue strict regulations to control the urban runoff. With strict regulations in force violators can be punished with fines where it hurts.

Please don't give in to pressure to weaken the regulations. Thank you for your help! WE'LL SEE YOU AT THE BEACH!!

Noreen B. Taddiken
1808 Pacific avenue
Manhattan Beach, CA 90266
June 22, 1996

VOL 21 0531

Monica Loeffler
P.O. Box 2571
Malibu, CA 90265

RECEIVED
96 JUN 25 PM 12:38
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

June 21, 1996

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea and/or other illnesses. One out of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Monica Loeffler

P.S. I am an avid water enthusiast. There is no greater feeling than being out in the water, except maybe when you are out in the water and dolphins or other marine life swim by. We have a responsibility to keep our waters clean. Thank you.

VOL 21 0532

Al Weber
25123 Malibu Rd
Malibu, Ca 90265

RECEIVED June 22. 1996
96 JUN 25 PM 12:21
QUALITY CONTROL BOARD
LOS ANGELES REGION

Attn: Mr. Michael Keston, Chair
Regional Water Quality Control Board.

Dear Mr. Keston,

I am writing to urge you and other members of the Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

Studies by USC and others have proven that if you swim in areas where storm drains empty into the Bay, you are likely to get sick with colds, sore throat, fever, diarrhea etc.

No one should be subjected to these dangers by simply trying to enjoy a swim in the Bay. Every beach should be safe for swimming.

Please do not give in to pressure to weaken the regulations. Thank you.

Sincerely,

Al Weber

VOL 21
0533
R0064787

Connie Jenkins
8406 Mipiolomol Road, Malibu, Ca., 90265 phone and fax: (310) 457-7370

June 21, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN 25 PM 12:37
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Connie Jenkins

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0534

NORMAN HARRITON AND MONIQUE HARRITON
2413 RONDA VISTA DRIVE
LOS ANGELES, CALIFORNIA 90027
(213) 663-9695
Fax (213) 663-9696

RECEIVED
96 JUN 25 PM 12:37
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 22, 1996

Michael Keston, Chairman
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing to express my concern and indignation at the abject failure of the Board to recognize the crisis facing the people and the economy of Southern California. The waters of the Santa Monica Bay must be rehabilitated and made healthy for bathers. Yes, it will cost money to do it. But it will cost far more in dollars to allow the Bay to be a source of disease and illness. Tourism is a vital element in Southern California's coastal counties. Fear of coastal waters threatens tourism. Only the ignorant or foolhardy now chance the waters of Santa Monica Bay. I now must go to Zuma to find waters clean enough to swim and feel safe from disease causing pollutants.

The Board must develop a comprehensive plan for cleaning up the runoff from the area's storm drains before that runoff is allowed to enter Santa Monica Bay.

Very truly yours,

Norman Harriton

NORMAN HARRITON

196harr11.wpd

C

VOL 21

0535

6-23-96

RECEIVED
96 JUN 25 PM 12:00
QUALITY CONTROL BOARD
LOS ANGELES REGION

Charles Vernon
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Hello Charles,

Please do everything you can to help clean up Santa Monica Bay.

Just think how great it would be if all the hot and angry people at the beach were not afraid to jump in the water to cool off... maybe even enjoy themselves...We'd have a much more peaceful city.

Clean storm drains will be good for everyone in L.A.

You can make a difference.

Please Stop Storm Drain Pollution.

Thank You,

Joseph Hardin
624 Santa Clara Ave.
Venice, CA 90291

C ✓

VOL 21

0536

6-23-96

RECEIVED
96 JUN 25 PM 12:00
QUALITY CONTROL BOARD
LOS ANGELES REGION

Jack J. Coe
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Hello Jack,

Please do everything you can to help clean up Santa Monica Bay.

Just think how great it would be if all the hot and angry people at the beach were not afraid to jump in the water to cool off... maybe even enjoy themselves...We'd have a much more peaceful city.

Clean storm drains will be good for everyone in L.A.

You can make a difference.

Please Stop Storm Drain Pollution.

Thank You,

Joseph Hardin

624 Santa Clara Ave.
Venice, CA 90291

C

VOL 21

0537

R0064791

C X

VOL 21

6-23-96

Charlotte Craven
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Hello Charlotte,

Please do everything you can to help clean up Santa Monica Bay.

Just think how great it would be if all the hot and angry people at the beach were not afraid to jump in the water to cool off... maybe even enjoy themselves...We'd have a much more peaceful city.

Clean storm drains will be good for everyone in L.A.

You can make a difference.

Please Stop Storm Drain Pollution.

Thank You,

Joseph Hardin
624 Santa Clara Ave.
Venice, CA 90291

0538

R0064792

6-23-96

Clark Drane
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Hello Clark,

Please do everything you can to help clean up Santa Monica Bay.

Just think how great it would be if all the hot and angry people at the beach were not afraid to jump in the water to cool off... maybe even enjoy themselves...We'd have a much more peaceful city.

Clean storm drains will be good for everyone in L.A.

You can make a difference.

Please Stop Storm Drain Pollution.

Thank You,

Joseph Hardin
624 Santa Clara Ave.
Venice CA 90291

C x VOL 21

0539

R0064793

6-23-96

John Slezak
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Hello John,

Please do everything you can to help clean up Santa Monica Bay.

Just think how great it would be if all the hot and angry people at the beach were not afraid to jump in the water to cool off... maybe even enjoy themselves...We'd have a much more peaceful city.

Clean storm drains will be good for everyone in L.A.

You can make a difference.

Please Stop Storm Drain Pollution.

Thank You,

Joseph Hardin
624 Santa Clara Ave.
Venice, CA 90291

C x

VOL 21

0540

R0064794

C x

VOL 21

6-23-96

Michael Keston
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Hello Michael,

Please do everything you can to help clean up Santa Monica Bay.

Just think how great it would be if all the hot and angry people at the beach were not afraid to jump in the water to cool off... maybe even enjoy themselves...We'd have a much more peaceful city.

Clean storm drains will be good for everyone in L.A.

You can make a difference.

Please Stop Storm Drain Pollution.

Thank You,

Joseph Hardin
624 Santa Clara Ave.
Venice, CA 90291

0541

R0064795

6-23-96

Elizabeth Rogers
California Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Hello Elizabeth,

Please do everything you can to help clean up Santa Monica Bay.

Just think how great it would be if all the hot and angry people at the beach were not afraid to jump in the water to cool off... maybe even enjoy themselves...We'd have a much more peaceful city.

Clean storm drains will be good for everyone in L.A.

You can make a difference.

Please Stop Storm Drain Pollution.

Thank You,

Joseph Hardin

624 Santa Clara Ave.
Venice, CA. 90291

RECEIVED
96 JUN 25 PM 3:59
QUALITY CONTROL BOARD
LOS ANGELES REGION

C x

VOL 21

0542

R0064796

RECEIVED
96 JUN 25 PM 12:00
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

C

6/24/96

DEAR MR. KOSTOW,

I'M A RESIDENT OF HERMOSA BEACH AND A PARENT OF A BABY GIRL. I'M WRITING YOU FOR MY DAUGHTER AND MYSELF TO URGE YOU AND OTHER BOARD MEMBERS OF THE REGIONAL WATER QUALITY CONTROL BOARD TO PASS STRONG NEW STORM WATER POLLUTION PREVENTION [redacted] REGULATIONS WHEN IT VOTES ON JULY 15, 1996.

A RECENT STUDY BY USC AND THE SANTA MONICA BAY RESTORATION PROJECT SHOWS THAT IF YOU OR I SURFED IN AREAS WHERE STORM DRAINS EMPTY INTO THE BAY, YOU AND I ARE ALMOST 50% MORE LIKELY TO GET SICK, WITH A COLD, SORE THROAT, FEVER, DIARRHEA AND NAUSEA OR OTHER ILLNESSES. ONE OF EVERY 25 PEOPLE THAT SURFS IN FRONT OF A DRAIN WILL GET SICK!

THATS SIMPLY NOT ACCEPTABLE TO ME OR MY DAUGHTER. I FEEL NO ONE SHOULD SUFFER A GREATER CHANCE OF GETTING SICK JUST BECAUSE THEY SURF IN THE BAY. EVERY BEACH SHOULD BE SAFE FOR SWIMMING EVEN HERMOSA BEACH.

URBAN RUNOFF IS ALSO TOXIC TO THE MARINE LIFE IN THE BAY. IT LEAVES OUR BEACHES LOOKING LIKE TRASH DUMPS FOR OUR

VOL 21

0543

R0064797

EVENTUALLY TOURISM INDUSTRY. IT ALSO DUMPS CONTAMINATED MATERIAL IN THE BAYS AND MARINAS THAT POSES BOTH ENVIRONMENTAL AND BOATING SAFETY HAZARDS.

PLEASE THINK OF THE YOUNG PEOPLE THAT ARE GOING TO SWIM IN OUR BAY AND THE LOST ECONOMIC EFFECT OF TOURISM IF YOU GIVE INTO PRESSURE TO WEAKEN THE REGULATIONS. I HOPE YOU WILL THINK ABOUT ALL THE SPECIES FROM WHALES TO SAND CRABS THAT ARE AFFECTED BY THESE REGULATIONS. THANK YOU FOR YOUR CONSIDERATION AND TIME.

Sincerely,

RICHARD D. SUTTON AND ALEXANDRA J. SUTTON.
624 3RD ST.
HERMOSA BEACH, CA. 90254

VOL 21 0544

R0064798

C

VOL 21

RECEIVED
96 JUN 25 AM 11:59
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 24, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every twenty five people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Lori Christensen

Lori Christensen
141 South Clark Drive, #216
Los Angeles, CA 90048
(310) 246-9291 home
(310) 474-4074 work

/ljc

0545

C

VOL 21

RECEIVED
96 JUN 25 AM 11:59
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 22, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am writing to urge you and other members of the Regional Water Quality Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a storm drain will get sick.

That is simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming. Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marinas that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,
Susan Dilger
Martin Dilger

Susan and Martin Dilger
7250 Franklin Avenue, #917
Los Angeles, CA 90046

0546

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Ron Fujieharo

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

C VOL 21 0547

C VOL 21

RECEIVED
96 JUN 25 AM 11:50
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

BRIGETTE WHISNANT

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

0548

Not cited C

VOL 21

0549

June 20, 1996

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Mitchell L. Gill ?

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

R0064803

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Jaqualyn Forest

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

VOL 21
0550
R0064804

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Jessica Schulman

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

C VOL 21 0551

R0064805

Not added
C

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Susan Laval Wilson ?

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd
Suite 150
Santa Monica, CA 90405

0552

R0064806

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Patrick Rau

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Venice, CA 90405

VOL 21 0553

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Sharon Buchman

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

VOL 21 0554

Not added C

VOL 21

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Susie Hall ?

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

0555

R0064809

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Sincerely,

Tami Glen

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

R0064810

VOL 21
0556

Not added

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

0557

R0064811

RECEIVED
96 JUN 25 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Roger Gorke

cc: Governor Pete Wilson
Mayor Richard Riordan

Roger Gorke
2028 Holmby
Los Angeles, CA
90025

VOL 21 0558

R0064812

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Manfred A. Gorke Jr

M.A. Gorke Jr
43803 Victor Pl
Lancaster CA 93535

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0559

Not added

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

E-M. R 1

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

0560

R0064814

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

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and Members
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Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Suzanne M. Henkel

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

VOL 21 0561

R0064815

Not Added

VOL 21

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay

0562

Not added C

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0563

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay

R0064817

RECEIVED
96 JUN 25 AM 11:51
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0564

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Kelli J. Abraham

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

R0064818

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

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and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
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Sincerely,

Megan Denny

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

C
VOL 21
0565
R0064819

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
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Sincerely,

Mark Berman MD
1557 OCEAN AVE #200
SANTA MONICA, CA 90401

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0566

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

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and Members
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Los Angeles Region
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Monterey Park, CA 91754-2156

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Sincerely,

Melanie Behrens
417 6th St, Manhattan Beach, CA 90266

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0567

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0568

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Saralee Berman

SARALEE BERMAN
603 OCEAN AVE
SANTA MONICA, CALIF. 90402

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064822

RECEIVED
96 JUN 25 AM 11:51
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0569

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Deborah L Deming

11620 CLARKSON RD.
L.A. CA 90064

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 20, 1996

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Los Angeles Region
101 Centre Plaza Drive
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Sincerely,

April Roncar

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

0570

Not added

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 20, 1996

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Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Carolyn [illegible] – Manhattan Beach?

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay

0571

R0064825

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0572

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Steven Haag-Baker

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park ~~Blvd.~~
~~Ste~~ Suite 150
Santa Monica, CA 9040

R0064826

RECEIVED
96 JUN 25 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0573

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Roger Fiehman

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd
Suite 150
Santa Monica, CA 90405

R0064827

VOL 21

RECEIVED
96 JUN 25 AM 11:52
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
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Sincerely,

Martin Litton

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

0574

Not dated

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
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Sincerely,

Robert Zick ?

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay

0575

Not added
6

VOL 21

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
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California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay

0576

R0064830

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

James M. McCormick
POB 157
PACIFIC PALISADES CA
90272

cc: Governor Pete Wilson
Mayor Richard Riordan

C VOL 21 0577

Noted
C

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Tony M. ?

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay

0578

R0064832

C

VOL 21

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Dennis Zane

0579

R0064833

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd
Suite 150
Santa Monica, CA 90405

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

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and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Lindsay Ford

Environmental Media Association

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

VOL 21 0580

R0064834

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0581

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Shelly Gark

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

R0064835

Not added C

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0582

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay

R0064836

VOL 21

0583

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

Laurie Kowlan

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

R0064837

Not added

VOL 21

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay

0584

R0064838

RECEIVED
96 JUN 25 AM 11:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Jon Beck

cc: Governor Pete Wilson
Mayor Richard Riordan

Heal the Bay
2701 Ocean Park Blvd.
Suite 150
Santa Monica, CA 90405

6 VOL 21

0585

R0064839

VOL 21

0586

24 June 1996

Mr. Charles Vernon
Calif. Regional Water Quality Control Board

Dear Mr. Vernon,

I am writing to urge you to adopt the proposed storm water permit. As a former user of the Santa Monica Bay area, I can tell you that such action would influence me and many of my family and friends from the midwest and east coast to come to visit and spend time on the Santa Monica beaches once again.

Adopting the proposed storm water permit will go a long way to improving the quality of the bay waters that are used by so many people each year.

Sincerely yours,

Rocco L. Motto, MD
440 South Bristol Ave.
Los Angeles, CA 90049

R0064840

JC

VOL 21

Miss Irene Joseph
1115 S Elm Dr Apt 213
Los Angeles CA 90035

JC

Rec June 26

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Irene Joseph

ntrol Bd

156

0587

R0064841

/c

VOL 21

RECEIVED
96 JUN 26 PM 12:52
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15th.

I used to swim in Santa Monica Bay, but gave it up after noticing that I didn't feel well after a few days. I miss having the freedom to utilize a public ocean (unless I'm in a designated area!)

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That is simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps and dumps contaminated materials in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Cheryl Gundred
2647-6th St #11
Santa Monica, CA 90405

0588

R0064842

/c

James C. Birch
380 Mesa Road
Santa Monica, CA 90402

RECEIVED
96 JUN 26 PM 12:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 24, 1996

Dear Mr. Keston,

I'm writing you to urge you and the other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

As a resident of the Santa Monica Canyon I have first hand experience with the detrimental health affects of swimming near the storm drain that flows into Will Rogers State Beach. Since learning of the USC study that documents the 50% probability of getting a cold, sore throat, or other illness I have not been swimming at my neighborhood beach in 3 years.

When I did go swimming at State Beach during the summer, I would regularly feel sick and nauseous. Since I've stopped swimming, I no longer have these "summer colds". I live at the beach and love to swim in the ocean, yet due to the proximity of the storm drain I can no longer safely do that.

I urge you to enact the strongest possible regulations to curb runoff that contains toxins damaging to humans, marine life and leaves the shore line looking like a garbage dump. Please help make it possible to swim safely at beaches like mine in the Santa Monica Bay.

Sincerely,

James C. Birch

VOL 21
0589
R0064843

June 24, 1996

1c

Charlotte Craven
Calif Water Quality Control Board
LA Region
101 Centre Plaza Dr
Monterey Park Ca 91754-2156

96 JUN 26 PM 12:48
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Ms. Craven

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money—money that many of the affected cities claim they either don not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit I would ask you to consider the following questions:

How can we afford not to protect the health of the fifty million people who will swim in the Bay this summer?

How can we afford not to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we turn away from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done—now it's up to you. Please vote to adopt the permit on July 15.

Sincerely,

Diane Kahan

KAHAN
331 S. ANITA AVENUE
LOS ANGELES, CA. 90049

VOL 21 0590

June 24, 1996

Jack L Cole
Ca Reg Water Qual. Control Bd
LA Region
101 Centre Plaza Dr
Monterey Park Ca 91754-2156

Dear Mr Cole.

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

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Sincerely,

Diane Kahan

KAHAN
331 S. ANITA AVENUE
LOS ANGELES, CA. 90049

RECEIVED
96 JUN 26 AM 11:58
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0591

R0064845

June 24, 1996

1c

John Hetzak
Ca Reg Water Quality Control Bd
La Region
101 Centre Plaza Dr
Monterey Park Ca 91754-2156

96 JUN 26 PM 12:48

REGION LOS ANGELES REGION

Dear Mr Hetzak,

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money—money that many of the affected cities claim they either don not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit I would ask you to consider the following questions:

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Sincerely,

Diane Kahan

KAHAN
221 S. ANITA AVENUE
LOS ANGELES, CA 90049

VOL 21

0592

June 24, 1996

Clark Drane
Ca Reg Water Qual Control Bd
LA Region
101 Centre Plaza Dr
Monterey Park Ca 91754-2156

Dear Mr Drane,

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money—money that many of the affected cities claim they either don not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit I would ask you to consider the following questions:

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Sincerely,

Diane Kahan

KAHAN
331 S. ANITA AVENUE
LOS ANGELES, CA. 90049

RECEIVED
96 JUN 26 PM 12:38
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0593

R0064847

June 24, 1996

1/C

Mr Charles Vernon
Calif Reg Water Quality Control Bd
LA Region
101 Centre Plaza Dr
Monterey Park Ca 91754-2156

Dear Mr. Vernon

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

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Sincerely,

Diane Kahan

KAHAN
331 S. ANITA AVENUE
LOS ANGELES, CA. 90049

RECEIVED
96 JUN 26 AM 11:59
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0594

R0064848

June 24, 1996

1C

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Par, CA 91754-2156

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money—money that many of the affected cities claim they either don not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit I would ask you to consider the following questions:

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Sincerely,

Diane Kahan

KAHAN
331 S. ANITA AVENUE
LOS ANGELES, CA. 90049

RECEIVED
96 JUN 26 AM 11:51
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0595

/c

VOL 21

RECEIVED
96 JUN 26 PM 12:36
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 26,1996

Dear Mr Sugnet

I have volunteered for our local "Gutter Patrol" to remind people that what they trash on to the street goes in to the ocean. The reaction I found from all I came into contact with has been universal support. I feel that close to the surface of this enthusiasm is a suspicion that government agencies will once more jerk us around, in order to meet the needs of interests which find environmental responsibility too expensive.

I am sure that you have detailed technical points of view regarding storm drain permit requirements: my purpose here is to remind you of the fury that California citizens have expressed in recent history over license for pollution.

I suggest that the major influence over your decision be your sworn trust to protect the health and welfare of the people.

Sincerely,

TR McLean

T R MC LEAN
1029 1/2 19TH ST
SANTA MONICA CA 90403

0596

R0064850

VOL 21

0597

RECEIVED
96 JUN 26 AM 11:59
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 26,1996

Dear Mr Evans,

I have volunteered for our local "Gutter Patrol" to remind people that what they trash on to the street goes in to the ocean. The reaction I found from all I came into contact with has been universal support. I feel that close to the surface of this enthusiasm is a suspicion that government agencies will once more jerk us around, in order to meet the needs of interests which find environmental responsibility too expensive.

I am sure that you have detailed technical points of view regarding storm drain permit requirements: my purpose here is to remind you of the fury that California citizens have expressed in recent history over license for pollution.

I suggest that the major influence over your decision be your sworn trust to protect the health and welfare of the people.

Sincerely,

TR McLean

T R MC LEAN
1029 1/2 19TH ST
SANTA MONICA CA 90403

R0064851

Jeffery Comstock
727 Westbourne Dr., Apt. 113
W. Hollywood, CA 90069
310/659-4775 (Home)
818/386-6605, Ext. 18 (Office)

June 25, 1996

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Coe:

Please vote to adopt the proposed storm water permit on July 15.

My personal interests as an occasional beach-goer, as well as my future environmental concerns for Los Angeles and its citizens, are the reasons I am writing to you.

Please vote with your conscience.

Yours truly,

Jeffery Comstock

RECEIVED
96 JUN 26 AM 11:56
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

VOL 21
0598

Jeffery Comstock
727 Westbourne Dr., Apt. 113
W. Hollywood, CA 90069
310/659-4775 (Home)
818/386-6605, Ext. 18 (Office)

June 25, 1996

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

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Please vote with your conscience.

Yours truly,

-Jeffery Comstock

RECEIVED
96 JUN 26 AM 11:51
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0599

R0064853

1C

VOL 21

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

June 21, 1996

RECEIVED
96 JUN 26 AM 11:50
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea and/or other illnesses. One out of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Chuck Kloeris
Third Point, Malibu

P.S. I am an avid surfer and there is no greater feeling than being out in the water, except maybe when you are out in the water and dolphins or other marine life swim by. We have a responsibility to keep our waters clean. Thank you.

0600

/C

VOL 21

RECEIVED
96 JUN 26 AM 11:53
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15th.

I have been a swimmer in the Santa Monica Bay for many years and I have had head colds a few times after swimming. We have to keep all our water fresh and the ocean pure.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That is simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps and dumps contaminated materials in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Matt Hammond

1553 Tenth St.
Santa Monica, CA 90401

0601

R0064855

1C

VOL 21

RECEIVED
05 JUN 26 PM 12:
REGIONAL
QUALITY CONTROL BD
LOS ANGELES REGI.

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 90045

Dear Mr. Keston!

I'm writing to urge you & other member of the RWQCB to pass strong new measures on storm water pollution prevention regulations when you vote on July 15.

It is outrageous that our beaches are filled with filth. You should be doing everything in your power to remedy the situation.

Thank you for doing the right thing.

Sincerely,

Merak Eskigian
8028 Holy Cross Pk.
LA, CA 90045

0602

R0064856

/ c

VOL 21

RECEIVED
96 JUN 26 PM 12:48

3811 Bluff Pl. #18
San Pedro, CA 90731

To: Michael Keston, Chair

Re: Storm Water Pollution Prevention

Dear Mr. Keston,

Living where I overlook the ocean, I'm very aware of its state of cleanliness. There is a dock where fish are caught which are not fit to eat. There is an inner beach whose water ir fouled by motor oil and gas fumes. I have never known our storm drains to be cleaned from the trash which piles up. The whole area is covered by a fine dust of coke which gets washed off into the drains.

We, in San Pedro, like all beach cities, are dependent on tourists for income. That means clean water and edible fish are imperative. Please work to pass strong water polution prevention regulations.

Thank you for your attention.

Sincerely,

Goldie Otters

Goldie Otters
3811 Bluff Pl
San Pedro, CA 90731

0603

R0064857

RECEIVED
96 JUN 26 PM 12:35
REGIONAL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

No Address

June 22, 1996

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers,

This letter is from one more very concerned citizen avocating for adoption of the proposed storm water permit on July 15.

Neither you nor I would dump the sewage from our home into the gutter to save money. Civilized individuals have to create civilized societies. Polluted environments affect ecosystems, not just those using the resources for recreational purposes. Eventually we are all affected.

Please join those of us concerned about man living in harmony with the environment and vote to stop the dumping of pollutants into our home bay.

Thank you for giving this your consideration.

Sincerely,

Jeanne L. Obert
Playa del Rey Resident

VOL 21 0604

No Address Not added

RECEIVED
96 JUN 26 PM 12:39
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 22, 1996

Charlotte Craven
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Ms. Craven,

This letter is from one more very concerned citizen avocating for adoption of the proposed storm water permit on July 15.

Neither you nor I would dump the sewage from our home into the gutter to save money. Civilized indrviduals have to create civilized societies. Polluted environments affect ecosystems, not just those using the resources for recreational purposes. Eventually we are all affected.

Please join those of us concerned about man living in harmony with the environment and vote to stop the dumping of pollutants into our home bay.

Thank you for giving this your consideration.

Sincerely,

Jeanne L. Obert
Playa del Rey Resident

0605

R0064859

C

No Address Not added

RECEIVED
96 JUN 26 PM 12:37
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

June 22, 1996

John Slezak
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Slezak,

This letter is from one more very concerned citizen avocating for adoption of the proposed storm water permit on July 15.

Neither you nor I would dump the sewage from our home into the gutter to save money. Civilized individuals have to create civilized societies. Polluted environments affect ecosystems, not just those using the resources for recreational purposes. Eventually we are all affected.

Please join those of us concerned about man living in harmony with the environment and vote to stop the dumping of pollutants into our home bay.

Thank you for giving this your consideration.

Sincerely,

Jeanne L. Obert
Playa del Rey Resident

0606

R0064860

No Address C Not added

RECEIVED
96 JUN 26 PM 12:37
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 22, 1996

Clark Drane
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Drane,

This letter is from one more very concerned citizen avocating for adoption of the proposed storm water permit on July 15.

Neither you nor I would dump the sewage from our home into the gutter to save money. Civilized individuals have to create civilized societies. Polluted environments affect ecosystems, not just those using the resources for recreational purposes. Eventually we are all affected.

Please join those of us concerned about man living in harmony with the environment and vote to stop the dumping of pollutants into our home bay.

Thank you for giving this your consideration.

Sincerely,

Jeanne L. Obert
Playa del Rey Resident

VOL 21 0607

R0064861

No address

Not added

RECEIVED
96 JUN 26 PM 12:43
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 22, 1996

Charles Vernon
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Vernon,

This letter is from one more very concerned citizen avocating for adoption of the proposed storm water permit on July 15.

Neither you nor I would dump the sewage from our home into the gutter to save money. Civilized individuals have to create civilized societies. Polluted environments affect ecosystems, not just those using the resources for recreational purposes. Eventually we are all affected.

Please join those of us concerned about man living in harmony with the environment and vote to stop the dumping of pollutants into our home bay.

Thank you for giving this your consideration.

Sincerely,

Jeanne L. Obert
Playa del Rey Resident

VOL 21

0608

R0064862

No address

Not added

96 JUN 26 PM 2:42
CALIF. REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 22, 1996

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Coe,

This letter is from one more very concerned citizen avocating for adoption of the proposed storm water permit on July 15.

Neither you nor I would dump the sewage from our home into the gutter to save money. Civilized individuals have to create civilized societies. Polluted environments affect ecosystems, not just those using the resources for recreational purposes. Eventually we are all affected.

Please join those of us concerned about man living in harmony with the environment and vote to stop the dumping of poliutants into our home bay.

Thank you for giving this your consideration.

Sincerely,

Jeanne L. Obert
Playa del Rey Resident

VOL 21
0609
R0064863

VOL 21

Dear Mr. Keston, Rec. Jun 27 JC

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea ar nausea or other illnesses. One of every 25 people that sw in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Dorothy Reynolds
San Pedro CA 90731

trol Board

0610

R0064864

June 15, 19.

C

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Par, CA 91754-2156

RECEIVED
96 JUN 27 PM 1:25
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money—money that many of the affected cities claim they either don not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit I would ask you to consider the following questions:

How can we afford not to protect the health of the fifty million people who will swim in the Bay this summer?

How can we afford not to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we turn away from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done—now it's up to you. Please vote to adopt the permit on July 15.

Sincerely,

David M. Mizrahi

David M. Mizrahi
6638 Wildlife Rd.
Malibu, CA 90265

0611

R0064865

1C

VOL 21

Dear Mr. Keston,

6/24/96

We are writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15th.

A recent study by USC and Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That is simply not acceptable. We feel that no one should suffer a greater risk of getting sick just because they swim in the Bay. every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in ports and marina that poses both environmental and boating safety hazards.

Please don't give into pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Jemma & John Wildermuth
2939 16th St.
Santa Monica, CA 90405

0612

STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION
96 JUN 27 PM 1:23
RECEIVED

1C

VOL 21

M. Lisa Wallace
305 San Vicente Blvd. #.309
Santa Monica, CA 90402
fax 310-395-0277
phone 310-395-2270

RECEIVED
96 JUN 27 PM 1:22
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 24, 1996

Dear Mr. Keston,

I urge you to pass the new storm water pollution prevention regulations on July 15, 1996.

Urban run off is toxic to marine life, leaves our beaches looking like trash dumps, and puts contaminated material in the ports and marina that pose both environmental and boating safety hazards. This is in addition to the recent USC study showing that one of every 25 people who swim in front of a storm drain will get sick.

The situation of water quality in Santa Monica Bay is not acceptable. Please do not give in to pressure to weaken the regulations.

Do everything within your influence to support the passage of the regulations. This is one of the most important acts you can take as the Chair of the Regional Water Quality Control Board. I urge you to use your position of responsibility and leadership to make a lasting difference to the Santa Monica Bay watershed.

Sincerely,

M Lisa Wallace

Lisa Wallace

0613

recycled paper

/C

# THE TUNE-UP

RECEIVED
96 JUN 27 PM 1:23
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Kenston

I'm this letter to urge you and other members of the Reginal Water Quality Board to pass new storm water pollution prevention regulations when it votes on July 15.

A recent study show that if we swim in areas where storm drains empty into the bay we are 50% more likely to get sick with a cold, fever, sore throat diarrhea and other illnesses.

I feel that no one should suffer a greater chance of getting sick just because they went swimming in the bay I think every beach should be safe for swimming

Please don't give in to pressure to weaken the regulations. Think about the future and how this will affect everyone in general.

Thank you for your consideration

Sincerely,

Carin Clayton

6835 Camrose Drive
Los Angeles, CA 90068
(213) 876-0188

VOL 21 0614

R0064868

VOL 21

0615

**Christine Shemanski**
700 E. Cedar Ave. # 201, Burbank, California 90068

June 25, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15, 1996.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea and other illnesses. One of every 25 people that swim in front of a drain will get sick.

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Christine Shemanski

Christine Shemanski

RECEIVED
96 JUN 27 PM 1:23
QUALITY CONTROL BOARD
LOS ANGELES REGION

Frank L. Buckley
2775 Cahuenga Blvd. West, Los Angeles, California 90068

June 25, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15, 1996.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea and other illnesses. One of every 25 people that swim in front of a drain will get sick.

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

F.L.B.

Frank L. Buckley

VOL 21 0616

VC

VOL 21

1631 South Barry Avenue, #3,
Los Angeles, CA 90025
June 26, 1996

RECEIVED
96 JUN 27 PM 1:15
QUALITY CONTROL BOARD
LOS ANGELES REGION

Elizabeth D. Rogers, Ph. D.
California Regional Water Quality Control Board
Los Angeles Region
100 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money - money that many of the affected cities they claim either do not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit, I would ask to you the consider the following questions:

How can we afford not to protect the health of fifty million people who will swim in the Bay this summer?

How can we afford not to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we turn away from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to you. Please vote to adopt the permit on July 15, 1996.

Sincerely,

Linda M. Kaplan

Linda M. Kaplan

LMK

RECEIVED
96 JUN 27 PM 1:09
QUALITY CONTROL BOARD
LOS ANGELES REGION

0617

1c

VOL 21

2510A 7th Street
Santa Monica, CA 90405

June 25, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUN 27 PM 1:21
STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston::

I am writing to urge you and the Water Quality Control Board to pass strong new storm water pollution prevention regulations at the meeting on July 15, 1996.

A recent study by the University of Southern California and Santa Monica Bay Restoration Project shows that people who swim in areas where storm drains empty into the Bay are almost 50% more likely to become ill with a cold, sore throat, fever, diarrhea and nausea. One person out of every 25 people that swim in front of a drain will become sick.

This is not acceptable. Personally, I do not swim in the ocean for this reason, although I would like to do so. Many people feel the same way. Every beach should be safe for swimming. Also, the ocean is one reason why tourists visit Los Angeles and tourist dollars are endangered because of unhealthy beaches.

Urban runoff is toxic to marine life, trash our beaches and dumps contaminated material in the ports and marina, posing environmental and boating safety hazards.

Please don't give into pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Heidi Pickman

0618

Not added

VOL 21 0619

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles. I urge you to adopt the proposed permit on July 15th without any further delays.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 JUN 27 PM 1:26
CALIF. REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

R0064873

No Address Not added

RECEIVED
96 JUN 27 PM 1:12
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Kate Lyki's

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0620

R0064874

1

No Address Not added C#

VOL 21

RECEIVED
96 JUN 27 PM 1:08
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,
Regina Birdsell

cc: Governor Pete Wilson
Mayor Richard Riordan

0621

R0064875

1

No Address

RECEIVED
96 JUN 27 PM 1:21
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 25, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Steve Shor

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0622

R0064876

C'

VOL 21

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

96 JUN 28 PM 2:46
REGIONAL BOARD
LOS ANGELES REGION

June 12, 1996

Dear Chairman Keston:

I am concerned about recent articles appearing in the Los Angeles Times that describe the debate about cleaning up the region's urban runoff. I therefore want to urge you to deal with this problem by adopting the stormwater permit now undergoing review and comment.

Urban runoff is the primary source of pollution in Santa Monica Bay. Urban runoff results from a vast array of activities and we must begin to address these systematically or lose the tremendous ecological and economic benefits deriving from Southern California's coast. The stormwater permit offers the only reasonable method to ensure the continued enjoyment of these benefits.

Despite the reluctance of cities to take on new responsibilities, it is imperative for our economic well-being, our health, and our very identity to take action to safeguard our waterbodies from the contaminated runoff to which we all contribute.

We are looking to the Regional Board to exercise leadership in this area. Our future depends it.

Sincerely,

Michael P. Ryan
3224 Barkentine Rd.
RPV, CA 90275

0623

RECEIVED
96 JUN 28 PM 2:47
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 26, 1996

Dear Mr. Keston,

I am writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Robert Lakin
13250 Arctic Circle
Santa Fe Springs, CA 90670

VOL 21
0624
R0064878

C.

June 27, 1996
16546 Chalet Ter.
Pacific Palisades
CA 90272
310-454-2577

RECEIVED
96 JUN 28 PM 2:47
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keeton,

I have been a resident of Pacific Palisades since 1965. One of the most delightful features of Los Angeles is that it is on the coast. Our family of six has enjoyed beach activities all this time - boogie boarding, swimming, windsurfing, rowing, and sailing. I am deeply disturbed that the water quality in Santa Monica Bay is so bad in many locations that these activities are now hazardous to health. I believe that everything possible should be done to eliminate, or decrease, the sources of pollution. Certainly diverting the storm drains to sewage treatment plants is one of the more obvious solutions. Of course, there are others. Please strengthen, rather than weaken, all the existing regulations. I am willing to pay more in taxes to safeguard our beautiful natural resource, our ocean and coastline.

Sincerely Yours,
Mrs Barbara G. Taylor

VOL 21

0625

R0064879

10

JUNE 25, 96

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

JEFF, JOYCE AND
SAVANNA CHONIS.

1019 BAY ST.
SANTA MONICA, CA. 90405

RECEIVED
96 JUN 28 PM 2:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0626

R0064880

VOL 21

0627

RECEIVED
96 JUN 28 PM 2:48
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

June 12, 1996

Dear Chairman Keston:

I am very concerned about the health of our coastal waters and Santa Monica Bay, in particular, and hope that you will approve the stormwater permit now under review.

The Water Quality Control Board has taken significant strides in controlling pollution from industrial sources and sewage treatment plants. Nonetheless, our coastal waters are still polluted.

I read with great concern the articles appearing in the Los Angeles Times about illnesses to people resulting from pollution. They have described the ailments afflicting surfers who swim in the Bay. These range from runny eyes, skin rashes, colds, ear aches, and stomach problems to indeterminate "strange strains of infection."

Urban runoff is the culprit. It is the primary source of pathogens and toxics that cause illnesses among swimmers. If its effects are so pronounced on swimmers, what is it doing to the fish? to the marine mammals?

I hope that just as the Water Quality Control Board addressed the "point sources" of pollution, it will now take the lead in addressing the "nonpoint sources"--urban runoff.

Sincerely,

Pam Sarvis

Pam Sarvis
5324 Las Virgenes Rd. #3
Calabasas, CA 91302

RECEIVED
96 JUN 28 PM 2:49
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair and Members Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As someone who lives and works in the Los Angeles Area, I have a great interest in the health and quality of our beautiful beaches and coastline. Our beaches are an enormous economic and social resource for the entire Los Angeles region and we must therefore take informed, reasonable and cost-effective action to protect them.

As a parent and resident of the area, I am aware that people are getting sick from storm drain polluted waters in Santa Monica Bay as the Los Angeles Times confirmed in a front page article in May of this year. That is why I believe it is imperative that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is without doubt very strong scientific data to support the passage of such a measure. I am particularly pleased that the business community was included in the negotiations because they are affected by the quality of our beaches and coastline as much as the general populace. If the degradation of our beaches continues tourism will inevitably suffer.

At a time when government is often criticized for not taking action, I urge you to take advantage of this unique opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Josh Brand

3000 Olympic Blvd. #1367
Santa Monica, CA 90404

Cc: Governor Pete Wilson

Mayor Richard Riordan

VOL 21
0628
R0064882

RECEIVED

96 JUN 28 PM 2:51

STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 26,1996

Dear Mr Person

I have volunteered for our local "Gutter Patrol" to remind people that what they trash on to the street goes in to the ocean. The reaction I found from all I came into contact with has been universal support. I feel that close to the surface of this enthusiasm is a suspicion that government agencies will once more jerk us around, in order to meet the needs of interests which find environmental responsibility too expensive.

I am sure that you have detailed technical points of view regarding storm drain permit requirements: my purpose here is to remind you of the fury that California citizens have expressed in recent history over license for pollution.

I suggest that the major influence over your decision be your sworn trust to protect the health and welfare of the people.

Sincerely,

TR McLean

T R MC LEAN
1020 1/2 19TH ST
SANTA MONICA CA 90403

VOL 21

0629

RECEIVED
96 JUN 28 PM 2:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 26.1996

Dear Ms Graves,

I have volunteered for our local "Gutter Patrol" to remind people that what they trash on to the street goes in to the ocean. The reaction I found from all I came into contact with has been universal support. I feel that close to the surface of this enthusiasm is a suspicion that government agencies will once more jerk us around, in order to meet the needs of interests which find environmental responsibility too expensive.

I am sure that you have detailed technical points of view regarding storm drain permit requirements: my purpose here is to remind you of the fury that California citizens have expressed in recent history over license for pollution.

I suggest that the major influence over your decision be your sworn trust to protect the health and welfare of the people.

Sincerely,

T R MC LEAN

T R MC LEAN
1029 1/2 19TH ST
SANTA MONICA CA 90403

VOL 21 0630

R0064884

RECEIVED
96 JUN 28 PM 2:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 26,1996

Dear Dr. Rojas

I have volunteered for our local "Gutter Patrol" to remind people that what they trash on to the street goes in to the ocean. The reaction I found from all I came into contact with has been universal support. I feel that close to the surface of this enthusiasm is a suspicion that government agencies will once more jerk us around, in order to meet the needs of interests which find environmental responsibility too expensive.

I am sure that you have detailed technical points of view regarding storm drain permit requirements: my purpose here is to remind you of the fury that California citizens have expressed in recent history over license for pollution.

I suggest that the major influence over your decision be your sworn trust to protect the health and welfare of the people.

Sincerely,

T R MC LEAN
1029 1/2 19TH ST
SANTA MONICA CA 90403

VOL 21
0631
R0064885

C

RECEIVED
96 JUN 28 PM 2:49
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 26.1996

Dear Mr. Cox

I have volunteered for our local "Gutter Patrol" to remind people that what they trash on to the street goes in to the ocean. The reaction I found from all I came into contact with has been universal support. I feel that close to the surface of this enthusiasm is a suspicion that government agencies will once more jerk us around, in order to meet the needs of interests which find environmental responsibility too expensive.

I am sure that you have detailed technical points of view regarding storm drain permit requirements: my purpose here is to remind you of the fury that California citizens have expressed in recent history over license for pollution.

I suggest that the major influence over your decision be your sworn trust to protect the health and welfare of the people.

Sincerely,

TR McLean

T R MC LEAN
1029 1/2 19TH ST
SANTA MONICA CA 90403

VOL 21

0632

R0064886

Bradley R. Kingston
Michelle Kingston
1148 Pine Avenue
Manhattan Beach, California
90266

RECEIVED
96 JUN 28 PM 2:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 24, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Keston:

We are writing to you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution regulations when it votes on July 15, 1996.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. We feel that no one should suffer a great chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to the pressure to weaken regulations. Thank you for your consideration.

Sincerely,

Bradley R. Kingston

Michelle Kingston

VOL 21
0633
R0064887

609 Alta Avenue  Santa Monica, California 90402

June 26, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

The condition of Santa Monica Bay, especially in the vicinity of storm drain exits, is not only a local, but a national disgrace.

While remedying the situation is costly, so is doing nothing--in terms of polutions's impact on tourism, not to mention the health of local swimmers.

The proposal before you July 15 is a modest step in the right direction. I strongly urge you and the other members of the board to vote in favor of the proposed storm water permit.

Very truly yours,

James R. Zukor

RECEIVED
96 JUN 28 PM 2:51
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

VOL 21 0634

R0064888

7556 Cowan Avenue
Los Angeles, CA 90045
June 29, 1996

96 JUL -1 PM 2:57
CITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because he swims in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marinas that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Juliane McAdam

Juliane McAdam

VOL 21 0635

R0064889

June 28, 1996

Dear Chairman Keston

As a friend of Palos Verdes/South Bay Audubon Society, I am writing to urge the Water Board to issue the proposed stormwater permit. Storm-water is the single greatest contributor to pollution of Southern California Coastal waters. It contains toxins, pathogens, and debris that harms marine life and afflicts swimmers with an array of ailments.

Some cities are concerned about the costs, but opportunities for cooperation among cities reduces costs considerably. The permit simply calls for education and ordinary good housekeeping practices.

Without leadership from the Board in addressing stormwater runoff, growth and development will lead to increase degradation of coastal waters. More illness, beach closures, and heart-rending ailments among marine mammals will result. Such degradation threatens our economic prosperity and our very identity as Southern Californians.

Sincerely,
Jane Nishimura

Ms. Jane S. Nishimura
2517 N. 288th St.
Torrance, CA 90505-3107

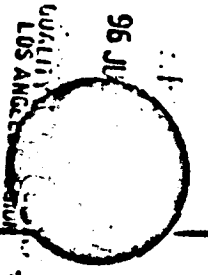
95 JUL 11 PM 2:57
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0636
R0064890

Jacob I. Green
801 Holmby Ave.
Los Angeles, CA
90024

June 27, 1996

Michael Keston, Chair and Members
California Regional Water Quality Control Bd.
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA, 91754-2156



Dear Chairman Keston and Members of the Board

The Municipal Storm Water Permit is a basic imperative for all the cities in Los Angeles County to comply with the Clean Water Act requirements. We must minimize the pollution carried by water or rain from industrial and domestic sources, such as gas stations, auto repair facilities and restaurants. The Permit requires cities to minimize pollutants from entering the storm drain system from construction sites and building projects. We must control the dumping that drains into the ocean from pollutants that are carried in storm drain water system. The permit is the most important step to improve the health of our local coastline and the health of our important tourist industry.

Sincerely yours,

Jacob I. Green

Jacob I. Green

VOL 21

0637

MRS. JAMES GARNER

33 OAKMONT LANE
LOS ANGELES, CALIFORNIA 90049

June 26, 1996

96 JUL -1 PM 2:58
LOS ANGELES REGION

Michael Keston,
Chair
Regional Water Quality Control Board
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project found there is an almost 50% probability of getting a cold, sore throat, fever, diarrhea and nausea or other illness by swimming in areas where storm drains empty into the bay. One of every 25 people that swim near such a storm drain will get sick! That is simply not acceptable. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life. Our beaches look like trash dumps and the dumping of contaminated material in the ports and marina creates environmental and boating safety hazards.

We need stronger rather than weaker regulations and those of us who love California and used to love the beach, would like to see something done to make the beaches what they were fifty years ago.

Thank you for your consideration.

Sincerely,

Mrs. James Garner

VOL 21

0638

R0064892

C.

# Write a letter!

Your letter to the Regional Water Quality Control Board could help persuade the Board to stop the flow of pollution from storm drains into the Bay. Please feel free to modify this sample letter, but please send it soon – the Board will vote July 15 at the L.A. County Supervisors' Hearing Room.

**If you'd like to attend the July 15 hearing to show your support of a clean and healthy Bay, please contact Heal the Bay at 1-800-HEALBAY for the location and directions.**

For Gods Sake Lets clean up this mess for children now & in the future

## Sample Letter:

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Ronald A Cavallo

**Send your letter to:**

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Ron Cavallo Insurance Agency
1611 S. Pacific Coast Hwy #20.
Redondo Beach, CA 90277

**Over →**

VOL 21

0639

R0064893

3014 Third Street C-
Santa Monica, CA 90405
June 27, 1996

Dear Mr. Keston -

I'm writing to ask you and the Regional Water Quality Board to pass better and much stronger storm water pollution prevention regulations. It is unconscionable that we cannot swim (or let our children swim) in Santa Monica Bay. It has historically been a place of recreation, and now I read in the paper that a study by USC and a local bay restoration project confirms what we know from our own experience - if you swim in the bay near a storm drain, you are 50% more likely to get sick with a cold or diarrhea or a sore throat or worse. Not only do people get sick, but storm drain runoff is also poisonous to marine life, and trashes our beaches so they look like garbage dumps. The Bay should not be a dumping ground for the detritus that people sweep into the drains, or that storm water carries there. Please do not allow anyone to weaken the current regulations, and please vote instead to strengthen the storm water pollution regulations. Thanks for your help - Sincerely,

[illegible]

VOL 21

0640

R0064894

ROSE FREEMAN
515 OCEAN AVE. #701N
SANTA MONICA CA 90402
(310) 395-0265

RECEIVED
96 JUL -1 PM 2:37
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

June 22, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park CA 91754-2156

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Board to pass strong new storm water pollution prevention regulations when it votes on 7/15/96.

It is simply not acceptable that there are so many illnesses created by the storm drains emptying into the ocean, as the recent USC and Santa Monica Bay Restoration Project studies show. As I live near the Santa Monica beach, it would be nice for my grandchildren to be able to swim in the ocean, but the fear of the them getting sick is too great. Every beach should be safe for swimming.

Marine life also suffers from this dangerous runoff. Our beaches and the marina look like trash dumps with materials that pose health and environmental hazards.

Please pass strong measures to protect us form this pollution.

Sincerely,

Rose Freeman

RF/ed

VOL 21 0641

R0064895

RECEIVED
96 JUL -1 PM 2:36
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

J. Bartel
527 Midvale #313
LA, CA 90024

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0642

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -1 PM 2:44
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Robin P. Hunter

No Address

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0643
R0064897

C/

VOL 21 0644

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -1 PM 2:44
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Catherine P. Wandel

No Address

cc: Governor Pete Wilson
Mayor Richard Riordan

R0064898

1

6-28-96 C

Dear Mr. Keston.

RECEIVED 96 JUL -1 PM 2:45 LOS ANGELES REGION

In writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by U.S.C. and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick. That's simply not acceptable.

Every beach should be safe for swimming.

Urban runoff is also posing environment and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely yours

Mary Semeraro
1721 - 5th St.
Manhattan Beach, Ca. 90266

VOL 21

0645

R0064899

June 26. 1996
31820 Cottontail Ave
Malibu, Ca 90265

Regional Water Quality Control Board

It is my understanding you are to vote on July 15. 1996 on proposition regulations on storm water pollution.

It is now a proven fact the storm drain water are affecting the Santa Monica bay swimmers as well as the sea life.

Please don't give in to pressures to weaken regulations - if anything they need strengthening

Sincerely

Jack A. Teufel

96 JUL 1 PM 2:47
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Jack A. Teufel
31820 Cottontail Ave.
Malibu, CA 90265

VOL 21
0646
R0064900

c)

June 26, 1996

Michawl Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of thw Regional Water Quality Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Mnica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea abd nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That'ssimply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,
Mrs. Sylvia Lindenberg
1147 El Medio Avenue
Pacific Palisades, CA 90272

Sylvia Lindenberg

QUALITY CONTROL BOARD
LOS ANGELES REGION
96 JUL -1 PM 2:45
RECEIVED

VOL 21 0647

C/

VOL 21

June 26, 1996

Michael Keston
Chair, Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Sir:

This letter is in support of strong storm water pollution regulations, an issue that is scheduled for voting on July 15, 1996. As found in recent research by the Santa Monica Bay Restoration Project, contaminated sea water from storm drain run-off directly correlates with the level of illness of swimmers. Santa Monica, and all Southern California areas, are popular vacation areas due in a large part to our beaches. To further allow pollution and waste to contaminate the Bay is short-sighted and self-defeating.

Please assist organizations such as Heal the Bay in reducing storm drain outflow. I ask that you strengthen the regulations when the issue is decided. Thank you for your consideration.

Sincerely,

Carole Rosenberger

200 S. Sycamore Ave. Apt. 16
LA CA 90036-3047

0648

RECEIVED
96 JUL -1 PM 2:45
QUALITY CONTROL BOARD
LOS ANGELES REGION

C/

July 1, 1996

Michael Keston, chair
Regional Water Quality Control Board
01 Centre Plaza Drive
Monterey Park, CA 91754

RECEIVED
96 JUL -2 PM 1:28
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I urge you to please pass stronger storm water pollution regulations in your vote later this month. Please don't bend from pressure to maintain or even weaken current regulations. The recently published article in the L.A. Times about the USC study only confirms once again what many of us have feared for years, storm drain run-off increasing the likeliness of illness by 50% is completely unacceptable. We obviously have a right to expect our government(s) (federal, state, county and local) to protect our health from such matters. Given that our beaches and ocean are a major attraction to tourists and tourism is one of the few growing areas in our local economy it is economically responsible to improve the cleanliness of our ocean shoreline waters. Please vote to toughen current regulations for cleaner ocean waters in Los Angeles. Thank you for your help.

Sincerely,

Peter Standish
1202½ Hoffman St.
Studio City, CA 91604

VOL 21

0649

R0064903

[illegible] Kesion,

[illegible] ting [illegible] and other members [illegible] Regional [illegible] Quality Control Board to pass strong new storm [illegible] pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever or other illnesses. One of every 25 people that swim in front of a drain will get sick.

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulation. Thank you for your consideration

Sincerely,

Robert Allen

Bob Allen
12405 OHIO AVE
West LA, CA 90025

RECEIVED
96 JUL -2 PM 1:29
ALUMINIA REGIONAL
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0650

R0064904

CATHLEEN ROWLAND SENOGLES
6438 Ben Ave.
N. Hollywood, CA 91606
(818)769-0298

June 28, 1996

RECEIVED
96 JUL -2 PM 1:29
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Re: STORM WATER POLLUTION PREVENTION REGULATIONS

Dear Mr. Keston:

I'm writing to urge you and other members of the Board to pass regulations when you vote on July 5th.

I am a scuba diver and skin diver. I have experienced sickness from swimming near storm drains at Malibu and Santa Monica. It is very unpleasant.

Please vote to clean up the Santa Monica Bay.

Sincerely,

Cathleen Rowland Senogles

Cathleen Rowland Senogles

C1

VOL 21

0651

Note: Five other identical letters were addressed to Drane, Slezak, Craven, Vernon, Rogers.

4010F Highland Ave.
Manhattan Beach, CA 90266
June 29, 1996

RECEIVED
96 JUL -2 PM 1:42
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Coe:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money - money that many of the affected cities claim they either do not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit I would ask you to consider the following questions:

How can we afford not to protect the health of the fifty million people who will swim in the Bay this summer?

How can we afford not to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we turn away from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to you. Please vote to adopt the permit on July 15.

Sincerely,

Sharon L. Adcock

VOL 21 0652

UCLA Medical Center

UCLA Sports Medicine

UCLA Sports Medicine and Fitness Complex
Rehabilitation Services
A3-89 Rehab. Center
178822

Dear Chairman Keston

We need you to write letters NOW!

**SAMPLE LETTER**

Dear Governor Wilson or Dear Chairman Keston
*(please send separate letters)*

Urban runoff is the largest source of coastal pollution to Santa Monica and San Pedro Bays. As you know, the Santa Monica Bay Restoration Plan targets reducing storm water pollution as the plan's most important goal. Los Angeles County has suffered through a drastic reduction in the number of beach visitors (from over 80 million per year to less than 50 million) to L.A. County beaches largely because many people are afraid to swim in the runoff polluted waters off our coast. Also, clogged catch basins cause hundreds of thousands of dollars in property damage every year. Urban runoff dumps tons of contaminated sediments at the mouths of the L.A. and San Gabriel Rivers and Ballona Creek next to Marina Del Rey. The end result is a boater safety problem and a contaminated sediment hot spot problem that poses severe health risks to local marine life and costly site remediation problems.

Please protect the public health, marine life, local real estate, and the County's $2 billion a year coastal tourism economy by supporting the Municipal Storm Water NPDES permit for Los Angeles County.

Sincerely —

Margaret C. Green

13810 NW Passage #20
Marina del Rey CA
90292

RECEIVED
96 JUL -2 PM 1:24
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0653

R0064907

C.

6/27/96

VOL 21

0654

**SAMPLE LETTER**

June 15, 1996

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Par, CA 91754-2156

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money -- money that many of the affected cities claim they either don not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit I would ask you to consider the following questions:

How can we afford not to protect the health of the fifty million people who will swim in the Bay this summer?

How can we afford not to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we turn away from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done -- now it's up to you. Please vote to adopt the permit on July 16.

Sincerely,

RECEIVED
96 JUL -2 PM 1:28
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Margaret C. Loan
13810 NW PASSAGE #209
MARINA del Rey CA 90292

I thought that this would be as effective as copying the sample - PLEASE HELP!

R0064908

C

6/27/96

VOL 21

## Sample Letter:

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

96 JUL -2 PM 1:40
QUALITY CONTROL BOARD
LOS ANGELES REGION

Margaret Jan

13810 NW PASSAGE #209
Marina del Rey, CA 90292

P.S.

I am a member of the Marina del Rey Outrigger Canoe Club - every day that we have practice we can see DIFFERENCES in the quality of the water whether it's orange or smells or filled w/ diapers - please [illegible] clean up the water! [illegible]

0655

R0064909

Note: Five other identical C letters were addressed to Slezak, Craven, Rogers, Coe, & Drane.

Charles Vernon
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754

July 1, 1996

RECEIVED
96 JUL -2 PM 1:44
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Vernon,

I am writing to encourage you to adopt the proposed storm water permit on July 15.

I know this is a tough decision, but one that you HAVE to make. At some point this city has to come to terms with cleaning up the Santa Monica Bay and KEEPING it clean.

With other strong statements made in the past few years by the city to upgrade the Hyperion Treatment plant and adequately treat its sewage and other discharges into the bay, storm water runoff into the ocean is now THE main obstacle to having a clean Bay. Failure to vote for the provisions of this permit will mean that the city is not totally committed to clean water. Like so many key environmental decisions before it, failure to adopt this one will mean continued steady degradation of the Bay and its beaches.

I realize this decision would have significant economic impact for local cities. However, the impact on tourist and recreation businesses, fish and sealife populations and the overall quality of life of one of the world's great cities, would unquestionably be greater.

Please, take a bold step. Vote FOR the permit.

Sincerely,

Matt Moody

Matt Moody

1018 Euclid St. #204
Santa Monica, CA. 90403

VOL 21
0656
R0064910

Dear Mr. Keston,

I'm writing to ~~urge~~ you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Janet L. MacPhee PO Box 2331, Malibu 90265

NEW ADDRE
JANET L MacPH
P.O. BOX 23
MALIBU, CA 9

VOL 21

00657

R0064911

July 1, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -2 PM 1:45
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston:

I am writing to urge you and the other members of your board to pass strong new water pollution regulations when you vote on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, chances of becoming ill are increased to almost 50%. One out of 25 people who swim in front of a drain will become ill with colds, sore throats, nausea, diarrhea and other illnesses.

This is simply not acceptable. No one should suffer a greater chance of getting sick because they want to enjoy the ocean. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps and dumps contaminated materials that poses both environmental and boating safety hazards.

Please give this issue your serious consideration. Thank you from a concerned citizen.

Sincerely,

Edie Anderson

Edie Anderson
2041 Euclid St., #15
Santa Monica, CA 90405

VOL 21

0658

R0064912

VOL 21

C-1

Bill Becker
410 Mesa Road
Santa Monica, California 90402

JUNE 29, 1996.

MIKE KEATON
REGIONAL WQC BD CHAIR

DEAR MIKE:

LET'S NOT MINCE WORDS. SANTA MONICA BAY MUST BE PRESERVED AS A RESOURCE FOR OUR KIDS AND GRANDKIDS AND ALL FUTURE GENERATIONS OF OUTDOOR-LOVING HEALTHY CALIFORNIANS.

CLEAN THE BAY NOW. LIGHTEN REGULATIONS.

ANY DIMINUTION OF CONTAMINATION CONTROLS IS TO BE CONSIDERED AS A VIOLATION OF PUBLIC TRUST AND THE BEST INTERESTS OF ALL BEACH LOVERS.

DON'T LET US DOWN — OR YOURSELF, EITHER. PLUG THOSE DRAINS AND REDUCE RUNOFF POLLUTION BEFORE THE NEXT BIG RAINY SEASON. IT'S LATER THAN YOU THINK.

Sincerely,
Bill Becker

37-YEAR RESIDENT of Santa Monica Canyon and REGULAR SWIMMER at Will Rogers State Beach at PCH & Entrada Rd.

0659

RECEIVED
96 JUL -2 PM 1:47
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Jane E. Blew Neilson
3140 Nelson Way # 223
Santa Monica, CA, 90405

C: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0660

(1)

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the SF Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

VOL 21 0661

R0064915

(D)

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations.

Thank you for your consideration,

Sincerely,

Robert Stearn R.N.

633 Washington Blvd.
Venice, CA 90292

VOL 21

0662

Dear Regional Board:

Please VOTE YES on the LA County-wide Municipal Storm water Permit on July 15th. C/

I want to swim in a clean ocean without fear of getting sick!
No more delays - please!

Marianne Neumeier, Santa Monica

VOL 21

06633

R0064917

Daniel Temianka MD
1325 Via Gabriel
Palos Verdes Estates, CA 90274-2022
(310) 373-7222

E. D. Rogers Ph.D.
Calif. Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

I SWIM IN THE PACIFIC OCEAN EVERY WEEK AND URGE YOU TO ADOPT THE PROPOSED STORM WATER PERMIT!!

Yours sincerely,

Daniel Temianka MD

June 30, 1996
cc: DT

RECEIVED
96 JUL -2 PM 1:50
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0664
R0064918

RECEIVED
96 JUL -2 PM 1:52
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael & Donna Ernstoff
11940 Victoria Avenue
Los Angeles, CA 90066-3216

30 June, 1996

Charles Vernon
California Reional Water Quality control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, Ca 91754-2156

Dr. Mr. Vernon:

Please add my name to the list of people urging you to adopt the proposed storm water permit system.

For my family, Cabrillo Beach in San Pedro is a unique recreational resource in that it is the only place in the area where the whole family can go wind surfing. While my expert son takes on the waves and wind outside the breakwater, my daughter and I enjoy the flatter, alas less windy, water inside the breakwater, and my wife practices the basics near the beach. It is the only windy location for those without the skill to sail through the surf this side of Lake Isabella past Bakersfield.

Unfortunately, Cabrillo Beach is also an unhealthy place to wind surf because of water pollution. Cabrillo Beach was rated an "F" in the most recent Heal-the-Bay report. As a community, we need to take steps to clean up Cabrillo Beach and the other beaches that are the driving force behind much of California's tourism.

Please vote to adopt the proposed storm water permit system when it comes up for a vote on 15 July '96.

Very truly yours,

Michael Ernstoff

VOL 21
0665
R0064919

RECEIVED
96 JUL -2 PM 1:53
QUALITY CONTROL BOARD
LOS ANGELES REGION

8173 Billowvista Drive
Playa del Rey, California 90293
July 1, 1996

Mr. Michael Keston, Chairman
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Keston:

The purpose of my letter is to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when votes are taken on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if swimming in areas where storm drains empty into the Bay, you are almost 50 percent more likely to become sick with any number of illnesses. One in every 25 people swimming near a drain will get sick! That is simply not acceptable. I feel that no one should suffer a greater chance of getting sick because they swim in the Santa Monica Bay. We should keep every beach clean and safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and the marina. This poses both environmental and boating safety hazards.

Please do not give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Linda K. Jones

VOL 21
0666
R0064920

VOL 21

July 1, 1996

RECEIVED
96 JUL -2 PM 1:33
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

C: Governor Pete Wilson
Mayor Richard Riordan

A. Fouman
13109 Valleyheart Dr.
Sherman Oaks, CA 9423

0667

C

VOL 21

Dear Dr. Rogers,
We urge you to adopt the storm water permit for Santa Monica Bay. Although some cities have objected that the permit is too costly, not cleaning up the bay could be even costlier in the long run, by increased health care costs from sick swimmers, surfers + boaters, declining fishing, + tourism resulting from a polluted bay. Tourism generates billions in revenue for our economy, + should be protected, too.

MR. & MRS. DAVID WARSHAW
5703 EVEWARD RD.
CULVER CITY, CA 90230

Rec. July 3

06688

2 July 1996

Elizabeth Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

How can we afford NOT to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford NOT to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we TURN AWAY from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to YOU.

PLEASE vote to adopt the permit on July 15.

Sincerely,

Susanne K. Gillies

Ms Suzanne Gillies
3340 Adams Dr
Los Angeles, CA
90066-1731

VOL 21
0669
R0064923

Dear Michael - I don't think I could say it any better. Pls. help heal our Bay. Thank you!

# Write a letter!

Your letter to the Regional Water Quality Control Board could help persuade the Board to stop the flow of pollution from storm drains into the Bay. Please feel free to modify this sample letter, but please send it soon – the Board will vote July 15 at the L.A. County Supervisors' Hearing Room.

**If you'd like to attend the July 15 hearing to show your support of a clean and healthy Bay, please contact Heal the Bay at 1-800-HEALBAY for the location and directions.**

## Sample Letter:

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Vicki A. Bye

**Send your letter to:**

**Michael Keston, Chair**
**Regional Water Quality Control Board**
**101 Centre Plaza Drive**
**Monterey Park , CA 91754-2156**

**Over →**

VOL 21 0670

R0064924

CX

VOL 21

2 July 1996

Elizabeth Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

How can we afford NOT to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford NOT to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we TURN AWAY from the single most effective step we can take as a communuty to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to YOU.

PLEASE vote to adopt the permit on July 15.

Sincerely,

Susanne Filkins

Ms Susanne Filkins
3360 Adline Dr
Los Angeles, CA
90068-1731

0671

R0064925

2 July 1996

Charlotte Craven
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Charlotte:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

How can we afford NOT to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford NOT to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we TURN AWAY from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to YOU.

PLEASE vote to adopt the permit on July 15.

Sincerely,

Susanne K Filkins

Ms. Susanne Filkins
3360 Adina Dr
Los Angeles, CA 90068-1731

VOL 21 0672

R0064926

VOL 21

Steven G. Martindale
268 Orange Blossom
Irvine CA 92620-4434



Michael Keston, Chair
Calif. Regional Water Quality Control Board
Los Angeles Region

REC July 3 7-2-96

Dear Sir:

I do and I hope you do support a comprehensive pollution prevention program for storm water runoff to the RWQCB. Thankyou.

Steven G. Martindale

0673

R0064927

Dear Mr. Keston,

Please issue a permit for LA County to adopt practices to reduce urban run off. On July 15th, please show your support of a pollution prevention program for storm water runoff. ☺

Thank you!

Kathy Ochiai
Santa Ana

Rec. July 3

Michael Keston
CRWQCB
101 Centre Plaza Dr.
Monterey Park, CA
91754-2156

R0064928

June 13, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Tammy Uedoi
350 E. Del Mar Blvd #102
Pasadena, CA 91101

cc: Governor Pete Wilson
Mayor Richard Riordan

96 JUL -3 PM 1:43
RECEIVED
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VCL 21
0675

July 1, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, Ca 91754-2156

Dear Mr. Keston

I am writing to you to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick. That is simply unacceptable. I am a native Californian, having been born and raised in the San Francisco Bay Area. I am a graduate of the University of California, Santa Cruz, and I have lived here in Los Angeles County for over 20 years. In the middle of these past 20 years I lived in New York for 5 years, right in the middle of Manhattan. I can't tell you how many times I said to people as I boarded a train to get far enough away from the city so that it was safe to go in the water, "I can't wait to get back to California where I can swim safely in the waters of Santa Monica Bay." Now what am I going to do; where is my six-year-old daughter going to have to go in order to enjoy the pleasure of swimming and playing in the sea? I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Mr. Dency L. Nelson
2415 Silverstrand Avenue
Hermosa Beach, Ca. 90254-2664
e-mail: stgu64c@prodigy.com

96 JUL -3 PM 1:12

VOL 21 0676

VOL 21

1st July 1996.

Mr Michael Keston,
Regional Water Quality Control Board,
101 Centre Plaza Drive,
Monterey Park, CA 91754-2156.

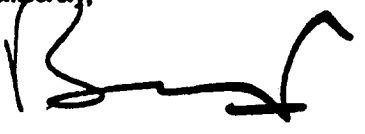
Dear Mr. Keston,

I do hope that you and your fellow members of the Regional Water Quality Control Board will honor your responsibilities to prevent storm water pollution in the Santa Monica Bay.

It seems to me almost criminal that swimmers are subject to harmful infections and that marine life is threatened.

Please stand up to those who seek to make matters worse rather than better.

Yours sincerely,



BARRY SPIKINGS.

535 N. Maple Drive
Suite 135
Beverly Hills, CA 90210

96 JUL -3 PM 1:41

0677

56 Malibu Colony, Malibu, California 90265

R0064931

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA
91754-2156

July 2, 1996

Mr. Keston,

Please pass the new storm water pollution prevention regulations when you and the Regional Water Control Board meet July 15, 1996.

My sons surf and also one is an avid fisherman. We have seen first hand evidence of the mutations local bottom fish manifest. Tom cod being the most notorious.

You must agree that there are significant problems that can be addressed and corrected

JUL 8 PM
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0678
R0064932

by passing the strong storm water pollution prevention regulations ~ July 15, 1996.

Every beach should reflect our concern for ourselves and future generations.

Thank you Ms. Keaton for your consideration.

Sincerely.

Mrs. Barbara Lazarik
1705½ Grant Ave
Redondo Bch
CA 90278

VOL 21 0679

R0064933

J M Seanor
2860 Park Pl.
Laguna Bch. Ca
92651

Michael Keston
Chair RWQCB
LA Region
101 Centre Plaza Dr.
Monterey Park, CA. 91754

VOL 21

0680

**ACTION ALERT!!!**

**TO ALL LOS ANGELES COUNTY BEACH USERS:**

[illegible] Control Board will vote [illegible] permit [illegible] upon the 88 cities within LA County to adopt practic[illegible] and [illegible] this runoff, the primary source of [illegible] filled with [illegible] that [illegible] our coastal waters, [illegible] surfers and swimmers.

The new regulations are [illegible] that is at [illegible] less than the [illegible] of beachgoers, the [illegible] of nearshore [illegible] the beauty of miles of County beaches and the economic benefit of the coastal economy of Southern California.

Please write a letter o[illegible]

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Please call (800) 743-SURF to make a special contribution to Surfrider Foundation Clean Water Campaign this summer

Governor Pete Wilson
State Capitol
Sacramento, CA 95814
Mayor Richard Riordan
City of Los Angeles
101 N. Figueroa St.
Los Angeles, CA 90012

For more information call (714) 492-8170 Web: http://www.sdsc.edu/surfrider

R0064934

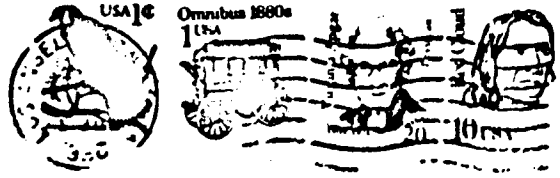
VOL 21

R0064935

6/30/96

**Denali (Mt. McKinley) National Park, Alaska.**
*Photo © Carr Clifton*

The Sierra Club Legal Defense Fund has halted all placer mining in 44 million acres of Alaska's national parks, including Denali, until the National Park Service regulates the mining to prevent pollution of the parks' rivers and streams. Your support of the Legal Defense Fund will help our clients all over the country protect our parks and forests, the air we breathe, the water we drink, the wildlife and wilderness we cherish.




Dear Mr. Keston,

I hope that you and the other members of your board will continue to protect us and the bay from preventable pollution. It does seem to me that the proposed storm water pollution regulations would help enormously. We lived near the Pico-Kenter storm drain in the late 1970's and came down with strange viruses after swimming there. We quit doing this once the word got out.

Now one of our favorite beaches is at PY. Same - another hot spot biologically speaking but gorgeous. Please do your best. Sincerely

Mollie Bowling

Mollie Bowling
1718 Wellesley Ave.
Los Angeles, CA 90025

dnp

Michael Keston, Chair
Regional Water Quality
Control Board
101 Centre Plaza Dr.
Monterey Park, CA
91754-2156



VOL 21

06802

R0064936

/C

VOL 21

96 JUL -3 PM 1:25

CALIFORNIA
LOS ANGELES REGION

July 1, 1996

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Par, CA 91754-2156

Dear Dr. Rogers:

Add our names to the growing list of concerned citizens urging you to adopt the proposed storm water permit for Santa Monica Bay.

We know that this is a costly measure, but aren't our natural resources something we need to preserve? Isn't it really in our own best interest to clean up the Bay so that over 50 million beach-goers will continue to use this great resource? Isn't the economic health of the coastal tourism and recreation businesses which generate billions of dollars for our area worth protecting?

We urge you to adopt all the measures included in this permit. Please vote to adopt the storm drain permit on July 15 and bring our area a giant step closer to a safer, healthier Santa Monica Bay.

Sincerely,

L.J. Cowgill
David S DeCrane
Clea DeCrane
1028 Euclid St.
Santa Monica, CA 90403

0683

R0064937

VOL 21

0684

Jeff Meyer
15342 Moulins
Irvine, CA 92714

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am strongly in favor of implementing a comprehensive pollution prevention program for storm water runoff. It would greatly benefit our coastal environment.

Excessive amounts of pavement in our urban environment are allowing much of our societies waste to flow directly to the ocean untouched by streams, marshes, microorganisms and plant matter that help to purify and absorb runoff. Urban runoff along with our ludicrous waste of water in homes, businesses, and industry is contributing to high amounts of contaminated runoff that is the primary source of coastal pollution. This water contains pathogens, toxins and debris that poison our coastal waters.

As a surfer I visit the ocean often and I have seen what poor solutions to water management does. I'll paddle around in brown mucky foam, plastic bags and Styrofoam. I will take a deep breath hoping to smell that thick salty air only to catch a whiff of a not so fresh toilet. Needless to say I have become ill simply from going in the polluted ocean to enjoy my favorite activity. As a Landscape Architect and environmental designer, I know that there are several better ways to deal with our runoff. I hope that you will support sustainable development by backing a comprehensive pollution prevention program.

Sincerely

Jeff Meyer

R0064938

July 1, 1996

96 JUL -3 PM 1:25

LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I'm writing to ask you and the other board members of the Regional Quality Control Board to please pass strong, new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with various ailments. I've lived here about 27 years and both my sons are surfers and I can attest to how often they are sick when they surf in the Bay.

This really is unacceptable - nobody should get sick just because they swim in the Bay. People don't understand that everything they throw out of their cars or along the curbs ends up in the Bay after a rainstorm.

I cannot believe that intelligent people believe that weakening the present regulations is a good thing for the people of this area and the Bay itself. Surely the Board will pass new anti-water pollution legislation on July 15th.

Thank you.

John Richetti
30816 Via Riviera
Rancho Palos Verdes
Calif. 90275

VOL 21

0685

R0064939

Lyn Davis Lear, Ph.D., M.P.C.C.
1911 Westridge Road
Los Angeles, California 90049
213-477-7055

RECEIVED
96 JUL -5 PM 1:58
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

July 2, 1996

Elizabeth D. Rogers, Ph.D
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money - money that many of the affected cities claim they either do not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit, I would ask you to consider the following questions:

How can we afford not to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford not to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we turn away from the single most effective step we can take as a community to create a cleaner, healthier Bay?

Over the last few years we have made great progress in cleaning up the Bay, but on July 15 the next move is up to you. Please vote to adopt the permit.

Sincerely,

Lyn Lear

Lyn Lear

VOL 21 0686

1206 S. Sierra Bonita
Los Angeles, CA 90019

Elizabeth Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

July 3, 1996

Dear Dr. Rogers:

It's my understanding that, on July 15, the Water Quality Control Board will vote on the proposal to adopt a storm-drain permit. As a concerned, frequent user of Santa Monica Bay, I urge that the Board adopt this crucial proposal for improving the quality of water that, ultimately, finds it way into the Bay.

I'm but one of the citizens who uses that Bay regularly for recreation, and it's obviously important to me that the ocean be preserved for the usage of all citizens. There's even an economic angle as well: the millions who use Santa Monica Bay as a recreation destination will no longer use it if measures are not taken to safeguard the quality of the water--which means lost revenue for coastal businesses, local cities and the state.

I urge you to adopt the storm-drain permit policy at the July 15 meeting.

Sincerely,

Gene Sculatti

Gene Sculatti

RECEIVED
'96 JUL -5 PM 1:58
CALIF. REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0687

DAVID B. CARREN

Dear Sirs;

I hope you will pass strong new regulations to control Water Pollution July 15 — and not weaken the storm runoff protocols already in place. The Bay is sick — please don't kill it

RECEIVED
96 JUL -5 PM 1:58
AIR QUALITY CONTROL BOARD
LOS ANGELES REGION

David Carren

2458 Glyndon Ave.
Venice, CA 90291

VOL 21

0688

R0064942

ROBIN LEE LEVITT
10425 Bainbridge Avenue
Los Angeles, California 90024

July 3, 1996

RECEIVED
96 JUL -5 PM 1:57
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

Please pass strong storm water pollution prevention regulations when you vote on July 15th!

Our children are counting on you to protect us from toxic urban runoff!

Sincerely,

Mrs. Robin Lee Levitt

P.S. Stopping the flow of pollution from storm drains into Santa Monica Bay will help your family, as well as mine, be able to enjoy our ocean again. Thanks for your help. You are in a position to really HELP.

VOL 21
0689
R0064943

Steve Smith
2390-C Pleasant Way
Thousand Oaks, CA. 91362

RECEIVED
96 JUL -5 PM 1:57
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 3, 1996

Michael Keston
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Mr. Keston,

As a very young boy, I remember my parents taking me and my brothers and sisters to South Laguna Beach. We would wind down a narrow stone pathway that led to the most beautiful beach I have ever seen. We would be greeted by a pristine stretch of sand, and crystal clear water. That little stretch of beach provided countless hours of entertainment and education, and was the genesis of a love affair with the California coastline that continues to this day, some 35 years later.

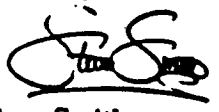
Imagine today young parents wanting to provide their children the same opportunity to experience California's greatest natural resource - it's breathtaking coastline. Instead of a beautiful beach with clear, clean water, they are greeted by signs that tell them the beach is closed because of harmful water. Or a sign that indicates swimming in the water may be hazardous to your health. This is a scene that takes place all too often on our Los Angeles County beaches. Fortunately we have the power to prevent these scenes from occurring in the future. Hopefully, we will have the wisdom and foresight to use this power now to ensure that generations to come will be able to enjoy a clean ocean like we have.

I understand that the Regional Water Quality Control Board will vote on July 15th to issue a permit calling on the eighty-eight cities within Los Angeles County to adopt practices that will reduce urban runoff. Urban runoff is the primary source of the pathogens, toxins and debris that pollute our coastal waters. Our fish are contaminated, our marine mammals are afflicted, and those that use the water, swimmers, sailors and surfers, risk various illnesses.

VOL 21 0690

We simply cannot allow this to continue. I urge you and the Regional Water Quality Control Board to issue the permit that will reduce urban runoff. Millions of people visit Los Angeles County's beautiful coastline every year. The health of these millions as well as the health of the Southern California coastal economy is at stake. So is the future memory of a little boy or girl. Will that memory cherish a pristine beach with clear, clean water, or one with signs warning of the dangers of swimming or playing in the waves? It's up to you and the Board. I urge you to vote so that our beaches are clean for everyone's memory - now and forever.

Sincerely,



Steve Smith

cc: Governor Pete Wilson
Mayor Richard Riordan

c/

VOL 21

0691

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

RECEIVED
95 JUL -5 PM 1:57
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 3, 1996

Dear Mr. Keston,

I am writing you on behalf of my family and the millions of residents of Los Angeles County who swim in Santa Monica Bay to request your support for a comprehensive pollution prevention program and Municipal Stormwater Permit on July 15, 1996.

Urgent and effective action is necessary to address the significant health risks identified in the recent USC epidemiology study for individuals who swim within 400 ft of a stormdrain discharge. In addition, there are hundreds of sources of pollution entering the bay from our neighborhoods and city streets. I have often observed waste oil and antifreeze running off the property of an automotive repair shop into a nearby stormdrain.

In my professional judgement as an inspector for a local agency, the monitoring, business educational components, and enforcement of an effective stormwater management program could easily and cost effectively be incorporated within existing inspectional programs currently operating within local sanitation districts, fire departments, health departments, and building and safety programs.

Allowing urban runoff that is hazardous to our children, toxic to marine life, and costly to our local tourism industry is not acceptable.

Please understand the economic and health benefits of strong stormwater pollution prevention. A vote on July 15 is the right thing to do! Thank you for your consideration.

Sincerely,

Roger B. Kints

127 11th St. #302
Santa Monica, CA 90403

VOL 21 0692

RALPH BECKER
1625 OLYMPIC BOULEVARD
SANTA MONICA, CA 90404

RECEIVED
96 JUL -5 PM 1:57
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Ralph Becker, A.I.A.

C: Governor Pete Wilson
Mayor Richard Riordan

C
VOL 21
0693
R0064947

1466 S. Shenandoah St. #7
Los Angeles, CA 90035-3517

July 3, 1996

RECEIVED
96 JUL -5 PM 1:57
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a Urban Planning and Law student at UCLA, and likewise as a lifetime resident of Los Angeles, I have come to know the value of having a healthy and vibrant coastline here in Southern California. The cleaner that the are beaches and bays are, the better image people will have of Los Angeles. With a better image, more people will come here and spend valuable tourist dollars to support our economy. Further, residents will spend more vacation hours at the coastline versus traveling away from our area—again creating benefits for our economy. Any decisions and action taken in respect to protecting our resources must take those two factors into consideration.

Working as an intern in the Natural Resources Defense Council office in Los Angeles has opened my eyes to the importance of your committee and the decisions you are about to make on the proposed Los Angeles permit. This may be the single most important decision you will face as Members of this Board. I urge you to adopt the proposed storm water permit without any more delay. All the parties involved in the negotiation of the permit, including the business partners, will echo my sentiment when I say this permit is the most effective means to address the problem of an unhealthy and polluted coastline.

Los Angeles will reap the rewards of a wise decision in favor of the permit. Now it is up to you to sew the seeds of environmental sustainability.

Thank you for your consideration.

Sincerely,

Scott Daniel McVarish

Scott Daniel McVarish

cc: Governor Pete Wilson
Mayor Richard Riordan

C✓
VOL 21
0694
R0064948

MARK E POLLACK

C

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

07-03-96

RECEIVED
96 JUL -5 PM 1:57
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

Please don't give in to pressure to weaken the regulations. This could not be more important! Thank you for your consideration.

Mark E. Pollack

2700 NEILSON WAY · NO 1727 · SANTA MONICA · CALIFORNIA 90405-4024
TELEPHONE 310/399-6802 · FACSIMILE 310/399-6141 · EMAIL: mep@compuserve.com

VOL 21 0695

R0064949

RECEIVED
96 JUL -5 PM 1:57
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

7-3-96

MICHAEL KESTON, CHAIR
REGIONAL WATER QUALITY CONTROL BOARD
101 CENTRE PLAZA DR.
MONTEREY PARK, CA 91754-2156

DEAR MR. KESTON,

I URGE YOU & OTHER BOARD MEMBERS TO [illegible]
STRONGEST POSSIBLE "STORM" RUNOFF REGUL
AT YOUR 7-15 VOTE.

SINCE WE CAN'T RELY ON INDIVIDUALS TO DO THE
RIGHT THING, WE MUST RELY ON AGENCIES SUCH
AS YOURS.

IN GOOD CONSCIENCE HOW COULD ONE NOT VOTE
TO PROTECT MOTHER OCEAN, OUR PRESENT HEALTH, &
THE LONG-TERM GLOBAL ENVIRONMENT? HOW?

SINCERELY

THOMAS BYRD
1701 PURDUE AV.
L.A., CA 90025

VOL 21

0696

Ken A. Estrella
24203 Park Street
Torrance, CA. 90505

RECEIVED
96 JUL -5 PM 1:57
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 30, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston:

The Regional Water Quality Control Board will vote on July 15 whether to issue a permit calling upon the 88 cities within LA County to adopt practices that will reduce urban runoff. This runoff, the primary source of coastal pollution, is filled with pathogens, toxins and debris that poison our coastal waters, contaminate fish, afflicts marine mammals, and sickens surfers and swimmers.

As an avid surfer and beachgoer for over 40 years, I urge you to support this initiative for new regulations needed to implement a comprehensive pollution prevention program for storm water runoff.

Sincerely,

Ken A. Estrella

Ken A. Estrella

C

VOL 21

0697

VOL 21

0698

MR MICHAEL KESTON
CHAIR, CALIFORNIA REGIONAL WATER QUALITY
CONTROL BOARD

I AM WRITING TO YOU TO SHOW
MY SUPPORT OF A COMPREHENSIVE
POLLUTION PREVENTION PROGRAM FOR
STORM WATER RUNOFF

I URGE YOU TO VOTE IN FAVOR
OF SAID PERMIT/PERMITS.

WE NEED TO STOP THE POLLUTION
OF OUR WORLD! NOW!

MR KIM W MARVEL
11620 WARNER #423
FOUNTAIN VALLEY CA. 92708

cc. GOVERNOR PETE WILSON STATE OF CALIF
cc. MAYOR RICHARD RIORDAN
CITY OF LOS ANGELES

RECEIVED
96 JUL -5 PM 1:58
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

R0064952

RECEIVED
96 JUL -5 PM 1:35
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Deidre Gordon

C: Governor Pete Wilson
Mayor Richard Riordan

Sony Music
2100 Colorado Ave.
Santa Monica, CA 90404

VOL 21 0699

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Robert Khachaturian Jr.

C: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 07100

7

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Stephanie Matz

C: Governor Pete Wilson
Mayor Richard Riordan

C

VOL 21

07011

1

Can't Read Name Not added to list

VOL 21

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

C: Governor Pete Wilson
Mayor Richard Riordan

0702

R0064956

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

virginia V. Dudek

C: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0703

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Steven Kaufman

C: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0704

R0064958

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Stephanie Parker

C: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0705

R0064959

June 27, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Elizabeth Woolley

Elizabeth Woolley
15445 Cobalt St., #27
Sylmar, California 91342

RECEIVED
96 JUL -8 AM 10:29
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

CV VOL 21 07006

R0064960

3915 Carnavon Way
Los Angeles, California
June 28, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Judythe Roberts

RECEIVED
96 JUL -8 AM 10:29
WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

07 07

R0064961

C

VOL 21

0708



Diane Shapiro
18366 Collins Street,
#A
Tarzana, Ca 91356 .

June 27, 1996

RECEIVED
96 JUL -8 AM 10:29
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Diane Shapiro

Diane Shapiro

/ds

R0064962

C/ VOL 21

June 27, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Re: Heal The Bay

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

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Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely yours,

Debie Keefe

Debie Keefe
26717 Pamela Drive
Santa Clarita, California 91351

RECEIVED
96 JUL -8 AM 10:29
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

0709

Dear Mr. michael Keston,

I am writing in regards to the Regional Quality Control Boards vote on July 15th to adopt practices that will reduce urban runoff. People who don't go in our oceans every day do not realize how polluted they really are. You can't see all the garbage and pollution in the water unless your in it. That is why the Surfrider Foundation along with all the thousands of surfers who use the ocean as their playground are taking such a firm stand. We dont want people to have to worry about getting a disease every time they step into our ocean.

Urban street runoff contributes to nearly 80% of coastal pollution. If we can adopt practices that will reduce urban runoff, then we can start to enjoy our mother ocean and not destroy her. If things continue the way they are going, it wont be long before our ocean turns into the worlds largest garbage dump.

I ask you to please spend one weekend down at the beach and go out in the water. Take your kids out there or your wife, so you to can see up close and personal all the garbage and sewege that we as surfers deal with every day. And please, pass the permit to start cleaning up our ocean.

sincerely,

Steven McCrosky

1827 Fairford Dr.
Fullerton, CA 92633

RECEIVED
96 JUL -8 AM 10:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

VCL 21

07110

Mavis S. Gallenson
2538 Wellesley Ave
Los Angeles, California 90064

June 28, 1996

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15, 1996.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Please do whatever is necessary to keep our oceans clean.

Thank you for your consideration in this matter.

Sincerely,

Mavis S. Gallenson

RECEIVED
96 JUL -8 AM 10:
REGIONAL WATER QUALITY CONTROL BD
LOS ANGELES REGION

VCL 21
07/11

RECEIVED
96 JUL -5 PM 1:15
CALIFORNIA REGION
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 3, 1996

Mr. Michael Keston
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, Ca. 91754-2156

Shannon Miller
335 Lutge Avenue
Burbank, Ca. 91506

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in the areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick.

That's not acceptable. I feel that no one should suffer a greater change of getting sick jut because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Shannon Miller

VOL 21
0712
R0064966

**Richard P. Berg**
**2071 Hopewell Court**
**Thousand Oaks, CA 91360**

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am taking this opportunity to urge you, and other members of the Regional Water Quality Control Board, to pass strong new storm water pollution prevention regulations when it votes on July 15.

I read a report in the Los Angeles Times about recent study by USC and the Santa Monica Bay Restoration Project which shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. I use the Bay and I would much rather swim and boat in areas which are relatively free of pollution.

The current situation is simply not acceptable. No one should suffer a greater chance of getting sick just because they swim, or even boat, in the Bay. The waters at our beaches should be safe for swimming and other recreational uses!

Storm drain runoff from our cities is toxic to marine life, leaves our beaches looking like filthy trash dumps, and dumps contaminated materials in our waters. The present situation causes both environmental damage and boating safety hazards, which you must certainly agree is not acceptable.

Please take appropriate steps to clean up our waters.

Sincerely yours,

Richard P. Berg

RECEIVED
96 JUL -8 AM 10:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

✓C
VOL 21
0713

1365 Marinette Road
Pacific Palisades, Ca. 90272
July 2, 1996

Mr. Michael Xeston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, Ca. 91754-2156

RECEIVED
96 JUL -5 PM 2:22
CALIF. REGIONAL WATER QUALITY CONTROL BD.
LOS ANGELES REGION

Dear Mr. Xeston:

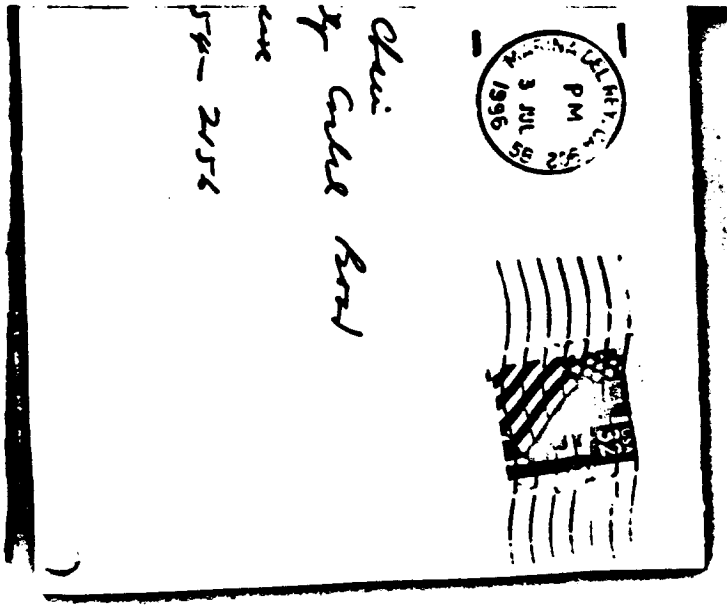
I understand the Board will be meeting on July 15. Since I cannot attend the meeting, I am writing this letter to urge that stronger pollution regulations be enacted to clean up Santa Monica Bay.

I was surprised and distressed to read in the L.A. Times some weeks ago that the very beach I use, Will Rogers State Beach was rated D for unhealthy dangerous pollution. Although the pollution is obviously worse right by the exit of the storm drains the whole beach was rated dirty and likely to cause illness.

I do not have the technical expertise to recommend any particular measures to stop the flow of pollution from storm drains into the Bay but I am sure that the situation could be vastly improved and I urge you and the other members of the Board to strengthen, rather than weaken, pollution controls.

Thank you
Sincerely, Betty S.Hoffenberg

Betty S. Hoffenberg




VOL 21

0714

c ✓

R ... D

96 J... -8 PM 1:26

CALIFO... QUAL... LOS ANGELES

1070 Las Pulgas Road
Pacific Palisades, CA 90272

July 3, 1996

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Coe:

We are concerned citizens who urge you to adopt the proposed storm water permit. We understand that there has been a strong effort by civic and environmental leaders in the last year or so to reach consensus on the measures included in the permit. Please vote to adopt the permit on July 15.

Sincerely,

Gloria Fowler & Martin Epstein

Gloria Fowler and Martin Epstein

VOL 21

0715

R0064969

CH

VOL 21

0716

1070 Las Pulgas Road
Pacific Palisades, CA 90272

July 3, 1996

Charlotte Craven
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Ms. Craven:

We are concerned citizens who urge you to adopt the proposed storm water permit. We understand that there has been a strong effort by civic and environmental leaders in the last year or so to reach consensus on the measures included in the permit. Please vote to adopt the permit on July 15.

Sincerely,

Gloria Fowler & Martin Epstein

Gloria Fowler and Martin Epstein

RECEIVED
96 JUL -8 PM 1:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 5, 1996

Glen Frank
1835 Tahiti Drive
Costa Mesa, CA 92626

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am writing in support of the new regulations to issue a permit calling upon the 88 cities within LA County to adopt practices that will reduce urban runoff, which is currently scheduled for a July 15 vote.

Runoff is the primary source of coastal pollution, and it is filled with pathogens, toxins, and debris that poison our coastal waters, contaminate fish, afflict marine mammals, and sicken surfers, swimmers, and divers.

These new regulations are needed to implement a comprehensive pollution prevention program for storm runoff. At stake are the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches, and the economic benefit of the coastal economy of Southern California.

I hope that the vote is in favor of the comprehensive pollution program. Thank you for your support.

Sincerely,

Glen Frank

RECEIVED
96 JUL -8 PM 1:27
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
07117

C ✓

VOL 21

June 26, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -8 PM 1:27
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick with a cold, sore throat, fever, diarrhea and nausea. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life and leaves our beaches looking like trash dumps. Not to mention the contaminated material that is dumped into the ports and marina creating both environmental and boating safety hazards.

Please do not succumb to the pressures of weakening the regulations. We need you to fight for our beaches!!

Thank you for your time and efforts.

Cordially,

Pete Goslow

Raleigh Enterprises
11444 W. Olympic Blvd.
LA, CA 90064

0718

C/

VOL 21

Dear Mr. Keston,

I am writing this letter in regards to a comprehensive pollution prevention program to combat the problem of coastal runoff. I have lived within minutes of plentiful coastline my entire life and it completely blows me away to see the actions, or actually the lack of, that are taken when it comes to saving our oceans. The ocean has supplied us with resources necessary to the survival of man for generations and in a day and age where sciene is now so advanced I would think that we would be doing all that we could to preserve this beautiful gift. In Revelations it is stated that we only get one ocean. That's like getting only one car your entire existance. Would you mistreat that car, or would you do all that you could to keep it in its best condition?I I know that if I were there on July 15th when that ballot was passed out I would be voting yes for the urban runoff permit and I hope that you will do the same! After all, this world is not ours but something that we inherit from our grandchildren.

Sincerly,

Kimm Van Every

Kimm Van Every
27371 Via Caudaloso
Mission Viejo, CA 92692

RECEIVED
96 JUL -8 PM 1:27
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

0719

C ✓

VOL 21

RECEIVED
96 JUL -8 PM 1:27
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Rod D. Washington

Rod D. Washington
1018 Second St. #2
Santa Monica, CA 90403

07120

RECEIVED
96 JUL -8 PH 1:35
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Ms Nancy Jones

NANCY JONES
357 Palos Verdes Blvd. #6
Redondo Beach, CA 90277

RECEIVED
96 JUL -8 PH 1:30
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0121

C/

VOL 21

RECEIVED
96 JUL -8 PM 1
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

James Crawford

JAMES CRAWFORD
1320 N. Eastern Ave.
LA, CA 90063

0722

LES ORECK 22817 Ventura Blvd., #460 Woodland Hills CA 91364 818 224-2925 (Phone & Fax)

C/

VOL 21

7/5/96

RECEIVED
96 JUL -8 PM 1:27
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
CRWQCB
L.A. Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston,

With regard to the July 15 vote on practices to reduce urban runoff, I want the board to know I am wholeheartedly in favor of a comprehensive pollution prevention program. The waters off our city beaches are a mess and need all the help you can give them.

Thank you for your attention and consideration in improving the situation for everyone.

Yours truly,

Les Oreck

0723

R0064977

July 2, 1996

Dear Mr. Keston,

I simply don't believe that we, as a society or an urban area, have the right to pollute our own natural environment. I believe we owe it to ourselves to do all we can to clean-up and return to a natural state our local habitat.

The recent study showing increased illness to those who swim near storm drains emphasizes the priority of mitigating this problem to the best of our ability.

I urge you to maintain and to strengthen measures to control and reduce the problem of polluted urban run-off into our local ocean.

Thank you for your thoughtful attention & consideration to this matter.

Sincerely,

DALE SHERO

REDONDO BEACH

1206 Firmona Ave
Redondo Beach, CA 90278-4612

RECEIVED
96 JUL -8 PM 1:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0724

VOL 21

0725

REC'D 3 July 1996

96 JUL -8 PM 1:35

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing to urge you and the other members of the Regional Water Quality Board to pass strong new storm water pollution prevention regulations during the 15 July 1996 vote.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick. Illnesses include colds, sore throats, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick. I personally have suffered from sinus and ear infections from exposure to storm drain runoff during the dry season as well as the rainy season. During the rainy season, I follow the 72 hour waiting period before going into the water. However, I have still have experienced the illnesses previously mentioned.

This is not acceptable. I strongly believe no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safer for swimming. In addition, urban runoff is toxic to marine life. It also results in trash on the beaches as well as dumping contaminated material in the ports and marina. This poses a serious environmental as well as a boating safety hazard. I have seen the results of this run of during local beach clean ups and LA River clean ups. Without strengthening regulations, this runoff will continue to contaminate coastal waters with pathogens, toxics and debris.

Please don't give in to pressure to weaken the regulations. These new regulations are needed to implement a comprehensive pollution prevention program for storm water runoff. What is at stake is nothing less than the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches, and the economic benefit of the coastal economy of Southern California. Thank you for your consideration.

Sincerely,

Delise E. Shearer

Delise Shearer
Member-Heal the Bay & Surfrider Foundation
2312 Ruhland Ave., #1, Redondo Beach 90278

R0064979

4105 Pacific Avenue #4
Marina del Rey, CA 90292
July 2, 1996

RECEIVED
96 JUL -8 PM 1:35
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Keston:

I am writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when you vote on July 15.

Urban runoff is toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marinas that pose both environmental and boating safety hazards. Recent studies show that those swimming near storm drains in Santa Monica Bay are 50% more likely to get sick. This is unacceptable.

As a sailor, kayaker, swimmer, and beach aficionado, I urge you to resist pressure to weaken the regulations. Thank you for your consideration of this serious matter.

Sincerely,

Rhonda Read Turner

VOL 21 0126

RECEIVED
96 JUL -8 PM 1:33
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

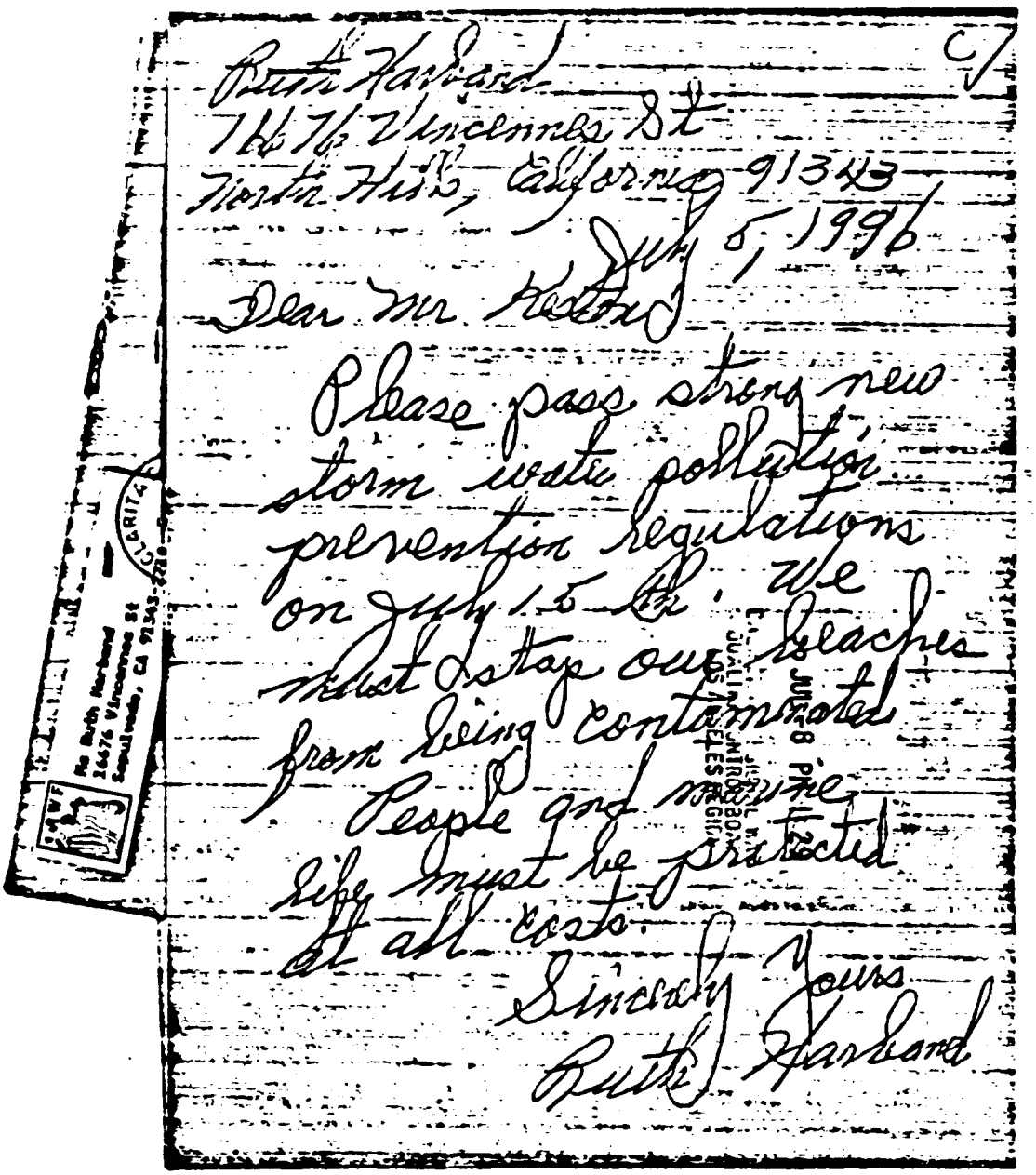
Thank for your serious consideration of this matter.

C: Governor Pete Wilson
Mayor Richard Riordan

Stephanie Abbott
Registered Voter!

907 1/2 S. Fuller Ave.
L.A., CA 90036

VOL 21 0727



Ruth Harband
16676 Vincennes St
North Hills, California 91343

July 5, 1996

Dear Mr Keston

Please pass strong new storm water pollution prevention regulations on July 15th. We must stop our beaches from being contaminated. People and marine life must be protected at all costs.

Sincerely Yours
Ruth Harband

Ms Ruth Harband
16676 Vincennes St
Sepulveda, CA 91343

JUL 8 PM 1:22
CALIFORNIA
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0728

R0064982

C/

VOL 21

July 5, 1996

CALIFORNIA REGIONAL WATER CONTROL BOARD
ATTN: MICHAEL KESTON, CHAIR
101 CENTRE PLAZA DR.
MONTEREY PARK, CA 91754-2156

Dear Mr. Keston,

I am writing to urge you to vote to issue a permit calling upon the 88 cities within LA County to adopt practices that will reduce urban runoff.

I feel that the new regulations are needed to implement a comprehensive pollution prevention program for storm runoff. What is at stake is nothing less than the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches and the economic benefit of the coastal economy of Southern California.

Please support a comprehensive pollution prevention program for storm runoff.

Sincerely,

Becky Soukup

Becky Soukup
Concerned Citizen
21501 Ellinwood
Torrance, CA 90503

BS/bs

RECEIVED
96 JUL -8 PM 1:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

0729

R0064983

C/

VOL 21

0730

DEAR SIR,

ON JULY 15, 1996 THE RWQCB WILL VOTE ON ADOPTING PRACTICES THAT WILL REDUCE URBAN RUNOFF. AS SOMEONE THAT IS IN THE OCEAN FREQUENTLY I SEE THE EFFECTS THAT RUNOFF HAS ON THE QUALITY OF THE WATER. AFTER STORMS THE AMOUNT OF POLLUTION IS TREMENDOUS, IT IS FILLED WITH PATHOGENS, TOXICS AND OTHER DEBRIS THAT POISONS OUR COASTAL WATERS, CONTAMINATES FISH AND AFFLICTS OTHER MARINE LIFE AS WELL AS SURFERS AND SWIMMERS.

THESE NEW REGULATIONS ARE NEEDED TO PROTECT OUR OCEAN AND THE ANIMALS AND PEOPLE THAT USE IT. THIS WILL ALSO BENEFIT THE ECONOMIC BASE OF SOUTHERN CALIFORNIA BY KEEPING THE WATERS OF OUR COASTLINE CLEAN.

PLEASE VOTE TO IMPLEMENT THESE NEW REGULATIONS AND SAVE LIVES.

THANK YOU

TOM HUFFMAN

TOM HUFFMAN
22391 CASS AVE.
WOODLAND HILLS, CA 91364

RECEIVED
96 JUL -8 PM 1:28
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -8 PM 1:36
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I am a thirty-year resident of Southern California and a Long Beach homeowner. I spend a lot of time at the beach with my family — swimming, surfing, fishing and kayaking. I would like you to know that I strongly support a comprehensive pollution prevention program for stormwater runoff in Los Angeles County.

Every year I suffer from several ear, throat and sinus infections that seem to develop immediately after surfing or swimming in the ocean. These illnesses may or may not be directly attributable to pollution in the water, but I'd sure like to clean up the ocean and find out.

Sometimes I force myself to stay out of the water after a rainstorm, even if the waves are good, because I'm afraid of the contaminants and the effects they may have on my health. This is a frustrating and regrettable loss of recreational use of our natural resources, but I am especially fearful of what may happen to my children and grandchildren due to their lifelong exposure to these toxins.

You have a chance to help solve this major problem, to preserve a safe and clean environment for us now and for the future. Please make the right decision and reduce urban runoff before it's too late.

Thank you.

Sean Strauss
3523 Senasac
Long Beach, CA 90808

cc: Governor Pete Wilson
Mayor Richard Riordan

CV VOL 21 0731

RICHARD & LUCILLE SEELEY

3924 El Caminito Street
La Crescenta, CA 91214

(818) 248-1793

C/

VOL 21

July 6, 1996

Michael Keston, Chair
Regional Quality Control Board
101 Centre Plaza Drive
Monterey Park, Ca. 91754-2156

Dear Mr. Keston:

I urge you and the other members of the Regional Water Quality Control Board to pass strong, enforceable storm water pollution prevention regulations when the matter comes up on July 15th.

A recent study by USC and the Santa Monica Bay restoration Project reflects that those who swim in areas where storm drains empty into the Bay, stand nearly a 50% chance of becoming ill with a cold, a sore throat, a fever, diarrhea, nausea or other illnesses!

Such a situation is not only not acceptable, but is inconscionable as well. Our entire coastline should be totally safe for swimming and other aquatic activities.

Urban runoff is also toxic to marine life, makes our beaches mere trash dumps, and contaminates our ports and marinas which poses both environmental and boating safety hazards.

Our beach and ocean areas must be kept safe and clean so that your children and mine, as well as their children, will be able to recreate without fear of illness or toxic poisoning. Do not allow political and economic pressure groups, in their greed, to pressure you and the Board into weakening the needed regulations. Thank you.

Sincerely,

Richard Seeley

RECEIVED
96 JUL -8 PM 1:42
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

0732

VOL 21

0133

RECEIVED
96 JUL -8 PM 1:40
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

Jane Gullette
2931 Plaza Del Amo #59
Torrance, CA 90503

CA Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754
**Attn: Michael Keston & Board Members**

Dear Regional Board,

Vote YES on the Los Angeles Countywide Municipal Storm water Permit on July 15. I have the right to swim and surf without getting sick.

Here are the facts:

- Contaminated runoff from storm drains is the main cause of pollution in Southern California.
- A recent health study showed that swimming near flowing storm drains during the summer greatly increases my chances of getting sick, even if I only swim once a week. To make matters worse, the ocean is full of trash and polluted with fecal waste after every storm.
- Without a strong storm water pollution prevention permit, we have no chance of cleaning up runoff and making beaches safe.

Please no more delays. Pass the permit on July 15. I want to enjoy our ocean once again.

Sincerely,

Jane Gullette

Jane Birkholz-Gullette

SUBJECT Water Quality

C

RECEIVED
96 JUL -8 PM
CANADA
LOS ALAMOS RI

Dear Michael Keston:

As an avid surfer in LA County I strongly support new regulations to implement a comprehensive pollution prevention program for storm water runoff. I have several friends who have become ill due to polluted runoff. Please steer your Regional Water Quality Control Board to issue a permit calling upon the 88 cities in LA County to adopt practices that will reduce urban runoff. Thank you.

Sincerely,

Timothy F. Corliss

Timothy F. Corliss

29239 Heathercliff Rd #7
Malibu CA 90265

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Board

VOL 21

0734

R0064988

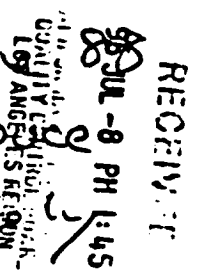
c

Michael Keston

Chair CRWQCB Los Angeles Region

I urge you to call upon the 88 cities within LA County to reduce urban runoff which ultimately disturbs, threatens, & destroys as it dumps into our nearby coastal waters.

RECEIVED
88 JUL -8 PM 1:45
CALIFORNIA REGIONAL
QUALITY CONTROL BOARD
LOS ANGELES REGION



IT is impossible to measure how much our beaches & water mean to our total image & incomes. But Baywatch is the most watched Show on the Planet Earth.... Ever... Southern California is Affected by Beach! We know Aerospace work is down ... let's not let our water be a toillette. Keep up the Image!

Thanks

Gary Reed
PO Box 860
Dana Point, CA 92629

VOL 21

0735

R0064989

7-2-96

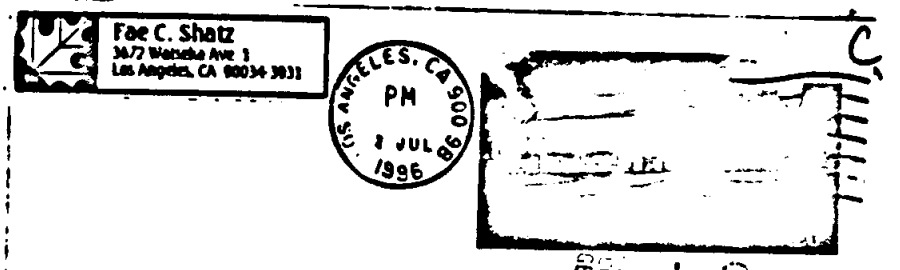
Dear Mr. Yeates,

I strongly urge you and the members of the Regional Water Quality Control Board to pass strong storm water pollution prevention regulations when it votes on July 15, 1996.

Uncontrolled urban runoff pollutes the Santa Monica Bay and is harmful and toxic to swimmers and marine life. This is unacceptable. We must do everything possible to have a clean and healthy Bay.

Sincerely,

Fae C. Shatz

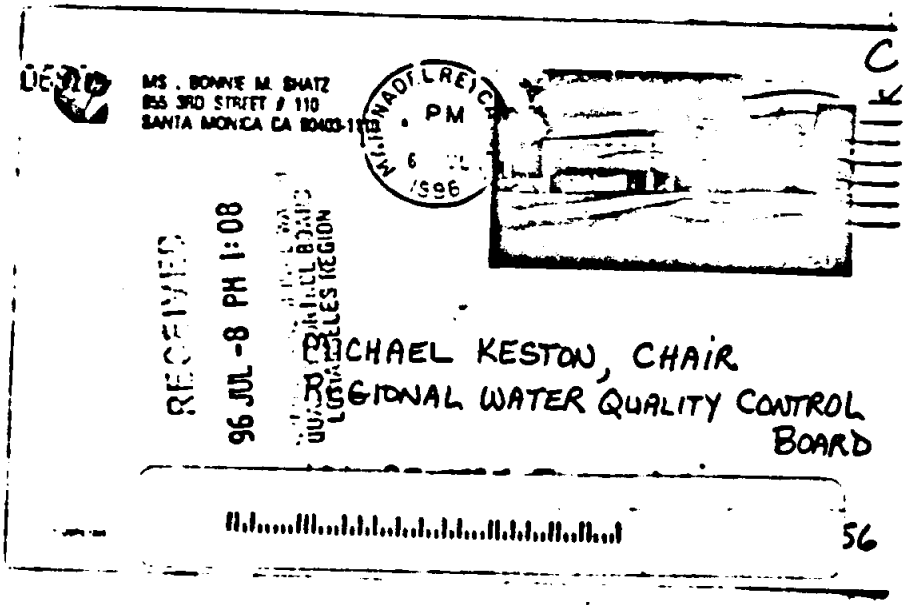



Michael Keston, Chair
Regional Water Quality Board
101 Centre Plaza Drive
Monterey Park, Ca.
91754-2156

VOL 21 0736

R0064990

VOL 21




0737

DEAR MR. KESTON, 7/5/96

I'M WRITING TO URGE YOU & OTHER MEMBERS OF THE REGIONAL WATER QUALITY CONTROL BOARD TO PASS STRONG NEW STORM WATER POLLUTION PREVENTION REGULATIONS WHEN IT VOTES ON JULY 15.

UNCONTROLLED URBAN RUN-OFF IS TOXIC TO HUMAN & MARINE LIFE. IN ADDITION, IT DEPOSITS CONTAMINATED MATERIAL IN THE PORTS & MARINA THAT POSES BOTH ENVIRONMENTAL & BOATING SAFETY HAZARDS; & IT LEAVES OUR ONCE BEAUTIFUL BEACHES LOOKING LIKE TRASH DUMPS. THIS IS NOT ACCEPTABLE!!

PLEASE DO NOT GIVE IN TO PRESSURE TO ALLOW WEAK REGULATION OF STORM DRAIN POLLUTION.

SINCERELY, Bonnie Shatz

C/

4651 Galendo St.
Woodland Hills, CA 91364
July 5, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA, 91754

RECEIVED
96 JUL -8 PM 1:08
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

I am greatly concerned about pollution of Santa Monica Bay waters by street run-off from storm drains. Since the W.Q.C.B. is at least partially concerned with coastal waters, it should recognize the great danger to public health that storm drain effluent presents. It is well established that swimming within 100 yards of a storm drain outlet to the bay will greatly increase one's chances of incurring a gastro-intestinal infection, sore throat, nausea and other unpleasant illnesses.

Therefore I urge you to pass strong new storm-water pollution prevention regulations on July 15 to help protect public health.

Sincerely,

James L. Campbell, Ph.D.

VOL 21 0738

R0064992

*Brian Wiles*
*211 Seal Beach Blvd. #3*
*Seal Beach, Ca 90740*

To :
Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza dr.
Monterey Park, CA 91754-2156

I was just informed that the RWQCB will be voting on July 15th whether to issue a permit calling upon the cities in LA county to adopt practices that will reduce urban runoff. I believe it is important that this passes and it goes into effect. The cities in LA need to reduce the amount of urban runoff to help fight pollution. LA needs to be concern about the health of the thousands of beachgoers that visit the coast everyday.

I am very much in support of a comprehensive pollution prevention program for storm water runoff. Please do what it takes to keep our water clean.

Thanks,
Brian Wiles
211 Seal Beach blvd. apt #3
Seal Beach, CA 90740
(310) 596-5891

RECEIVED
96 JUL -8 PM 1:08
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0739
R0064993

C✓

VOL 21

0740

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Liz Provencano
12207 Rochester Ave #8
Los Angeles, 90025

cc: Governor Pete Wilson
Mayor Richard Riordan

96 JUL -8 PM 1:09
LOS ANGELES REGION

R0064994

Rickey D. Dean
15344 Bixler Ave.
Paramount, CA 90723
(310)633-8268

July 5, 1996

Michael Keston
Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

re: Urban Run-off

Dear Mr. Keston:

I know you are very busy and your time very valuable. I will get right to the point.

On July 15, you will have the opportunity to do something about the urban run-off that is poisoning our coastal waters. As an avid surfing family, myself and my two daughters, we have personally felt the sickening affects of run-off. I have also been injured from floating debris, a tire.

I pray that you will support a comprehensive pollution prevention program to help reduce hazardous urban run-off. Please vote to require L.A. County cities to adopt safe run-off practices by requiring them to obtain a permit.

I thank you, my children thank you and my children's children thank you for for consideration and concern.

Respectfully,

Rickey D. Dean

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 JUL -8 PM 1:15
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

0741

RECEIVED
96 JUL -8 PM 1:26
REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Nancy Krusoe
Santa Monica resident

C: Governor Pete Wilson
Mayor Richard Riordan

Nancy Krusoe
804 Pier Ave.
Santa Monica, CA 90405

VOL 21

0742

July 3, 1996 C.

RECEIVED
96 JUL -8 PM 1:26
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dr. Dr. Rogers,

This letter is in regard to the adoption of the proposed storm water permit. I strongly urge you to vote for this on July 15. We truly need this for the health of all the people who swim in our bay. My kids have been there the Jr. life guard program & I'll hate to think they're health was in danger. Our beach in L.A. is our #1 tourist attraction - let's make it safer!

Yours truly,
Rita Gilmore

Rita Gilmore
430 Via de La Paz
Pacific Palisades, CA 90272

VOL 21

0743

R0064997

## ACTION ALERT!!!

**TO ALL LOS ANGELES COUNTY BEACH USERS:**

The Regional Water Quality Control Board will vote on July 15th whether to issue a permit calling upon the 88 cities within LA County to adopt practices that will reduce urban runoff. This runoff, the primary source of coastal pollution, is filled with pathogens, toxics and debris that poison our coastal waters, contaminates fish, afflicts marine mammals, and sickens surfers and swimmers.

The new regulations are needed to implement a comprehensive pollution prevention program for storm water runoff. What is at stake is nothing less than the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches and the economic benefit of the coastal economy of Southern California.

Please write a letter of support of a comprehensive pollution prevention program for storm water runoff to the RWQCB. Also, send copies to Governor Wilson and LA Mayor Richard Riordan.

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Governor Pete Wilson
State Capitol
Sacramento, CA 95814

Mayor Richard Riordan
City of Los Angeles
201 N. Figueroa St.
Los Angeles, CA 90012

Please call (800) 743-SURF to make a special contribution to Surfrider Foundation Clean Water Campaign this summer.

For more information call (714) 492-8170 Web: http www.sdsc.edu/surfrider

Surfrider Foundation
122 S. El Camino Real #67
San Clemente, CA 92672

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Mimi Cunningham
13810 NW PASSAGE APT 208
MARINA DEL REY CA 90292-7472

**ACTION ALERT!**
**TO ALL LOS ANGELES COUNTY BEACH USERS:**

**HELP US STOP RUNOFF POLLUTION!**

VOL 21

0744

VOL 21

0745

7/6/96

Dear Mr Keston, and other board members,

We, of the South Bay really need to have our ocean water clean and free of pollution from storm drains emptying in it. This runoff is not only a health hazzard to swimmers but to marine life as well. The beaches get littered with trash and debrie that is contaminated, often, and unsightly.

Recently, my son, who is a County Lifeguard stationed at Manhattan Beach got a bacterial infection from the water. This is a constant worry and very upseting. Every beach should be safe for swiming and for marine life.

A USC study claims if one swims in areas where storm drains empty into the Bay, sickness follows in 50% of the time.

I urge you to vote to tighten regulations to protect our waters and beaches.

Sincerely,

Mrs R. Patterson

Mrs R. Patterson

27965 Palos Verdes Dr. E.
Rancho Palos Verdes, Ca. 90275

96 JUL 12 PM 12:05

R0064999

C ✓

VOL 21

0746

Patricia and Robert Lane
213 18th St.
Manhattan Beach, CA
90266
July 6, 1996

RECEIVED
96 JUL -9 PM 12:04
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. ~~Keston~~,

We are writing th urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regualations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm draing empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That is not acceptable! We feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming!

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that posess both environmental and boating safety hazards.

Please do not give into pressure to weaken the regulations.
Sincerely,

Patricia Lane  Bob Lane

R0065000

PATRICIA BARRETT
850 SOUTH DETROIT STREET
LOS ANGELES CA 90036
213/931-0373

July 5, 1995

RECEIVED
96 JUL -9 PM 12:02
QUALITY CONTROL BOARD
LOS ANGELES REGION

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaze Drive
Monterey Par, CA 91754-2156

RE: Proposal to Adopt a Storm Drain Permit to Save the Santa Monica Bay

Dear Dr. Rogers:

It's easy to say not to think about money and the economic factors involved in the decision to vote for or against the Storm Drain Permit. Cities and businesses stating the price is too high have probably inundated every member of your board with reasons to vote no.

I have a better reason: Ten years from now, when you walk along the beach with your grandchild, what will be your answer be when she asks if she can swim in the Bay? I'd like to think you could look her in the eye and tell her to get her boogie board and go play in the surf.

Voting no gives us all a lousy future. In the long run, this really isn't about economics, it's about making the right decision for all of us in the State of California. Voting for the Storm Drain Permit sends a message to everyone that we treasure our land and our waters. The price isn't too high now. It will be later. *And there will be a "later."* By then, there will be talk of closing beaches, loss of the big bucks tourist trade and an angry group of taxpayers who in years to come will have to foot the bill for cleaning up the Bay.

Forget the quick fix and plan for a clean, healthy future. We need the protection this permit gives to our waters. California has always been a leader in our ecological heritage. Don't change the record now. Vote yes.

Sincerely,

VOL 21
0747
R0065001

4 other identical letters & addressed to Vernon, Coe, Slezak & Dore.

PATRICIA BARRETT
850 SOUTH DETROIT STREET
LOS ANGELES CA 90036
213/931-0373

RECEIVED
96 JUL -9 PM12:04
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

July 5, 1995

Ms. Charlotte Craven
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaze Drive
Monterey Par, CA 91754-2156

RE: Proposal to Adopt a Storm Drain Permit to Save the Santa Monica Bay

Dear Ms. Craven:

It's easy to say not to think about money and the economic factors involved in the decision to vote for or against the Storm Drain Permit. Cities and businesses stating the price is too high have probably inundated every member of your board with reasons to vote no.

I have a better reason: Ten years from now, when you walk along the beach with your grandchild, what will be your answer be when she asks if she can swim in the Bay? I'd like to think you could look her in the eye and tell her to get her boogie board and go play in the surf.

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Forget the quick fix and plan for a clean, healthy future. We need the protection this permit gives to our waters. California has always been a leader in our ecological heritage. Don't change the record now. Vote yes.

Sincerely,

VOL 21
0748
R0065002

PATRICIA BARRETT
850 SOUTH DETROIT STREET 213/931-0373
LOS ANGELES CA 90036

July 5, 1995

Mr. Charles Vernon
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaze Drive
Monterey Par, CA 91754-2156

RE: Proposal to Adopt a Storm Drain Permit to Save the Santa Monica Bay

Dear Mr. Vernon:

It's easy to say not to think about money and the economic factors involved in the decision to vote for or against the Storm Drain Permit. Cities and businesses stating the price is too high have probably inundated every member of your board with reasons to vote no.

I have a better reason: Ten years from now, when you walk along the beach with your grandchild, what will be your answer be when she asks if she can swim in the Bay? I'd like to think you could look her in the eye and tell her to get her boogie board and go play in the surf.

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Forget the quick fix and plan for a clean, healthy future. We need the protection this permit gives to our waters. California has always been a leader in our ecological heritage. Don't change the record now. Vote yes.

Sincerely,

VOL 21 0749

PATRICIA BARRETT
850 SOUTH DETROIT STREET 213/931-0373
LOS ANGELES CA 90036

July 5, 1995

RECEIVED
96 JUL -9 PM 12:02
WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Jack Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaze Drive
Monterey Par, CA 91754-2156

RE: Proposal to Adopt a Storm Drain Permit to Save the Santa Monica Bay

Dear Mr. Coe:

It's easy to say not to think about money and the economic factors involved in the decision to vote for or against the Storm Drain Permit. Cities and businesses stating the price is too high have probably inundated every member of your board with reasons to vote no.

I have a better reason: Ten years from now, when you walk along the beach with your grandchild, what will be your answer be when she asks if she can swim in the Bay? I'd like to think you could look her in the eye and tell her to get her boogie board and go play in the surf.

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Forget the quick fix and plan for a clean, healthy future. We need the protection this permit gives to our waters. California has always been a leader in our ecological heritage. Don't change the record now. Vote yes.

Sincerely,

VOL 21 0750

CV

PATRICIA BARRETT
850 SOUTH DETROIT STREET 213/931-0373
LOS ANGELES CA 90036

July 5, 1995

Mr. John Slezak
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaze Drive
Monterey Par, CA 91754-2156

RECEIVED
96 JUL -9 PM 12:02
CALIFORNIA REGIONAL WATER QUALITY CONTROL BD
LOS ANGELES REGION

RE: Proposal to Adopt a Storm Drain Permit to Save the Santa Monica Bay

Dear Mr. Slezak :

It's easy to say not to think about money and the economic factors involved in the decision to vote for or against the Storm Drain Permit. Cities and businesses stating the price is too high have probably inundated every member of your board with reasons to vote no.

I have a better reason: Ten years from now, when you walk along the beach with your grandchild, what will be your answer be when she asks if she can swim in the Bay? I'd like to think you could look her in the eye and tell her to get her boogie board and go play in the surf.

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Forget the quick fix and plan for a clean, healthy future. We need the protection this permit gives to our waters. California has always been a leader in our ecological heritage. Don't change the record now. Vote yes.

Sincerely,

VOL 21 0751

PATRICIA BARRETT
850 SOUTH DETROIT STREET 213/931-0373
LOS ANGELES CA 90036

July 5, 1995

RECEIVED
96 JUL -9 PM 12:04
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Clark Dane
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaze Drive
Monterey Par, CA 91754-2156

RE: Proposal to Adopt a Storm Drain Permit to Save the Santa Monica Bay

Dear Mr. Dane:

It's easy to say not to think about money and the economic factors involved in the decision to vote for or against the Storm Drain Permit. Cities and businesses stating the price is too high have probably inundated every member of your board with reasons to vote no.

I have a better reason: Ten years from now, when you walk along the beach with your grandchild, what will be your answer be when she asks if she can swim in the Bay? I'd like to think you could look her in the eye and tell her to get her boogie board and go play in the surf.

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Forget the quick fix and plan for a clean, healthy future. We need the protection this permit gives to our waters. California has always been a leader in our ecological heritage. Don't change the record now. Vote yes.

Sincerely,

VOL 21
0752
R0065006

Identical 5 or others addressed to Vernon, Slezak, Craven, Rogers, & Drane, & Keston

C/

Nomi Isak Kleinmuntz
927 Euclid Street
Apt. F
Santa Monica, CA 90403
(310) 393-1868

RECEIVED
96 JUL -9 PM 12:02
LOS ANGELES REGION

July 7, 1996

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Coe:

As I was growing up in Santa Monica, I spent more time at the beach than in my own backyard. I played in the surf nearly every day of every summer, and, in my teens, even braved an occasional stormy winter day. I did ocean swims in my youth with the Santa Monica AAU swim team, and later with fellow YMCA swim instructors. I have since been a SCUBA diver, an ocean rower, a windsurfer, and a passionate lover of the sea.

In my early twenties, I stopped going in the Santa Monica Bay. I had become ill and did not have the strength to continue with these sports. Doctors could not pinpoint what my illness was, or what was causing it, but it was clear that my middle and inner ear were involved and that my immune system was not functioning at its usual level. My life was interrupted for five years by this mystery illness, and I continue to this day to experience minor chronic ailments.

Although there is no proof that my exposure from the 1960s to the 1980s to the waters of the Santa Monica Bay (and to the myriad toxins that flow into the Bay from the storm drains) had contributed to my health problems, I ceased entering these waters. For me, it was too much of a risk. My decision has held fast, and is fortified each time I hear of the ear infections and rashes, and even hepatitis, contracted by those who continue to swim in the Bay. Most of my friends have sworn off the Bay's water, as well.

I miss the Santa Monica Bay. I am an ocean person with no clean ocean to swim in. A fish out of water.

<u>On July 15, when you cast your vote regarding the proposed storm water permit, please keep us in mind.</u> Not only those of us who have sworn off the Bay to avoid illness--the fish out of water--but also the fifty million who <u>will</u> swim in the Santa Monica Bay, and risk illness, this summer.

Sincerely,

Nomi Isak Kleinmuntz

Nomi Isak Kleinmuntz

cc: Michael Keston, Elizabeth Rogers, Charlotte Craven, Clark Drane, John Slezak, Charles Vernon, and Mark Gold at Heal the Bay.

VOL 21 0153

CX

Nomi Isak Kleinmuntz
927 Euclid Street
Apt. F
Santa Monica, CA 90403
(310) 393-1868

July 7, 1996

Charles Vernon
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Vernon:

As I was growing up in Santa Monica, I spent more time at the beach than in my own backyard. I played in the surf nearly every day of every summer, and, in my teens, even braved an occasional stormy winter day. I did ocean swims in my youth with the Santa Monica AAU swim team, and later with fellow YMCA swim instructors. I have since been a SCUBA diver, an ocean rower, a windsurfer, and a passionate lover of the sea.

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Sincerely,

Nomi Isak Kleinmuntz

cc: Michael Keston, Elizabeth Rogers, Charlotte Craven, Clark Drane, Jack J. Coe, John Slezak, and Mark Gold at Heal the Bay.

VOL 21

0754

R0065008

Nomi Isak Kleinmuntz
927 Euclid Street
Apt. F
Santa Monica, CA 90403
(310) 393-1868

RECEIVED
96 JUL -9 PM 12:04
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 7, 1996

John Slezak
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Slezak:

As I was growing up in Santa Monica, I spent more time at the beach than in my own backyard. I played in the surf nearly every day of every summer, and, in my teens, even braved an occasional stormy winter day. I did ocean swims in my youth with the Santa Monica AAU swim team, and later with fellow YMCA swim instructors. I have since been a SCUBA diver, an ocean rower, a windsurfer, and a passionate lover of the sea.

In my early twenties, I stopped going in the Santa Monica Bay. I had become ill and did not have the strength to continue with these sports. Doctors could not pinpoint what my illness was, or what was causing it, but it was clear that my middle and inner ear were involved and that my immune system was not functioning at its usual level. My life was interrupted for five years by this mystery illness, and I continue to this day to experience minor chronic ailments.

Although there is no proof that my exposure from the 1960s to the 1980s to the waters of the Santa Monica Bay (and to the myriad toxins that flow into the Bay from the storm drains) had contributed to my health problems, I ceased entering these waters. For me, it was too much of a risk. My decision has held fast, and is fortified each time I hear of the ear infections and rashes, and even hepatitis, contracted by those who continue to swim in the Bay. Most of my friends have sworn off the Bay's water, as well.

I miss the Santa Monica Bay. I am an ocean person with no clean ocean to swim in. A fish out of water.

On July 15, when you cast your vote regarding the proposed storm water permit, please keep us in mind. Not only those of us who have sworn off the Bay to avoid illness--the fish out of water--but also the fifty million who will swim in the Santa Monica Bay, and risk illness, this summer.

Sincerely,

Nomi Isak Kleinmuntz

cc: Michael Keston, Elizabeth Rogers, Charlotte Craven, Clark Drane, Jack J. Coe, Charles Vernon, and Mark Gold at Heal the Bay.

VOL 21 0155

CX

Nomi Isak Kleinmuntz
927 Euclid Street
Apt. F
Santa Monica, CA 90403
(310) 393-1868

July 7, 1996

Charlotte Craven
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Ms. Craven:

As I was growing up in Santa Monica, I spent more time at the beach than in my own backyard. I played in the surf nearly every day of every summer, and, in my teens, even braved an occasional stormy winter day. I did ocean swims in my youth with the Santa Monica AAU swim team, and later with fellow YMCA swim instructors. I have since been a SCUBA diver, an ocean rower, a windsurfer, and a passionate lover of the sea.

In my early twenties, I stopped going in the Santa Monica Bay. I had become ill and did not have the strength to continue with these sports. Doctors could not pinpoint what my illness was, or what was causing it, but it was clear that my middle and inner ear were involved and that my immune system was not functioning at its usual level. My life was interrupted for five years by this mystery illness, and I continue to this day to experience minor chronic ailments.

Although there is no proof that my exposure from the 1960s to the 1980s to the waters of the Bay (and to the myriad toxins that flow into the Bay from the storm drains) had contributed to my health problems, I ceased entering these waters. For me, it was too much of a risk. My decision has held fast, and is fortified each time I hear of the ear infections and rashes, and even hepatitis, contracted by those who continue to swim in the Bay. Most of my friends have sworn off the Bay's water, as well.

I miss the Santa Monica Bay. I am an ocean person with no clean ocean to swim in. A fish out of water.

<u>On July 15, when you cast your vote regarding the proposed storm water permit, please keep us in mind.</u> Not only those of us who have sworn off the Bay to avoid illness--the fish out of water--but also the fifty million who <u>will</u> swim in the Bay, and risk illness, this summer.

Sincerely,

Nomi Isak Kleinmuntz

cc: Michael Keston, Elizabeth Rogers, Clark Drane, Jack J. Coe, John Slezak, Charles Vernon, and Mark Gold at Heal the Bay.

VOL 21

0156

CX

Nomi Isak Kleinmuntz
927 Euclid Street
Apt. F
Santa Monica, CA 90403
(310) 393-1868

RECEIVED
96 JUL -9 PM 12:04
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 7, 1996

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

As I was growing up in Santa Monica, I spent more time at the beach than in my own backyard. I played in the surf nearly every day of every summer, and, in my teens, even braved an occasional stormy winter day. I did ocean swims in my youth with the Santa Monica AAU swim team, and later with fellow YMCA swim instructors. I have since been a SCUBA diver, an ocean rower, a windsurfer, and a passionate lover of the sea.

In my early twenties, I stopped going in the Santa Monica Bay. I had become ill and did not have the strength to continue with these sports. Doctors could not pinpoint what my illness was, or what was causing it, but it was clear that my middle and inner ear were involved and that my immune system was not functioning at its usual level. My life was interrupted for five years by this mystery illness, and I continue to this day to experience minor chronic ailments.

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I miss the Santa Monica Bay. I am an ocean person with no clean ocean to swim in. A fish out of water.

<u>On July 15, when you cast your vote regarding the proposed storm water permit, please keep us in mind.</u> Not only those of us who have sworn off the Bay to avoid illness--the fish out of water--but also the fifty million who <u>will</u> swim in the Bay, and risk illness, this summer.

Sincerely,

Nomi Isak Kleinmuntz

cc: Michael Keston, Charlotte Craven, Clark Drane, Jack J. Coe, John Slezak, Charles Vernon, and Mark Gold at Heal the Bay.

VOL 21

0757

CX

Nomi Isak Kleinmuntz
927 Euclid Street
Apt. F
Santa Monica, CA 90403
(310) 393-1868

RECEIVED
96 JUL -9 PM 12:04
STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 7, 1996

Clark Drane
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Drane:

As I was growing up in Santa Monica, I spent more time at the beach than in my own backyard. I played in the surf nearly every day of every summer, and, in my teens, even braved an occasional stormy winter day. I did ocean swims in my youth with the Santa Monica AAU swim team, and later with fellow YMCA swim instructors. I have since been a SCUBA diver, an ocean rower, a windsurfer, and a passionate lover of the sea.

In my early twenties, I stopped going in the Santa Monica Bay. I had become ill and did not have the strength to continue with these sports. Doctors could not pinpoint what my illness was, or what was causing it, but it was clear that my middle and inner ear were involved and that my immune system was not functioning at its usual level. My life was interrupted for five years by this mystery illness, and I continue to this day to experience minor chronic ailments.

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I miss the Santa Monica Bay. I am an ocean person with no clean ocean to swim in. A fish out of water.

On July 15, when you cast your vote regarding the proposed storm water permit, please keep us in mind. Not only those of us who have sworn off the Bay to avoid illness--the fish out of water--but also the fifty million who will swim in the Bay, and risk illness, this summer.

Sincerely,

Nomi Isak Kleinmuntz

cc: Michael Keston, Elizabeth Rogers, Charlotte Craven, Jack J. Coe, John Slezak, Charles Vernon, and Mark Gold at Heal the Bay.

VOL 21 0158

R0065012

Nomi Isak Kleinmuntz
927 Euclid Street
Apt. F
Santa Monica, CA 90403
(310) 393-1868

RECE
96 JUL -9
CALIFORNIA
QUALITY CON
LOS ANGELI

July 7, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

As I was growing up in Santa Monica, I spent more time at the beach than in my own backyard. I played in the surf nearly every day of every summer, and, in my teens, even braved an occasional stormy winter day. I did ocean swims in my youth with the Santa Monica AAU swim team, and later with fellow YMCA swim instructors. I have since been a SCUBA diver, an ocean rower, a windsurfer, and a passionate lover of the sea.

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I miss the Santa Monica Bay. I am an ocean person with no clean ocean to swim in. A fish out of water.

On July 15, when you cast your vote regarding the proposed storm water permit, please keep us in mind. Not only those of us who have sworn off the Bay to avoid illness--the fish out of water--but also the fifty million who will swim in the Santa Monica Bay, and risk illness, this summer.

Sincerely,

Nomi Isak Kleinmuntz

Nomi Isak Kleinmuntz

cc: Elizabeth Rogers, Charlotte Craven, Clark Drane, Jack J. Coe, John Slezak, Charles Vernon, and Mark Gold at Heal the Bay.

VOL 21 0759

RECEIVED
96 JUL -9 PM 12:04
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
07600

June 20, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

Fact: Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Sue Hutchins

812 Indiana Ave.
Venice, CA 90291

cc: Governor Pete Wilson
Mayor Richard Riordan

R0065014

C✓

Elaine Lloyd
1715 O'Leary Ct.
Newbury Park, CA 91320

RECEIVED
96 JUL -9 PM 12:02
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

July 8, 1996

Mr. Michael Keston
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Montery Park, CA 91754-2156

Dear Mr. Keston:

We support a comprehensive pollution prevention program for storm water runoff! Please vote on July 15th to issue a permit within Los Angeles County to adapt practices that will reduce urban runoff.

Sincerely,

Elaine Lloyd
Alicia Grooms
Mischelle Ray
S. Bowman
Mike T
Elizabeth Reeves
Daniel M Amado
Scott Henry
Paul Fitzhugh
James C Greene
Gary L Mallaley

0761

cc: Governor Pete Wilson, Mayor Richard Riorden

R0065015

1-16

Michael Kaston
Calif Regional Water Quality Control Board
L.A. Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Kaston:

We support a comprehensive pollution prevention program for storm water runoff! Please vote on our behalf on July 15th to issue a permit within L.A. County to adopt practices that will reduce urban runoff.

Sincerely,

Elaine M. Lloyd, 1715 O'Leary Ct., Newbury Park, CA 91320
Ellie Edwards
Fred Noble
Jane Ziegler

CC: Governor Pete Wilson, Mayor Richard Riordan

VOL 21 07162

C.

VOL 21

RECEIVED
96 JUL -9 PM 12:04
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

July 6, 1995

RE: Pollution Prevention Program for Storm Water Runoff.

Dear Mr. Kester,

New regulations are needed to implement a comprehensive pollution prevention program for storm water runoff. Not only the safety of beach goers is at stake but also the coastal economy of Southern California. I strongly urge that LA County adopt practices that will reduce urban runoff. It can be done. The safety of our citizens, and the protection of precious wildlife is at stake. We can't turn back the clock but we can create our future. Please attend to this issue, it is urgent.

Sincerely,

David Lindquist

Copies to:
Governor Pete Wilson
Mayor Richard Riordon

DAVID S. LINDQUIST
7836 ALEXANDER RD
LAGUNA BEACH, CA

07663

1424 NORTH BEVERLY DRIVE
BEVERLY HILLS - CAL. 90210
T. (213) 2768660
310

July 3, 1996

RECEIVED
96 JUL -9 PM 12:04
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

For the sake of our economy, our health, and our precious natural resources, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Philippa Calnan

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0764

Lee Forese
200 So. Topanga Cyn. Blvd.
Topanga, CA 90290

RECEIVED
96 JUL -9 PM 12:04
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Lee Forese

C: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0765
R0065019

07

VOL 21

RECEIVED
96 JUL -9 PM 12:05
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

C: Governor Pete Wilson
Mayor Richard Riordan

0766

11

C7

VOL 21

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Daryl Keighley

C: Governor Pete Wilson
Mayor Richard Riordan

Daryl Keighley
33 Thornton Ave
Venice, CA 90291

0767

No address C

RECEIVED
96 JUL -9 PM 12:05
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely, Harvey Hunter

No address

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0768

R0065022

c.

VOL 21

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region

Dear Mr. Keston,

I am writing to you in concern of our ocean waters. Being one who loves to spend my teen age years at the beaches, I have a concern for the "health" of the beach. Thus, I support the comprehensive pollution prevention program for storm water runoff.

This act seems to be so helpful for the environment. The protection of the swimmers and surfers will be increased, as well as the protection of marine animals. What more can you ask for? Please, help us in doing our part for keeping the environment clean.

Sincerely,

Theo Fedoruk

10941 Lime Tree Dr.
Santa Ana, CA 92705

RECEIVED
96 JUL -9 PM 12:05
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

07169

R0065023

Mary Luevano
24680 Calle Largo
Calabasas, CA 91302
818/407-7007

July 5, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a business operator in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. Our beaches are an important economic driver for the region, and we must take smart, reasonable, cost-effective action to protect our resources.

After reading in the Los Angeles Times that people are getting sick from storm drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures. I am pleased that the business community was included in the negotiations–as were representatives of all the effected parties.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes good economic sense and good environmental sense.

Thank you for your consideration.

Sincerely,

Mary Luevano

cc: Governor Pete Wilson
Mayor Richard Riordan

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96 JUL -9 PM 12:05
QUALITY CONTROL BOARD
LOS ANGELES REGION

14

VOL 21
0710
R0065024

7/7/96

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keaton,

It has been brought to my attention that the Regional Water Quality Control Board will vote on a permit calling for the cities in LA County to adopt practices that will reduce urban runoff. I strongly support this action. These new regulations are needed to help prevent pollution from storm water runoff. Water quality is tremendously important here in Southern California. With the southland's oceans being used for recreational, educational, economic, and ecological purposes it is vital that the oceans be protected, and the permit that will come to vote on July 15 will do just that. Thank you for your time.

Sincerely,

Jon R. Ralston

16029 Basil St.
Fountain Valley, CA 92708

RECEIVED
96 JUL -9 PM 12:04
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0771

VOL 21

0712

1307 Federal Avenue
Apartment 12
Los Agneles, CA 90025

July 7, 1996

RECEIVED
96 JUL -9 PM 12:04
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Elizabeth Rogers
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Dr. Rogers:

I urge you to fight water pollution in Santa Monica Bay. Please adopt a storm water permit, to have Los Angeles County and its cities treat water from storm drains, before that water enters the ocean.

Water pollution threatens the health of approximately 50 million swimmers a year, in the Santa Monica Bay.

Water pollution harms marine animals.

Water pollution can be harmful economically to Southern California, by decreasing tourism.

Thank you for your help.

Sincerely,

Dominick Falzone

Dominick Falzone

RECEIVED
96 JUL -9 PM 12:0
QUALITY CONTROL BO
LOS ANGELES REGIO

Thomas Tabbert
27 Abeto
Irvine,CA 92620

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754

Dear Mr. Michael Keston:

I am writing this letter with strong support of a comprehensive pollution prevention program for storm water runoff infecting our ocean. I, my brothers, parents ,friends, and neighbors all sincerely hope and will be extremely appreciative if methods are adopted that will reduce urban debris that poison our precious coastal enviorment. We all love to surf swim fish and play in our beautiful ocean that we are so lucky to have, therefore we have a big responsibility.

I am an 18 year old surfer and have been sick with ear, nose, and throat infections three times in the last year. I was sick for a good week to two weeks. Every time it was directly from the dirty ocean water. All my friends and acquaintances have been similarly affected, some more severely than others.

Thank you for taking the time to read this and I know you'll do the right thing for our fragile,irreplaceable enviornment and for the health of countless beachgoers.

Sincerely,

Thomas D Tabbert

Thomas Douglas Tabbert

VOL 21 0713

c✓

VOL 21

Melinda A. Nelson
2901 Alder Place
Fullerton, CA 92835
(714) 529-7056

RECEIVED
96 JUL -9 PM 12:00
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 1, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am in support of a comprehensive pollution prevention program for storm water runoff to the RWQCB. The runoff is a primary source of coastal pollution affecting waters, fish, marine mammals, surfers, swimmers, and ME. The new regulations are needed to remedy the current poor situation. My health as a beachgoer is in jeopardy. I want something to be done to improve the quality of nearshore coastal waters, the beauty of miles of County beaches, and the economic benefit of the coastal economy of Southern California.

I hope that my best interest is considered in making this crucial decision.

Sincerely,

Melinda A. Nelson

Melinda A. Nelson

0774

July 6, 1996

RECEIVED
96 JUL -9 PM 12:01
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston:

Re: July 15th vote to issue a permit to adapt practices to reduce urban runoff.

Pollution, be it air or water, is taking it's toll on mankind as we know it.

I personally get sick or develop various reactions to the ocean on a somewhat regular basis and I'm very healthy to begin with. What's being done to our youth and seniors is criminal. The toxins and other pollutants are causing long term diseases in all people and animals, not just oceangoers. This comes from the fish we eat and the air we breath.

**I am in complete support of a comprehensive pollution prevention program for storm water runoff.**

Please allow future generations to live in a healthy and envoirmentally friendly world. Your support can and will set an example to other politicians who are indecisive or apathetic.

Thank you very much for your consideration.

Sincerely,

Reid Goldstein (714-489-2497)
30 Fairlane Rd.
Laguna Niguel, CA 92677

VOL 21 0715

Andrea Valcourt
642 Rosecrans Avenue
Manhattan Beach, CA 90266

July 8, 1996

RECEIVED
96 JUL -9 PM 12:01
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing in support of the Storm Water Pollution Prevention Regulations which are due for vote on July 15, 1996. I would appreciate if you would not only vote for this legislation, but would also use your influence on the other board members to vote for these regulations.

As you know, recent USC studies have shown that people are 50% more inclined to become ill after swimming near where a storm drain empties into the ocean. This not only impacts the swimmers directly, but also affects the economy with lost work time and Medical benefits outpayments.

I live in Manhattan Beach where there are many good programs to support a cleaner environment and bay. Please give your support to this important legislation so that all of our efforts will be as fruitful as possible.

Thank you for your time and consideration.

Sincerely,

Andrea Valcourt

VOL 21
0716
R0065030

RECEIVED
96 JUL -9 PM 12:02
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21

THOMAS B. GIRVIN
6213 NORTH OAK AVENUE
TEMPLE CITY, CALIFORNIA 91780

July 8, 1996

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles, Region 101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Keston:

I understand that the Regional Water Quality Control Board will vote on July 15th whether to issue a permit calling upon the 88 cities within Los Angeles County to adopt practices that will reduce urban runoff. I further understand that this runoff , is the primary source of coastal pollution and is filled with pathogens, toxics and debris that poison our coastal waters, contaminates fish, afflicts marine mammals, and sickens surfers and swimmers.

This letter is to advise that I support a comprehensive pollution prevention program for storm water runoff . Your positive action to this end is appreciated.

Sincerely;

Tom Girvin

CC: Governor Pete Wilson
Mayor Richard Riordan

0777

2

C1

VOL 21

2 July 1996

Elizabeth Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -9 PM 12:35
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

How can we afford NOT to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford NOT to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we TURN AWAY from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to YOU.

PLEASE vote to adopt the permit on July 15.

Sincerely,

Susanne K Filkins

Susanne K. Filkins
3360 Adina Dr.
LA, CA 90068

Already on list as of July 2

07178

22

2 July 1996

Clark Drane
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -9 PM 12:35
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Clark:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

How can we afford NOT to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford NOT to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

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For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to YOU.

PLEASE vote to adopt the permit on July 15.

Sincerely,

Susanne K Filkins

Susanne K. Filkins
3360 Adma Dr.
LA, CA 90068

Already on list as of July 2

VOL 21 0779

Cx

VOL 21

2 July 1996

RECEIVED
96 JUL -9 AM 11:44
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Jack J. Coe
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Jack:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

How can we afford NOT to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford NOT to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we TURN AWAY from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to YOU.

PLEASE vote to adopt the permit on July 15.

Sincerely,

Susanne K. Filkins

Already received/on list on July 2

0780

R0065034

ck

2 July 1996

Charles Vernon
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -9 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Charles:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

How can we afford NOT to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford NOT to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we TURN AWAY from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to YOU.

PLEASE vote to adopt the permit on July 15.

Sincerely,

Susanne K. Filkins

Susanne K. Filkins

Already on list / received on July 2 list.

VOL 21 0781

July 8, 1996

RECE
96 JUL -9
IFORNIA
QUALITY CON
LOS ANGELE

Mr. Keston,

I write to you due to the fact that I am a surfer, a high school Biology/Marine Science teacher, and a fisherman.

At 62 years of age, I have been truly blessed to have dived Laguna in the 1950's when abalone and lobster were plentyful. Taught myself to SCUBA dive in 1958 in order to steal an occasional lobster from the commercial traps at Diver's Cove (UGH). In the 1940's, my father would take me fishing on the Redondo barge, and even earlier we would stay at Hermosa for a month in the summer and I would fish off the pier. This is undoubtedly where I acquired my interest in the ocean.

Now, I would be hard pressed to eat any fish taken from Santa Monica Bay.

I have been a surfer for almost 36 years; I am also President of the Malibu Surfing Association. Perhaps due to the latter, I spend a great amount of time surfing Malibu Surfrider Beach. My right eye is like the coal miner's canary; it often indicates when excessive pathogens are in the ambient surfzone. Many times it has become infected due to polluted ocean water.

Thus I write to you regarding the July 15 deadline as to whether to issue a permit calling for the 88 cities within L.A.County to better control runoff.

I have had many experiences with pathogens from runoff. I have heard of a large number more from friends and acquaintances, particularly in our club. The L.A. Times has had horror stories of the life guards that have worked near a storm drain. This must cease. Our near shore pollution is an issue we can control. The people should not have to go to the initiative process as we did in 1971 in order to get to vote on a proposed Coastal Commission, since the legislators were afraid to deal with the issue.

The pollution is unacceptable. Please start the process. Hopefully, it will roll on from there.

Yours,

Gary Stellern

Gary Stellern
1460 Casa Grande
Pasadena, Ca. 91104
818 7989868

VOL 21 0782

R0065036

6224 Kenwath
Woodland Hills CA
91367

RECEIVED
95 JUL -9 AM 11:48
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0783

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0784

RECEIVED
96 JUL -9 AM 11:49
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Donald Behrens

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0785

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0786

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Colleen C. McCarthy

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0787

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0788

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Please do <u>your</u> part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Connie Harrison

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0789

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Sincerely,

Helen Tzur

Helen TZUR

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0790

RECEIVED
95 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Joe Pearson
PRESIDENT EPOCH INK CORP (SANTA MONICA)

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0791

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0192

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0193

RECEIVED
95 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Sincerely,

Ryan Schuf 310-552-9091

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0794

RECEIVED
96 JUL -9 AM 11:48
STATE OF CALIFORNIA
WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Carol Dresser

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0795

RECEIVED
96 JUL -9 AM 11:48
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Lily Anne Rains
Student Body President of Crossroads School in Santa Monica

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0796

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Alec Gains

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0797
R0065051

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Juliette Anthony
3992 East Blvd. #303, Los Angeles, CA 90064

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0798

RECEIVED
96 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Kathleen M. Duncan

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0799

RECEIVED
95 JUL -9 AM 11:48
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Mike Forrest

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 00800

RECEIVED
96 JUL -9 AM 11:47
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

John Bell, Vice Pres
Malibu Boardriders Assoc.

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0801

RECEIVED
96 JUL -9 AM 11:47
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Paul J. Ihrs

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0802

RECEIVED
96 JUL -9 AM 11:47
QUALITY CONTROL BOARD
LOS ANGELES REGION

June 27, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Fact: Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

Fact: The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0803

c/

Dear Mr Michael Keston

Please do your very best to see the vote on July 15th go the way of improved Ocean water quality!

There are way to many beaches in L.A. County and surrounding Counties with Ocean water unsuitable for Human Recreational uses.

This is a sad reality that for some reason is being ignored by our political leaders. We know where the majority of our Ocean pollution comes from and

VOL 21

0804

R0065058

ichael Kest c/

how it finds it's way to our Ocean. It comes from the streets and it's conduit is the storm drains.

Mr Keston, make your's the administration who does somthing about this.

What a wonderful thing to do for your children and my children and their children

Sincerely

John Willson

An active California voter since 1970

115 5th St. #3

Seal Beach, CA 90740

VOL 21

0805

R0065059

July 4, 1996

C/

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

RECEIVED
96 JUL -8 PM 1:26
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

This letter is written on behalf of support of a comprehensive pollution prevention program for L. A. County Beaches. Storm water runoff is the main source of pollution along our coast. This runoff is full of debris, toxics, and pathogens that contaminate our water, the fish, and marine mammals. It also sickens swimmers and surfers and the health of thousands of beachgoers. There is a phenominal risk to our beautiful County beaches not to mention the risk of economic benefit of the Coastal economy of Southern California.

We need new regulations for a tougher pollution prevention program NOW. We are depending on you to do all you can to move ahead with this vital program. Please VOTE YES on July 15 to Reduce Urban Runoff!!

Sincerely,

The Yocum Family
Dan, Shelly, Erica, and Rachel
393 N. Clinton St.
Orange, CA 92687

VOL 21

C0806

R0065060

RECEIVED
96 JUL 10 AM 11:53
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 8, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a surfer and avid beachgoer in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. I am sure that you are all aware that the primary source of coastal pollution is urban runoff. This runoff is filled with pathogens, toxics and debris that poison our coastal waters, contaminates fish, afflicts marine mammals, and sickens surfers and swimmers. New regulations are needed to implement a comprehensive pollution program for storm water runoff.

Furthermore, after reading in the Los Angeles Times that people are definitely getting sick from drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am even more moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures.

Speaking from the many personal experiences I have had with ear infections caused by surfing in polluted waters, I strongly urge and support you to please take advantage of this opportunity to adopt public policy that will help the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches and the economic benefit of the coastal economy of Southern California.

Thank you for your consideration.

Sincerely,

KATHY ADIBI

Kathy Adibi
5260 Vanalden Ave.
Tarzana, CA 91356

VOL 21

00807

4C

VOL 21

July 8, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As an avid beachgoer in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. I am sure that you are all aware that the primary source of coastal pollution is urban runoff. This runoff is filled with pathogens, toxics and debris that poison our coastal waters, contaminates fish, afflicts marine mammals, and sickens surfers and swimmers. New regulations are needed to implement a comprehensive pollution program for storm water runoff.

Furthermore, after reading in the Los Angeles Times that people are definitely getting sick from drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am even more moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures.

I strongly urge and support you to please take advantage of this opportunity to adopt public policy that will help the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches and the economic benefit of the coastal economy of Southern California.

Thank you for your consideration.

Sincerely,

K Adibi

Dr. Kami Adibi
5260 Vanalden Ave.
Tarzana, CA 91356

RECEIVED
96 JUL 10 AM 11:53
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

08008

RECEIVED
96 JUL 15 AM 11:53
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 5, 1996

Michael Keston, Chair
Calif. Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, Ca. 91754-2156

Dear Mr. Keston,

I am in support of a comprehensive pollution prevention program for storm water runoff. I am one of the members of the Seaside Foundation that volunteers at Long Beach's El Dorado Nature Center's Moveable Museum Program POWW - Protect Our Watery World. POWW teaches youngsters about urban runoff and the dangers it creates in our waters both to us and the plants and animals that live there.

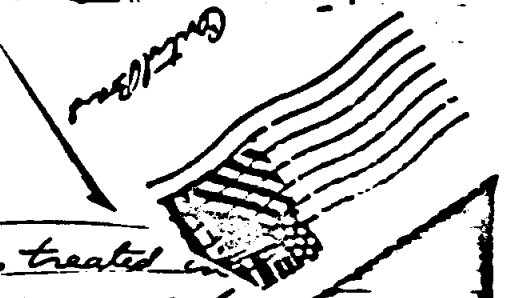
Since my volunteering in this program I have become aware that many adults and children

VOL 21

0809

R0065063

951



think our street runoff is treated in the sewer system. Most people have no idea that whatever is on their streets ends up in our waters. I believe that an educational aspect needs to be included in the pollution prevention program.

Also, I am a resident of Seal Beach. I run on the beach almost daily. The contents and the amount of pollution that washes ashore there from the San Gabriel River is unbelievable! I am glad to see that the L.A. Regional Water Quality Control Board is moving in the right direction to diminish this problem. I support and applaud your efforts to clean up our waters.

Sincerely,

Wendy Morris

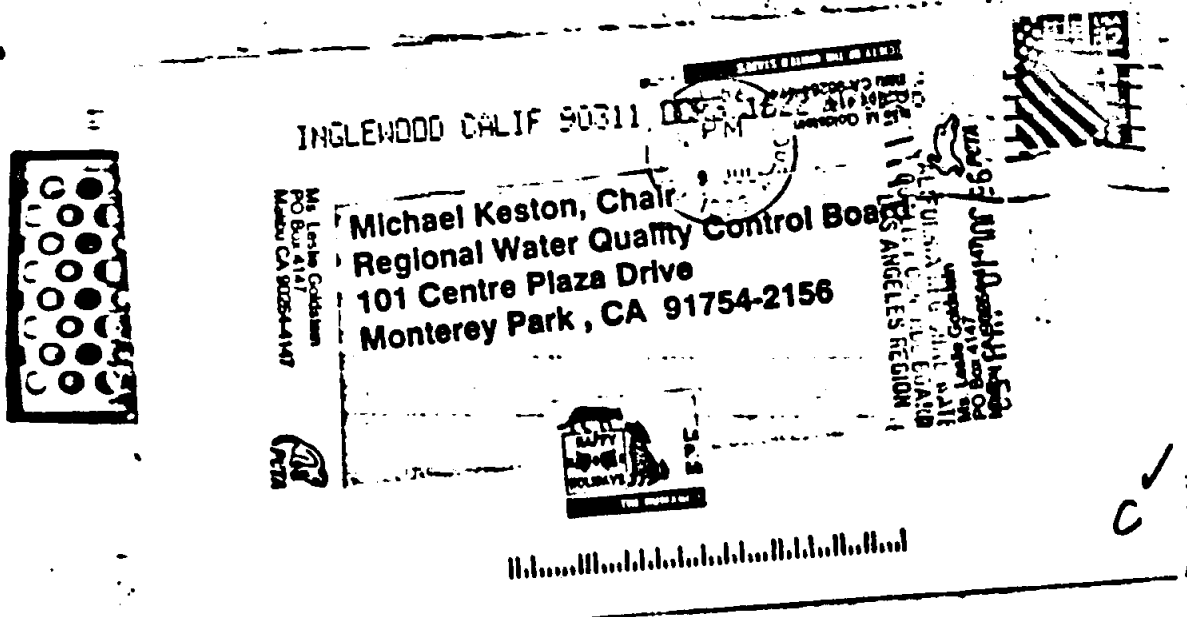
1729 Crestview Ave.
Seal Beach, CA 90740

VOL 21

08-10

R0065064

VOL 21




Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Leslie Goldstein (Malibu Ca.

08-11

RECEIVED
95 JUL 10 AM 11:49
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 2, 1996

California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

We have recently become aware of the scheduled July 15, 1996 vote of the Regional Water Quality Control Board concerning the adoption of regulations requiring Los Angeles cities to reduce urban runoff. We strongly support the proposed regulations, and believe enforcement of such codes will benefit the health of individual's utilizing the beaches as well as the beach communities in general. Our beliefs regarding the importance of this initiative stem from personal experiences; as frequent beachgoers we have suffered several bouts of polluted water related illnesses, including a severe eye infection. We implore the Regional Water Quality Control Board to vote in favor of regulations that will both decrease the public health risk and enhance the quality of the coastal environment, therefore upholding the responsibilities of this Board.

Sincerely,

George and Mary Drexinger

150 Hermosa Ave #9
Hermosa Beach, CA 90254

VOL 21 0812

RECEIVED
96 JUL 10 AM 11:50
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear CRWQCB,

I urge you to support a comprehensive pollution prevention program for stormwater runoff, it is something that is desporately needed in L.A county. I am one who enjoys to play in the ocean, but am able to leave the ocean when pollution occurs, unlike the living creatures in the ocean. We all suffer when our oceans are polluted and something must be done. Education is the key to an effective pollution prevention program, so please ~~ate~~ act without Haste and help to save out oceans.

Thank you

Brian Bailey
186 W. Mission Ave.
Ventura, CA 93001

VOL 21 0813

R0065067

VOL 21

0814

Kenneth & Dorothy Lyon
28506 San Martinez Ord. Cyn.
Saugus CA 91304

SANTA CLARITA CA 91351
PM
09 JUL
1996

Dr. Robert Ghirelli
Calif. Reg. Water Quality Board
101 Centre Plaza Dr.
Monterey Park, CA. 91754-2156

July 7, 1996

Please use all the resource "stops" to dis-allow the massive strip-mining pit in the beautiful hills of Fillmore, CA. As your resident & mayor has worked for the STOP. We beg you keep it out - our grand-children need the clean air - our elderly deserve your concern.

Sincerely,

Ken & Dorothy Lyon

RECEIVED
95 JUL 10 AM 11:53
QUALITY CONTROL BOARD
LOS ANGELES REGION

R0065068

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Deborah A. Rutoski

C: Governor Pete Wilson
Mayor Richard Riordan

Deborah A. Rutoski
27 1/2 Thornton Ave.
Venice, CA 90291

RECEIVED
96 JUL 10 AM 11:59
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0815
R0065069

C ✓

VOL 21

June 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Merrily Weeler

C: Governor Pete Wilson
Mayor Richard Riordan

Merrily Weeler
861 N. Detroit
LA, CA 90046.

0816

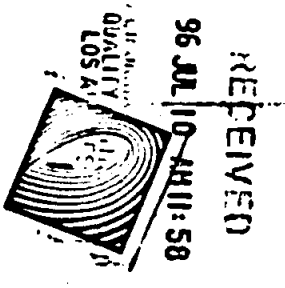
**TO ALL LOS ANGELES COUNTY BEACH USERS:**

The Regional Water Quality Control Board will vote on July 15th whether to issue a permit calling upon the 88 cities within LA County to adopt practices that will reduce urban runoff. This runoff, the primary source of coastal pollution, is filled with pathogens, toxics and debris that poison our coastal waters, contaminates fish, afflicts marine mammals, and sickens surfers and swimmers.

July 8, 1996

John Henrici
18 Sand Dollar Ct.
Newport Bch, Ca. 92663

Michael Keston, Chair
California RWQCB
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, Ca. 91754




Dear Sir:

This letter is to encourage you to support a comprehensive pollution prevention program for stormwater runoff. I realize that this is a difficult problem - costly and difficult to enforce. However, if we don't do it here, who will? Who else has more to lose? The beaches and surf of California are world-wide symbols of our enviable life-style. When we can no longer swim in the ocean, Los Angeles will be a much less attractive place to work in and visit.

Ignorance is bliss, but we cannot plead ignorance any more. This is our problem. Our generation must <u>begin</u> the fight against pollution so that our children will have something to build upon.

ACTION ALERT!!!

Sincerely,

R0065071

VOL 21

0817

Britton C. Smith
1400 Hermosa Ave., Apt. D • Hermosa Beach, CA 90254 • (310) 379-4299

VOL 21

8 Jul 96

Michael Keston
Chair, California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Mr. Keston:

This is a letter encouraging the Regional Water Quality Control Board to vote on July 15th in favor of a permit which would call upon the cities of LA County to adopt practices which will reduce urban runoff.

Sincerely,

Britton C. Smith

Britton C. Smith

RECEIVED
96 JUL 10 AM 11:58
QUALITY CONTROL BOARD
LOS ANGELES REGION

cc// Governor Pete Wilson

R0065072

VOL 21

0819

July 1, 1996

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Rocco Matone

C: Governor Pete Wilson
Mayor Richard Riordan

Rocco Matone
110 Dudley Ave. No. 2
Venice, CA 90291

RECEIVED
96 JUL 10 AM 11:58
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Sir,

8 July 1996

I am writing you regarding an upcoming decision you will be involved in. The issue is whether or not to permit the reduction of urban runoff to the cities of LA County.

If you are not aware, the runoff from LA cities runs directly into the LA area beaches, unfiltered and uncleaned! This runoff contains various types of pollution, including toxins, feces, oils, trash, chemicals, etc.

LA urban runoff often causes harm to both humans and animals. I frequently use LA area beaches and I am a resident of LA County. I, as well as most of my friends, have gotten sick, on more than one occasion, due to current allowed runoff levels. I have also seen local marine life wounded or dead because of the results of urban runoff.

If anything, the LA runoff standards need to be stronger and enforced with higher priority.

The LA beaches are currently a major source of income, fun, and relaxation for LA area residents. This all will be negatively affected if this permit is passed.

I am against this permit being passed and encourage you to vote in the same way, when you get the chance. Thank you for your time.

Sincerely,

Hawthorne, CA

Frank Boldus Jr.
4783 N. 133rd St. #25
Hawthorne, CA 90250-8762

RECEIVED
96 JUL 10 AM 11:57
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0820

GINA LADINSKY
17420 VEREDA DE LA MONTURA
PACIFIC PALISADES, CA 90272

July 8, 1996

Mr. Michael Keston,

I support a comprehensive pollution prevention program for storm water runoff to the RWQCB. Stop urban run-off now! Thank you,

Gina Ladinsky

RECEIVED
96 JUL 10 AM 11:57
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21
0821

7/7/96

GINA LADINSKY
17420 VEREDA DE LA MONTURA
PACIFIC PALISADES, CA 90272

Cx

Dear Dr Rogers,

Please adopt the proposed Storm water permit. Stop pollution of the Santa Monica Bay & of the residents & visitors who swim in the bay. Stop urban runoff! Thank you,

Sincerely,

Gina Ladinsky

RECEIVED
96 JUL 10 AM 11:57
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0822

R0065076

July 08, 1996

Mr. Keston,

I would like to urge you to please vote to implement the comprehensive pollution prevention program for storm water runoff on July 15. I feel this is an important aspect of our continued efforts to help preserve the quality of our coastal waters. If you do decide to support this legislation I would like to thank you in advance.

Sincerely,

Henry Koehn

18427 Vercennes St. #4
Northridge, CA 91325

VOL 21
0823
R0065077

9515 Via Venezia
Burbank, CA 91504
(818) 768-4753
Porterfid@aol.com

RECEIVED
10 AM 11:57
QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Keston,

I write for myself and as an active member of the Surfrider Foundation.

The cities of Los Angeles County need to care for their neighboring oceans. Runoff is now becoming more polluted than treated sewage: This is not a good sign. While there is no substitute for full public awareness and participation to ensure the reduction of runoff pollution, someone must show leadership somewhere. You're an awfully good start.

I ask you to vote on July 15 in favor of a permit calling on cities in the county to control and/or reduce urban runoff. This water currently is uncontrolled, and is replete with toxins, debris of who knows what origin, and pathogens, including staphylococcus aureus and various deadly bacilli. Marine biologists still are unsure how many and what kinds of viruses inhabit this soup, but they are sure that they are there. The last time I ventured with my board into the ocean at Malibu, I noticed the water temperature in the murky water just as I heard someone remark, "Gee this brown water is really warm." One cold and one ear infection later, I still think that that's a heavy price to pay for warm water in January. I hope you agree.

For the last two centuries, settlers have been attracted to this area largely due to the pleasant climate and proximity to the ocean. While others battle the smog that smears not only the landscape but our fair county's reputation, we (and you) must battle the runoff pollution that besmirches the water.

Please vote to reduce urban runoff. Increasing it doesn't make sense.

Very truly yours,

Andrew M. Porterfield

cc:
Surfrider Foundation
Hon. Richard Riordan, Mayor, City of Los Angeles
Hon. Pete Wilson, Governor, State of California

VOL 21 0824

July 8, 1996

John Oudyk
18320 Elaine Av
Artesia, CA 90701
310-860-2335

RECEIVED
96 JUL 10 AM 11:54
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Aangeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Sir.

I am writing you because of my concern about the local oceanic pollution caused by local runoff. I am an avid "waterman", as well as a registered voter. Protecting the seaside ecosystem's health is one of my top priorities. Please implement a comprehensive pollution prevention program for storm water runoff.
Please protect the beauty, which translates into economic vitality, of our fragile coastal zone. Thank you.

Sincerely

John Oudyk

VOL 21
0825
R0065079

18438 Los Alimos Dr.
Northridge, California
91326

8 July 1996

Mr. Michael Heston, Chairman
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California
91754-2156

RECEIVED
96 JUL 10 AM 11:54
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Heston,

When I was a boy in Massachusetts I used to watch trash barges, their cargoes aflame, being towed out to sea. This probably is not a viable alternative for getting rid of waste materials in Los Angeles, but surely more up-to-date scientific procedures must be available to eliminate this waste and reduce the runoff that pollutes the waters of our beautiful coastal areas.

As you know, some of the most beautiful beaches in the world are here in Southern California. I hope that your Board will rebuff pressures that would reduce restrictions designed to keep these beaches clean, free from pollution, healthy, and accessible to the public.

Respectfully yours,
Robert M. Lewenberg

VOL 21 0826

400 NORTH ROXBURY DRIVE
SEVENTH FLOOR
BEVERLY HILLS, CALIFORNIA 90210
(310) 274-7100
FAX (310) 275-5697

RECEIVED
96 JUL 10 AM 11:54
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
California Regional Water
Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Governor Pete Wilson
State Capitol
Sacramento, CA 95814

Mayor Richard Riordon
City of Los Angeles
201 N. Figueroa Street
Los Angeles, CA 90012

**Re: Letter in Support of RWQCB Permit Controlling Storm Drain Run-Off**

Gentlemen:

I am writing to urge each of you to support the Regional Water Quality Control Board ("RWQCB") to permit calling upon the 88 cities within Los Angeles County to adopt practices that will reduce urban run-off in the Santa Monica Bay and surrounding coastal areas. I understand that the RWQCB will be voting on this issue on July 15, 1996. I urge each of you to support the permit. As each of you well know, urban run-off is the primary source of coastal pollution and contaminates fish and sickens marine mammals and people.

The pollution is so bad that if you go in the water within 100 yards of the Santa Monica Canyon storm drain, you expose yourself to toxic levels of bacteria. This madness has got to stop. We must work together to save one of the most valuable assets this region has from turning into poison.

The new regulations are needed to implement a comprehensive pollution prevention program for storm water run-off. What is at stake is nothing less than the health of beach-goers and the survival of the Santa

8CV

VOL 21

0827

Monica Bay which supports and is essential to the economic future of Southern California.

Thank you for your time

Very truly yours,

Miles J. Feldman

VOL 21
0828
R0065082

C/

VOL 21

RECEIVED
96 JUL 10 AM 11:56
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Elizabeth D. Rogers, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza
Monterey Par, CA 91754-2156

Dear Dr. Rogers:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

By now, you have undoubtedly heard arguments that implementing this permit will cost money-money that many of the affected cities claim they either do not have or cannot spare. Tight budgets are something we all understand. But if these protests are making you think twice about adopting this permit I would ask you to consider the follow questions:

How can we afford not to protect the health of the fifty million people who will swim the Bay this summer?

How can we afford not to protect the economic health of the coastal tourism and recreation businesses which generate literally billions o f dollars for our area?

How can we turn away from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done-now it's up to you. Please vote to adopt the permit on July 15.

Sincerely,

Kevin Reilly

No Address

0829

C

96 JUL 11 PM 2:01

VOL 21

0830

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Juan Jasso

cc: Governor Pete Wilson
Mayor Richard Riordan

R0065084

96 JUL 11 PM 2:04

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Samuel A. Culbert

cc: Governor Pete Wilson
Mayor Richard Riordan

C
VOL 21
0831
R0065085

C

RECEIVED
96 JUL 11 PM 2:04
REGIONAL BOARD
LOS ANGELES REGION

VOL 21

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Donna Lee Jack

cc: Governor Pete Wilson
Mayor Richard Riordan

0832

RECEIVED
96 JUL 11 PM 2:04
REGIONAL CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Thomas F. White, Ph.D.

Director, Center for Business Ethics
Loyola Marymount University
Los Angeles CA 90045

cc: Governor Pete Wilson
Mayor Richard Riordan

C VOL 21 0833

RECEIVED
95 JUL 11 PM 2:04
WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Mary Anne McIntire

cc: Governor Pete Wilson
Mayor Richard Riordan

C
VOL 21
0834
R0065088

C

VOL 21

RECEIVED
96 JUL 11 PM 2:04
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Lisa Harrington, Pacific Palisades

cc: Governor Pete Wilson
Mayor Richard Riordan

0835

R0065089

c

VOL 21

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Michael J. Montgomery

cc: Governor Pete Wilson
Mayor Richard Riordan

0836

R0065090

C

VOL 21

96 JUL 11 PM 2:03

LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

0837

R0065091

C

RECEIVED

96 JUL 11 PM 2:03

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Donna M. Petersen

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0838

R0065092

C

96 JUL 11 PM 2:03

July 9, 1996

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and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0839

C

RECEIVED
96 JUL 11 PM 2:00

VOL 21

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Pamela Solar

cc: Governor Pete Wilson
Mayor Richard Riordan

0840

R0065094

RECEIVED
96 JUL 11 PM 2:03
LOS ANGELES REGION

C

VOL 21

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Tonia Cuomo

cc: Governor Pete Wilson
Mayor Richard Riordan

0841

C

VOL 21

96 JUL 11 PM 2:04

COUNTY CLERK
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Tim Nett

cc: Governor Pete Wilson
Mayor Richard Riordan

0842

R0065096

c

VOL 21

0843

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Dennis Wil

cc: Governor Pete Wilson
Mayor Richard Riordan

R0065097

C

VOL 21

0844

RECEIVED
96 JUL 11 PM 2:05
[illegible]

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

RECEIVED
96 JUL 11 PM 3:03
CLERK'S OFFICE

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Spence Cooper

cc: Governor Pete Wilson
Mayor Richard Riordan

c

VOL 21

0845

C

VOL 21

0846

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

11813 Dorothy Ave #5
LA, CA 90049

cc: Governor Pete Wilson
Mayor Richard Riordan

R0065100

C

RECEIVED
96 JUL 11 PM 2:0[illegible]

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Sally Hoover

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

0847

R0065101

RECEIVED
96 JUL 11 PM 2:05
LOS ANGELES

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0848
R0065102

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0849

R0065103

RECEIVED
96 JUL 11 P 2:03

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Carol Lee Schwartz

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0850
R0065104

C

VOL 21

RECEIVED
96 JUL 11 PM 2:03
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Alicia Cuto

cc: Governor Pete Wilson
Mayor Richard Riordan

0851

R0065105

C

VOL 21

0852

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

Matthew A. Cole

cc: Governor Pete Wilson
Mayor Richard Riordan

96 JUL 11 PM 2:03

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0853
R0065107

RECEIVED
96 JUL 11 PM 2:03
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

**Fact:** Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

**Fact:** Storm drain runoff pollution causes flooding leading to property damage, contaminates sediments, and creates boater safety hazards in ports and harbors.

**Fact:** Reduce storm water pollution and you take the single largest step you can to protect public health at the beach and clean up the Bay.

**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0854
R0065108

RECEIVED
96 JUL 11 PM 2:03
CLERK'S OFFICE
LOS ANGELES REGION

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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Sincerely,

Margaret E. Midgett

Margaret E. Midgett

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0855

96 JUL 11 PM 2:03

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21 0856

6

VOL 21

0857

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Bob & Linda Vandenberg

cc: Governor Pete Wilson
Mayor Richard Riordan

C

VOL 21

96 JUL 11 P 2:30

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Kim Vanderburg

cc: Governor Pete Wilson
Mayor Richard Riordan

0858

R0065112

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

Fact: Scientific studies have proven that contaminated runoff from storm drains can make you sick, is toxic to marine life, and is the main cause of pollution in Santa Monica Bay from Malibu to Palos Verdes.

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Fact: Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Dave Carter
President, Malibu Boardriders Association

cc: Governor Pete Wilson
Mayor Richard Riordan

C

VOL 21

0859

C

VOL 21

96 JUL 11 PM 2:03

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

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**Fact:** The tentative municipal storm water permit is clearly the most effective means to reduce storm water pollution.

**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do your part to clean up the Bay and approve the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 18, 1996.

Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

0860

R0065114

C

VOL 21

RECEIVED
96 JUL 11 PM 2:00
CLERK

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

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Sincerely,

cc: Governor Pete Wilson
Mayor Richard Riordan

0861

RECEIVED
96 JUL 11 PM 2:03
CLERK

July 9, 1996

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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**Fact:** Approve the municipal storm water permit and you protect public health, reduce storm water pollution, and ensure a strong coastal economy.

Please do <u>your</u> part to clean up the Bay and <u>approve</u> the Waste Discharge Requirements for the Municipal Storm Water Discharges within the County of Los Angeles on July 15, 1996.

Sincerely,

Gilma Joyce

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0862
R0065116

256 Fourth Street
Fillmore, CA 93015
9 July 1996

96 JUL 11 PM 1:17

Dr. Robert Ghirelli
California Regional Water Quality Board
1001 Centre Plaza Dr.
monterey Park, CA 91754-2156

Dr. Ghirelli,

Hello, my name is Stephanie Coats-Arnold. I am writing you to urge you to vote against Southern Pacific Milling Company's strip mine proposal of Sycamore Ranch in Fillmore. My parents moved our family to Fillmore over 29 years ago from Orange County. My Mother recalls coming to Fillmore for drives and longing to live here. Eventually they did and now along with my husband we are raising our two sons here. We have both lived here for over 20 years.

Our family takes along walk each Sunday that takes us to our new Central Park. This park is to be centered around our growing Short Line train. We are so glad to see how many people are coming into Fillmore to take advantage of the train. Admittedly the train does give Fillmore some much needed income. Our town lacks other major retail stores that can provide a city with some of their tax money. We do fall short on this, however with the train running through our orchards tourists do linger and spend a few of their dollars at our stores. This money is badly needed.

If S.P. Milling Company does go through with their plans our small town will be devastated. Not only with the tourism but local agriculture and highway traffic. At our new Vons on Highway 126 we can buy produce grown right here in Fillmore, this might not be possible otherwise.

In our local newspaper SMIRF (Stop Mining In Rural Fillmore) states that the county feels that the western end of the county does not have enough quality sand and gravel , SMIRF points out that the county's general plan says that there is already a 50-year supply on hand. if this is true why the need for more? Granted we already have 3 rock and gravel companies. One on HWY 126 and two on Grimes Canyon Road. This should be enough for such a small town, shouldn't it?

Please consider my plea, I feel as though our town deserves so much more than to grow up and be a gravel pit.

Thank You for your consideration.

Sincerely,

Stephanie Coats-Arnold

VOL 21 0863

R0065117

CX

VOL 21

2 July 1996

John Slezak
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear John:

Please add my name to the growing list of concerned citizens urging you to adopt the proposed storm water permit.

How can we afford NOT to protect the health of the sixty million people who will swim in the Bay this summer?

How can we afford NOT to protect the economic health of the coastal tourism and recreation businesses which generate literally billions of dollars for our area?

How can we TURN AWAY from the single most effective step we can take as a community to create a cleaner, healthier Bay?

For the last 16 months, civic and environmental leaders have worked hard to achieve consensus on all the measures included in this permit. Their diligent work is done - now it's up to YOU.

PLEASE vote to adopt the permit on July 15.

Sincerely,

Susanne K. Filkins

96 JUL 11 PM 2:08

0864

R0065118

C
No Address

96 JUL 11 PM 1:31
QUALITY CONTROL
LOS ANGELES REGION

VOL 21

CA Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754
**Attn: Michael Keston & Board Members**

Dear Regional Board,

Vote YES on the Los Angeles Countywide Municipal Storm water Permit on July 15. I have the right to swim and surf without getting sick.

Here are the facts:

- Contaminated runoff from storm drains is the main cause of pollution in Southern California.
- A recent health study showed that swimming near flowing storm drains during the summer greatly increases my chances of getting sick, even if I only swim once a week. To make matters worse, the ocean is full of trash and polluted with fecal waste after every storm.
- Without a strong storm water pollution prevention permit, we have no chance of cleaning up runoff and making beaches safe.

Please no more delays. Pass the permit on July 15. I want to enjoy our ocean once again.

Sincerely,

(Your name and signature)

RHONDA SIMMONS

Rhonda Simmons. Calabrese

0865

R0065119

ACTION ALERT

# THIS SUMMER, 50 MILLION PEOPLE WILL SWIM IN SANTA MONICA BAY.
# ON JULY 15, 8 PEOPLE WILL DECIDE HOW SAFE THE WATER IN THE BAY IS GOING TO BE.

## THEY NEED TO HEAR FROM YOU !!!

Join Heal the Bay and the environmental community in passing the County Storm Water permit—our best chance for a safe Bay. We need to pack the hearing room with people like you, who don't want to get sick fom swimming or surfing in the Bay.

Monday, July 15th 9:00am
REGIONAL WATER BOARD MEETING
Board of Supervisors Hearing Room
500 W. Temple Street (Corner of Grand Ave.), Downtown Los Angeles




Getting There: The Santa Monica Blue Bus Express ($1.25) leaves Pico & Bundy at 8:25am and we'll be on it!
Join us for the ride downtown or at the Hearing Room.
If you drive, parking in surrounding lots is about $8.

CALL 1-800 HEAL BAY EXT. 116 FOR MORE INFO.

FREE T-SHIRT FOR ALL ATTENDING!

Heal the Bay

c

VOL 21

0866

R0065120

VOL 21

July 7, 1996

CG

Dear Dr Rogers,

Please protect the 50 million people who will swim in the Santa Monica Bay this summer by adopting the proposed storm water permit on July 15.

Sincerely,

Claire Gerard

Claire Gerard
1839 Pandora Avenue
Los Angeles, CA 90025

R0065121

7/9/96

Dear Mr. Kuston,

I am writing to inform you that as a voter, surfer, and member of the Surfrider Foundation, I support a comprehensive pollution prevention program for storm water runoff.

Sincerely,

William Regan
17538 La Vello St.
Van Nuys, CA 91406

96 JUL 11 PM 1:22

VOL 21

08688

R0065122

C

VOL 21 0869

MICHAEL KESTON, CHAIR
S.R.W.Q.C.B.
LOS ANGELES REGION
101 CENTRE PLAZA DR.
MONTEREY PARK, CA 91754-2156

96 JUL 11 PM 1:25

DEAR MR KESTON:

I WANT TO THANK YOU IN ADVANCE FOR YOUR SUPPORT OF A COMPREHENSIVE POLLUTION PREVENTION PROGRAM FOR OUR SOUTHERN CALIFORNIA BEACHES. I LEARNED TO BODY SURF ON THE SOUTH SIDE OF THE SANTA MONICA PIER DURING THE SUMMER OF 1972. SINCE THEN I HAVE WATCHED THE GRADUAL DETERIORATION OF OUR BEACHES ON MY OUTINGS TO SUN, SURF, SCUBA DIVE SAIL, KAYAK, BEACH RUN, JET SKI AND EXPLORE THE TIDE POOLS. I CONTINUE TO USE OUR BEACHES, BUT AM SADDENED BY THEIR STATE + CONCERNED FOR THEIR FUTURE.

BEST
DAVID ASCHER

David L. Ascher
1649 Appian Way
Unit #311
Santa Monica, CA 90401
(310) 393-8477

C.C.
GOV. P. WILSON
MAYOR R. RIORDAN

R0065123

C

VOL 21

11319 Dronfield Ave,
Pacoima, CA 91331
July 7, 1996

Dear Mr. Keston:

Please pass strong new storm water pollution prevention regulations when you vote on July 15. Even more than the danger to swimmers, is the lunacy of polluting the ocean, the source of life on earth. No pollution is acceptable. Any kid knows that when the ocean dies, we all die. The most "primitive" people knew that it is insanity to destroy your own life source. Why can't we, the richest and most technologically advanced people in the world, protect the ocean we depend on? Please look at the long view and don't cave in to pressure to weaken environmental regulations.

Sincerely,

Norah Cunningham

96 JUL 11 PM 1:26

REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

0870

Mark Salamon 975 North Hoover Street Los Angeles CA 90029 (213) 667-1527

July 10, 1996

96 JUL 11 PM 1:25

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am writing to encourage you to vote in favor of issuing a permit requiring the coastal cities in LA County to reduce the amount and frequency of their urban runoff. I seldom write a letter such as this, but I wanted my opinion know. We have done such severe damage to our coastline in the past - please take this opportunity to help in healing our ocean waters and coastline. I am one of many Southern California residents that regularly enjoy the beach. It's been a part of my life since I was born, and hope it always will be. Please vote to enforce strict guidelines for LA County cities, so we can begin the much needed process of healing from decades of damage.

Thank you for your consideration.

Sincerely,

Mark Salamon
Los Angeles

copy: Governor Pete Wilson
Mayor Richard Riordan

C

VOL 21

0871

R0065125

Monday, July 08, 1996

RECEIVED
96 JUL 11 PM 1:26
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Moterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board

As a Los Angeles County resident and beach goer for over forty years, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, and reasonable action to protect them.

I read the article in the Los Angeles Times (5/7/96 page 1) citing that beach goers are getting sick from stromm drain polluted waters. I am writing to you that your Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to handle the pending problems, and there seems to be strong scientific basis to support such measures.

Please consider this request as a way for a government agency to take action, that makes sense, both economically and environmentally.

Thank you for your consideration in this matter

Nick M. Steers
1719 Ashland Ave
Santa Monica, CA 90405

cc Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0872
R0065126

C

E. Pemberton
4215 ½ Mildred Ave
LA, CA 90066

July 10, 1996

96 JUL 11 PM 1:27

LOS ANGELES

California Regional Water Quality
Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156
Attn: Michael Keston, Chair

Dear M. Keston,

My name is Eric Pemberton and I live in Marina Del Rey, California I am writing in response to the upcoming water control board vote on July 15th 1996 to implement a comprehensive water pollution prevention program. I'm 31 and have surfed for 20 years. The ocean is my church. Urban runoff, uncontrolled, directly into Southern California coastline, is like carbon monoxide gas filling the chapel of your church. I love this state and I support my

VOL 21

08713

Family by doing business here in Southern California, but both industry and government have a responsibility to respect the ocean.

Eric W

Water... Earth's Eye... Looking into which, The Beholder Measures The Depth of His Own Nature.

Keep it clear.

Thank You,

Eric Pemberton

VOL 21

0874

R0065128

C

VOL 21

Mr Keston

96 JUL 11 PM 1:27

Please reinforce any measure to maintain and/or enhance all Clean Water Acts and any policy for preservation of marine life, our ecosystems and policing of toxic waste/waste disposal.

To protect our valuable natural resources, these measures are of vital importance to us.

Thank You.

Sincerely,

Azia
52 Paloma #2
Venice, CA 90291

PS. LET'S REDUCE, OR ELIMINAT TOXIC URBAN RUNOFF.

0875

c

VOL 21

July 5, 1996

2320 Vanderbilt Ln #15
Redondo Beach, CA 90278

Michael Keston, Chair
Calif. Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Sir:

I would like to urge you to adopt the measure to be voted on on the 15th pertaining to urban runoff.

I am a longtime surfer and am intimately acquainted with the health hazards of runoff. Surfing not only puts one ON the water, but one must go THROUGH and frequently UNDER it in this sport. Any water-borne pathogen that is in the water at a surfing spot has the potential to infect any riders in the water at that site. There is no way to be "cautious" or take preventive measures.

I belong to Surfrider Foundation. We are uncompromised in the belief that clean ocean waters are our birthright.

I know from a period of living inland that people who aren't regular beach-goers are not well-educated on these specifics. The same may go for officials of some of the inland communities, and this is why this measure is so important.

Please support these new regulations.

Sincerely,

John Mark Ferris

cc: Surfrider Fdn: National,Local

0876

R0065130

July 1, 1996

96 JUL 11 PM 1:28

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,

Jeanne Lux

Jeanne Lux
Hermosa Beach Resident
221 29th St.
Hermosa, CA 90254

VOL 21

0877

R0065131

C
No Action

VOL 21

July 9, 1996

96 JUL 11 PM 1:28

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am concerned citizen in Los Angeles county that uses many of the beaches for surfing. I have become sick after surfing many of L.A.'s beaches over the past years, specifically south Hermosa Beach, El Porto and Malibu.

Our beaches our sick and extremely polluted. They are also one of our main tourist attractions. If L.A.'s beaches get the reputation that you will be sick if you play in them, it will be disastrous for our local economy.

I strongly urge the RWQCB to adopt a comprehensive pollution prevention program for storm water runoff. It will be good for the health of L.A.'s citizens and visitors.

Sincerely,

Scott Griest

cc: Governor Pete Wilson
Mayor Richard Riordan

0878

R0065132

VOL 21

0879

July 9, 1995

Mr. Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston:

I am writing to urge you to use the considerable resources of the Water Quality Control Board to regulate urban runoff, the primary source of coastal pollution, in all 88 cities in Los Angeles County. As a county voter and taxpayer, I am deeply concerned about the quality of water throughout the Los Angeles Basin. The hidden costs of pollution -- medical expenses, lost recreation dollars and the like -- are bad enough. But the destruction of our beautiful California coast by pathogens and toxins would be unforgivable even if it cost us nothing in dollars. I support a comprehensive pollution prevention program for all water runoff, and expect the Water Quality Control Board to enact and enforce just such a program.

Best regards,

Lysbeth B. Chuck
Studio City, CA

CQ & A
4204 Camellia Ave
Studio City, CA 91604

RECEIVED
96 JUL 11 PM 1:28
QUALITY CONTROL BOARD
LOS ANGELES REGION

R0065133

C

VOL 21

0880

Dear Mr. Keston,

I'm writing to urge you and other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when it votes on July 15.

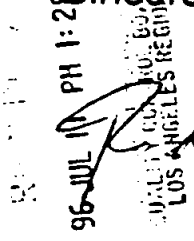
A recent study by USC and the Santa Monica Bay Restoration Project shows that if you swim in areas where storm drains empty into the Bay, you are almost 50% more likely to get sick, with a cold, sore throat, fever, diarrhea and nausea or other illnesses. One of every 25 people that swim in front of a drain will get sick!

That's simply not acceptable. I feel that no one should suffer a greater chance of getting sick just because they swim in the Bay. Every beach should be safe for swimming.

Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina that poses both environmental and boating safety hazards.

Please don't give in to pressure to weaken the regulations. Thank you for your consideration.

Sincerely,




Robert S. Wagner

Robert S. Wagner
P.O. Box 97
Manhattan Beach, CA 90267-0097

C

VOL 21

July 9, 1996

Michael Keston & Board Members
CA Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754

96 JUL 11 PM 1:29

Dear Regional Board,

Vote YES on the Los Angeles Countywide Municipal Storm water Permit on July 15th. I have the right to enjoy clean ocean waters without getting sick.

The fact of the matter is, the main cause of pollution in Southern California is contaminated runoff. A recent health study showed that swimming near flowing storm drains during the summer greatly increases my chances of getting sick, even if I only swim ONCE a week. If that is not enough, the ocean is full of trash and polluted with fecal waste after every storm.

With out a strong water pollution prevention permit, we have no chance of cleaning up runoff and making beaches safe.

Please no more delays. PASS the permit on July 15th. I am sick and tired of getting sick when I go to the ocean.

Thank you for you time.

Nathan Mudry
25502 Hillsboro Dr.
Laguna Niguel, CA 92677
(714) 365-0963

Please Recycle - Recycled Material

0881

96 JUL 11 PM 1:29

LOS ANGELES REGION

C1
No Address

VOL 21

Please reinforce any measure to maintain and/or enhance all Clean Water Acts and any policy for preservation of marine life, our ecosystems and policing of toxic waste/waste disposal.

To protect our valuable natural resources, these measures are of vital importance to us.

Thank You.

Sincerely,

0882

R0065136

20r: Frank & Eliane Lane Italiane
6505 ESPLANADE St #3, PDR CA 90293
Playdel Rey

C

Michael Keston, Chair
Regional Water Quality Board
101 Centre Playa Dr.
M.P. CA 91754-2156

96 JUL 11 PM 1:29
LOS ANGELES RR GMN

VOL 21

Dear Mr. Keston,

Please support & pass new strong storm water pollution prevention when it comes to vote on July 15, 1996.

My wife & live in Playa del Rey. We used to swim here. We don't any more because we would become sick afterwards.

Please don't weaken to any pressure, our health is at stake here. Frank & Elaine Italiane

0883

R0065137

July 8, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

96 JUL 11 PM 1:30

Dear Mr. Keston:

It has come to our attention that the Regional Water Quality Control Board (RWQCB) will vote on July 15 whether to issue a permit calling upon the cities within Los Angeles County to adopt practices that will reduce urban runoff. We applaud the RWQCB for entertaining this concept and urge the adoption of a comprehensive pollution prevention program for storm water runoff.

We utilize the beaches along the Los Angeles County coast, and are proud of the beauty our area has to offer not only to its residents but to visitors from all over the world. It is imperative that our coast and ocean be protected from the toxins and contaminants found in storm water runoff.

As you know, industry has been required by the Clean Water Act to carefully monitor the potential for storm water runoff. Such monitoring programs should be extended to municipalities. We are all responsible for the future of our environment.

We thank you for your attention.

Sincerely,

Linda Easter
Darryl Easter

Linda and Darryl Easter
863 Amber Drive
Camarillo, CA 93010

cc: Mayor Richard Riordan
Governor Pete Wilson

VOL 21

0884

R0065138

Kirk Maes
410 S Euclid Ave #5
Pasadena, CA 91101
(818) 449-2966
(818) 502-5905

July 7, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Mr. Keston!

# REDUCE URBAN RUNOFF!

We, the citizens of Southern California need a comprehensive pollution prevention program for storm water runoff. Our coastline is very important to all of us that live in Southern California. Storm water runoff has a direct effect on the quality of the coastline, and the quality of the coastline has a direct effect on the quality of life of those that live near it.

The health of those who swim, surf or play in the water see the effect of the runoff, and want the polluted runoff stopped! Even those that don't have direct contact with the Coastline are effected by the water quality through fish harvested in the area. The visual litter of "Contaminated Water" signs is experienced by beach-goers, including tourists that visit our beaches from around the world. Surely this cannot leave a positive image in their minds.

I visit the beaches of Southern California throughout the year. I want the amount of pollution being dumped into the ocean to be reduced as much as possible.

Please, do all you can to reduce urban runoff.

Sincerely

Kirk Maes

96 JUL 11 PM 1:30

LOS ANGELES REGION

VOL 21

0885

R0065139

July 8, 1996

96 JUL 11 PM 1:3

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a surfer and avid beachgoer in the Los Angeles Area, I take a great interest in improving the quality of our local coastline. I am sure that you are all aware that the primary source of coastal pollution is urban runoff. This runoff is filled with pathogens, toxics and debris that poison our coastal waters, contaminates fish, afflicts marine mammals, and sickens surfers and swimmers. New regulations are needed to implement a comprehensive pollution program for storm water runoff.

Furthermore, after reading in the Los Angeles Times that people are definitely getting sick from drain polluted waters in the Santa Monica Bay (5/7/96, front page), I am even more moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures.

Since several of my friends, as well as many people in general, have been afflicted with certain illnesses caused by surfing/swimming in polluted waters, I strongly urge and support you to please take advantage of this opportunity to adopt public policy that will help the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches and the economic benefit of the coastal economy of Southern California.

Thank you for your consideration.

Sincerely,

Joyce Lee

Joyce Lee
655 Endrino Place
Beverly Hills, CA 90210

VOL 21

0886

C

July 8, 1996

96 JUL 11 PM 1:31

Michael Keston, Chair
and Members
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

Dear Chairman Keston and Members of the Board:

As a parents of a surfer and avid beachgoer in the Los Angeles Area, we take a great interest in improving the quality of our local coastline. We are sure that you are all aware that the primary source of coastal pollution is urban runoff. This runoff is filled with pathogens, toxics and debris that poison our coastal waters, contaminates fish, afflicts marine mammals, and sickens surfers and swimmers. New regulations are needed to implement a comprehensive pollution program for storm water runoff.

Furthermore, after reading in the Los Angeles Times that people are definitely getting sick from drain polluted waters in the Santa Monica Bay (5/7/96, front page), we are even more moved to write to request that the Board adopt the proposed storm water permit as soon as possible. The permit is clearly the most effective means to address the problem, and there is obviously strong scientific bases to support such measures.

Since our daughter, as well as many others, has suffered from many ear infections caused by surfing/swimming in polluted waters, we strongly urge and support you to please take advantage of this opportunity to adopt public policy that will help the health of thousands of beachgoers, the quality of nearshore coastal waters, the beauty of miles of County beaches and the economic benefit of the coastal economy of Southern California.

Thank you for your consideration.

Sincerely,

Kures Adibi - Pari Adibi

Kures and Pari Adibi
5260 Vanalden Ave.
Tarzana, CA 91356

VOL 21 0887

R0065141

JUL-12-1996 10:22AM FROM STEVEN LEIBMAN * ABAMEDIA TO 12132666856 P.01

C

No Address

VOL 21

0888

# FAX COVER SHEET

DATE: July 12, 1996

TO: Robin -- FAX (213) 266-6856 -- For MICHAEL KESTON AND BOARD MEMBERS/CA Regional Water Quality Control Board -- Los Angeles Region

FROM: THE LEIBMAN FAMILY -- TEL: (310) 573-1798

RE: COUNTY STORM WATER PERMIT.

NUMBER OF PAGES INCLUDING COVER SHEET: 1

COMMENTS:

Dear Michael Keston and Board Members:

Please vote YES on the Los Angeles Countywide Municipal Storm Water Permit on July 15, 1996.

As Pacific Palisades residents, our family and friends swim, boogie board, and surf in Santa Monica Bay, and care deeply about it. Disgusting contaminated runoff from storm drains causes illness to people and marine life; polluting one of California's greatest wonders and tourist attractions: the Pacific Ocean.

We urge you, FOR THE HEALTH OF OUR GENERATION, FUTURE GENERATIONS, AND OCEAN LIFE, to approve this permit.

We're counting on you.

Thank you,

Gayle, Steven, Sarah & Jesse Leibman

Gayle, Steven, Sarah (9) and Jesse (4) Leibman

R0065142

JAMES F. DONLAN
2915 Laurel Avenue
Manhattan Beach, California 90266

July 11, 1996

RECEIVED
96 JUL 12 PM 1:38
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Re: Storm Water Regulations

Dear Mr. Keston:

I am writing to urge you and the other members of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulations when you vote on July 15.

A recent study by USC and the Santa Monica Bay Restoration Project shows that those who swim in areas where storm drains empty into the Santa Monica Bay are fifty percent more likely to become ill with a cold, sore throat, fever, diarrhea, nausea, or other illnesses. Urban runoff is also toxic to marine life, leaves our beaches looking like trash dumps, and dumps contaminated material in the ports and marina, posing both environmental and boating safety hazards. This is simply not acceptable. Our beaches are a major recreational resource for residents of the Los Angeles basin, as well as essential to the area's tourist economy.

Please don't give in to pressure to weaken the regulations.

Very truly yours,

James F. Donlan

JFD/sg

JFD96D73.SEL (7/11/96 1:31pm)

VOL 21
0889
R0065143

July 11, 1996

RECEIVED
96 JUL 12 PM 1:38
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Keston,

I am writing regarding the vote that will be taken next Friday, July 15, on the storm drain issue. I urge you to pass strong storm water pollution prevention regulations when you vote.

As I am sure you are aware, recent studies have verified the dangers present in the Santa Monica Bay due to pollution from the storm drains emptying into the Bay. The studies confirm that bacteria and trash reaching the ocean through storm drains are threatening ocean life as well as creating a health risk to humans. I have children who swim in the Santa Monica Bay and are at risk due to these conditions. I have an additional concern regarding the economy of this area. Even with the recent renovations of the Santa Monica Pier and surrounding areas, beach users and tourists may choose to go elsewhere if they know the waters are unsafe here.

Realizing this is a complex issue, I hope you will be able to resist the pressure to weaken regulations when you vote on July 15.

Thank you for your consideration.

Sincerely,

Sally Helin

Mrs. Sally Helin
12156 La Casa Lane
Los Angeles, CA 90049

VOL 21 0890

July 10, 1996

Dear Mr. Kester

I'm writing to beg you and the other members of the Board to pass new, stronger storm water pollution prevention regulations when you all vote on July 15th!

We have read some of the reports from the study by U.S.C. and the Santa Monica Bay Restoration Project. We were angered and made very upset to find out how dangerous it is (health wise) to swim in areas where storm drains empty into the Bay.

When we read the percentage of how many people become ill specifically from swimming in front of the drains we were aghast!

We are very concerned about the toxicity to marine life also, so my husband asked me to write to you.

Please, please do something for all of us.

Sincerely

Harry & Nancy Golowen

Harry & Nancy Golowen
4236 Michael Ave.
LA, CA 90066

RECEIVED
96 JUL 12 PM 1:38
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0891

Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, CA 91754-2156

RECEIVED
96 JUL 12 PM 1:37
STATE WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston:

This letter is to let you know that as a registered voter and a native Californian I support every effort of the California Regional Water Quality Control Board to develop and implement a comprehensive pollution prevention program for storm water runoff.

As you are painfully aware, California's world-famous beaches are turning into a disgraceful mess due to the ever-increasing levels of runoff pollution and debris.

I have had the good fortune to spend an exception amount of time at beaches from Baja California to San Francisco and have seen first hand the changes over the past 40 years.

We must do something now to reverse this disaster.

Please do everything you can in your meeting on Monday, July 15th to lead the way to cleaning up our most precious resource—water.

Thank you and good luck.

Sincerely,

Dennis Trombley
321 Avenida Granada
Long Beach, CA 90814
310.597.3123

cc Governor Pete Wilson, State Capitol
Mayor Richard Riordan, City of Los Angeles

VOL 21
0892

8 Saddle Horn Lane
Rolling Hills Estates, Ca. 90274

July 11, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Dr.
Monterey Park, Ca. 91754-2156

Dear Mr. Keston:

I strongly support a comprehensive pollution prevention program for storm water runoff into our coastal waters. There is so much at stake here -- not only for beach-goers, but for the marine life near shore.

I understand that on July 15 there will be a vote as to whether to issue a permit calling upon the 88 cities in Los Angeles County to adopt practices that will reduce urban runoff. This is imperative, and should be put into effect immediately.

Thank you for your support.

Yours truly,

Stella M. Hiatt

SMH/s

cc: Governor Pete Wilson

Mayor Richard Riordan

RECEIVED
96 JUL 12 PM 1:37
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

VOL 21 0897

RECEIVED
96 JUL 12 PM 1:37
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 7, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Mr. Keston:

I write to urge the RWQCB to issue a permit calling for a comprehensive pollution prevention program for storm water runoff in the Los Angeles area. As I'm sure you know, storm water runoff is the primary source of water pollution. Urging cities within L.A. County to adopt practices that will reduce urban runoff is an extremely crucial step for protecting L.A.'s greatest natural resource: its beaches and sea.

As a surfer and swimmer, I can attest to the truly heinous effects storm water runoff has on water quality. I urge you to please do something about this problem at your July 15th meeting.

Yours sincerely,

Brian K. Smith
1123 17th St. #6
Santa Monica, CA 90403

cc: -Governor Pete Wilson, Mayor Richard Riordan



VOL 21
0894
R0065148

Ann Marie Morris, MD

RECEIVED
96 JUL 12 PM 1:36
QUALITY CONTROL BOARD
LOS ANGELES REGION

Mr. John Slezak
California Regional Water Quality Control Board

Dear Mr. Slezak:

I grew up in Bayonne, New Jersey, a town located on a peninsula of land jutting into New York Harbor. Our town was surrounded on three sides by unswimmable water polluted by chemical wastes from dye factories, raw sewerage and runoff from hundreds of storm drains. I can remember my parents telling me, a young child, that I would become ill if I swam in the waters of the bay. I decided that I when an adult would leave my home town and move to an area where the land would offer me something. Fifteen years ago I moved to Hermosa Beach, married and now have two children. Our oldest child, aged 10 is on a swim team getting strong so she can participate in the Beachsports program. Our youngest child, aged five will be studying marine life in the Manhattan Beach Roundhouse program so she too can enjoy the benefits of living at the beach -- something I, as a child, was not able to do.

I understand that fixing the pollution caused by the runoff from the storm drains will cost money, but the rewards that the families of Los Angeles get from a clean bay are priceless, not just the families who live in the South Bay but all the people of southern California.

Please help us clean up the mess we have caused by adopting the storm water permit. I would like our children to be able to enjoy the greatest natural resource of Los Angeles with getting sick.

Sincerely,

Ann Marie Morris, MD

Ann Marie Morris, MD

P. O. Box 488, Hermosa Beach, CA 90254

R0065149

VOL 21 0895

2 Glenoaks
Laguna Hills, California 92656

July 10, 1996

Michael Keston
California Regional Water Quality
Control Board - Los Angeles Region
101 Centre Plaza
Monterey Park, CA 91754-2156

RECEIVED
96 JUL 12 PM 1:36
QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston:

I strongly urge you to support a comprehensive pollution prevention program for storm water run-off in the Los Angeles River watershed. Please issue a permit calling for the 88 cities within Los Angeles County to adopt practices that would reduce non-point source pollution.

California's beaches are out greatest asset. People come from all over the world to visit them. Unfortunately, out beaches are considered the dirties in the world. It is appalling to me that cities are allowed to use the ocean as a dump for their toxic waste. I do not even enjoy swimming and surfing in them anymore because they are so dirty. I also appear to get sick alot when I spend time in the water.

I am aware that it would be impossible to completely eliminate all non-point source runoff. However, we need to start somewhere by reducing the volume and toxicity of material being flushed in the ocean.

I am interested in hearing your views on this matter. Please let me know of any developments.

Very truly yours,

Michael Barnes

Michael Barnes

cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21
0896

Clara Beard
3580 Frances Ave.
L.A., CA 90066

July 9, 1996

Michael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

RECEIVED
96 JUL 12 PM 1:36
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston:

I am writing to urge you and other member of the Regional Water Quality Control Board to pass strong new storm water pollution prevention regulation when it votes.

These regulations are needed to keep our beaches and water safe today and in the future. Dirty oceans cause illness today and kill species. The damage of all this is forever.

Please vote to protect our waters for today and the future. Thank you for your consideration.

Sincerely,

Clara Beard

clara Beard

VOL 21 0897

RECEIVED
96 JUL 12 PM 1:36
STATE WATER RESOURCES CONTROL BOARD
QUALITY CONTROL BOARD
LOS ANGELES REGION

July 4, 1996

Michael Keston, Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Re: Re: Support of Comprehensive Pollution Prevention For Storm Water Runoff

Dear Mr. Keston:

I wholeheartedly endorse any measure to control urban runoff. Please give your support on July 15, to any legislation that can improve our coastal waters by decreasing the amount of urban runoff.

I have spent many years in and around the ocean. As a surfer I have experienced the effects of contaminated water; each season sewage-spills close beaches up and down the coast. I personally have suffered many upper respiratory infections due to surfing unknowingly in contaminated water. Sometimes you hear of beach closures after the fact,and you wait in fear of picking up a respiratory or a gastrointestinal infection. I believe beaches are monitored for coliform counts only. What about all of the toxins carried from urban areas to our beaches via the storm drains? I feel that thousands of beachgoers expose themselves to dangerous contaminants without realizing it.

California is blessed with beauty in land and sea. Let us come to understand how our urban pollution policies can help us create healthy beaches that Californians -and tourists alike- will trust and enjoy. It makes economic sense to solve this problem because so much of our tax revenue comes from tourism. Thank you for your support . Please feel free to contact me if I can be of any help.

Sincerely,

James L. Johnson, M.D.
119 7th St. # 8
Seal Beach, CA 90740
cc: Governor Pete Wilson
Mayor Richard Riordan

VOL 21

00898

VOL 21

0899

July 1, 1996

RECEIVED
96 JUL 12 PM 1:39
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

Mr. Michael Keston
Chair
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Dear Chairman Keston and Members of the Board,

As a Los Angeles area resident, I have a vested interest in improving the quality of our local coastline. Our beaches are a precious natural resource, and we must take smart, reasonable and cost-effective measures to protect them.

After reading the *Los Angeles Times* article (5/7/96, page 1) citing that beach-goers are becoming sick from storm drain polluted waters in the Santa Monica Bay, I am moved to write to you, requesting that the Board adopt the proposed storm water permit immediately. The permit is clearly the most effective means to address the pending problem, and there is obviously a strong scientific basis to support such measures.

In an era when government is so often criticized for not taking action, please take advantage of this opportunity to adopt public policy that makes both good economic sense and good environmental sense.

Thank for your serious consideration of this matter.

Scott Davison

C: Governor Pete Wilson
Mayor Richard Riordan

Mr. Scott Davison
402 Montana Ave Apt 8
Santa Monica, CA 90403-1331

2 JUL 96

Mr. Machael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, Ca. 91754-2156

RECEIVED
96 JUL 12 PM 1:40
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

Please vote on July 15th to pass strong new storm water pollution regulations.

I urge you and other members of the Regional Water Quality Board when considering your vote to heed the results of the recent Santa Monica Bay Restoration Project/USC study which found that people who swim in areas where storm drains empty into the Bay are 50% more likely to get sick! All Southern California beaches MUST be safe for swimming! Urban runoff poses serious Environmental & boating safety hazards.

The health of our Community is in your hands - please vote to pass strong pollution prevention regulations!

Thank you - Sue Barbowitz
449 San Vicente Blvd.
SANTA MONICA, CA 90402

R0065154

VOL 21 09000

2 JUL 96

Mr. Machael Keston, Chair
Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, Ca. 91754-2156

RECEIVED
96 JUL 12 PM 1:40
STATE WATER RESOURCES CONTROL BOARD
LOS ANGELES REGION

Dear Mr. Keston,

Please vote on July 15th to pass strong new storm water pollution regulations.

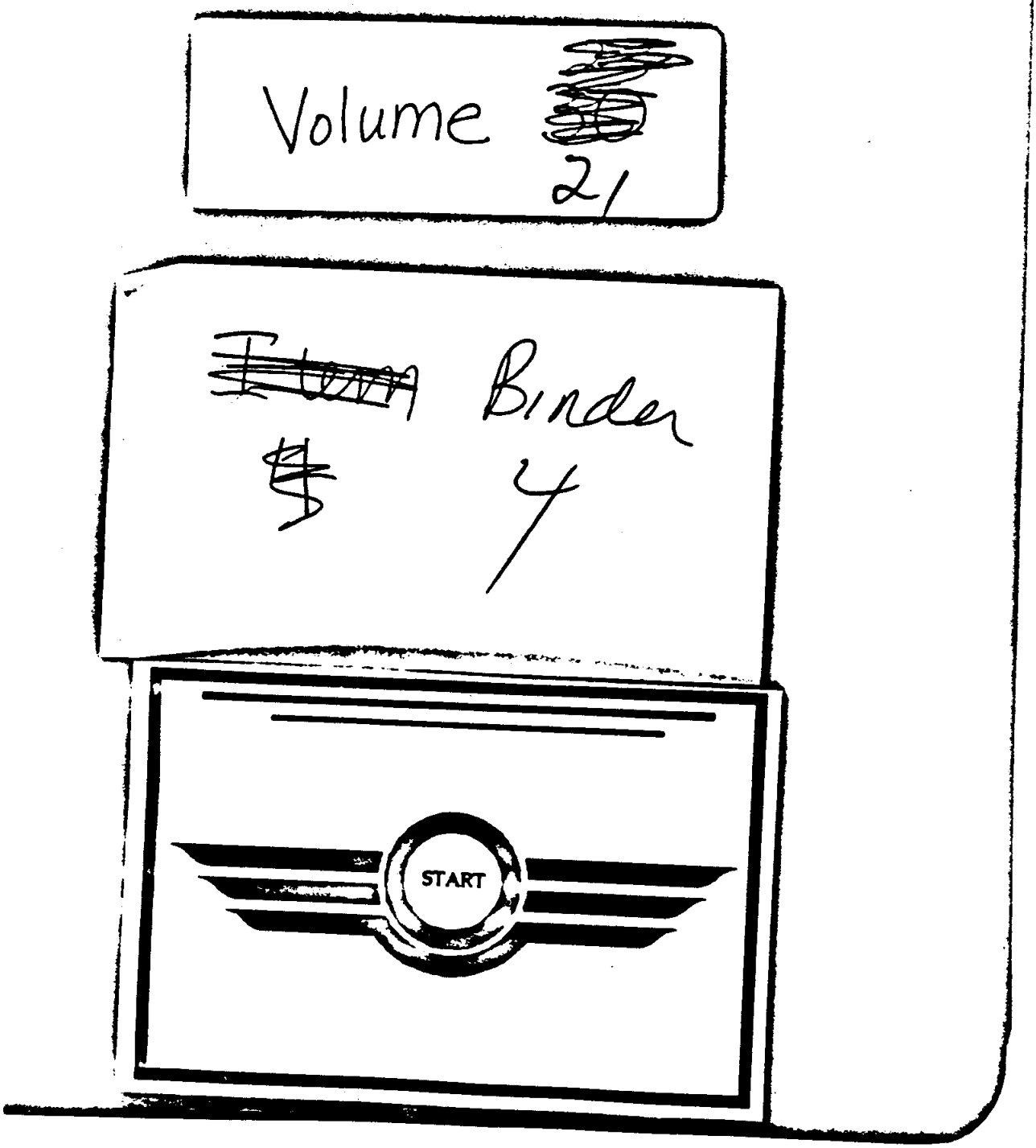
I urge you and other members of the Regional Water Quality Board when considering your vote to heed the results of the recent Santa Monica Bay Restoration Project/USC study which found that people who swim in areas where storm drains empty into the Bay are 50% more likely to get sick! All Southern California Beaches Must be safe for swimming! Urban runoff poses serious Environmental & boating safety hazards.

The health of our Community is in your hands - please vote to pass strong pollution prevention regulations!

Thank you - Sue Barbowitz
449 San Vicente Blvd.
SANTA MONICA, CA 90402

VOL 21 0901 L

R0065155




VOL 21

09021 F

R0065156

**Business and Industry**

Tom M.
Windham Hill Records
c/o BMG Distribution
8750 Wilshire Blvd. 2nd floor
Beverly Hills, CA 90211

Mike Sullivan
General Manager
Volkswagen Santa Monica
2440 Santa Monica Blvd.
Santa Monica, CA 90404

Gerald Breslauer
Breslauer, Jacobson and Rutman, Inc.
10345 W. Olympic Blvd.
LA., CA 90064-2524

Michael Segal
Fred Segal Santa Monica
Fred Segal Melrose
500 Broadway
Santa Monica, CA 90401

Sue B. Glasscock
Blackjack Incorporated
1341 Las Canoas, Pacific
Palisades, CA 90272

Annett Wolf
Wolf -Kasteler, Public Relations
132 S. Rodeo Dr. Suite300
Beverly Hills, CA 90212

Klaus Mennekes
General Manager
Shutters on the Beach
One Pico Blvd.
Santa Monica, CA 90405

Ted Danson
Paramount Pictures Corp.
5555 Melrose Ave.,
Lasky Bldg.#106
Los Angeles, CA 90038

Bret E. Williams
P.O. Box 5308
Balboa Island, CA 92662

VOL 21

0903

Gregg Patterson
General Manager
The Beach Club
201 Palisades Beach Road
Santa Monica, CA 90402- 1499

Trip Reeb
General Manager
KROQ 106.7FM
3500 W. Olive Ave. Suite 900
Burbank, CA 91505

Anthony Pritzker
1022 Palisades Beach Road
Santa Monica, CA 90403

John S. Buzas
Law Offices of Samuel E. Gabriel
801 Pacific Ave.
Long Beach, CA 90813-4226

J. Shaffer Smith
Law Offices of J. Shaffer Smith
and Associates
8383 Wilshire Blvd. Suite 660
Beverly Hills, CA 90211

Jon A. Douglas
Chairman of the Board
The Prudential-Jon Douglas Co.
427 N. Camden Drive
Beverly Hills, CA 90210

John S. Schuessler
Law Offices of John S. Schuessler
426 N. San Gabriel
P.O. Box 945, Azusa, CA 91702

Robert Greenwald
Robert Greenwald Prod. Inc.
10510 Culver Blvd.
Culver City, CA 90232

Deborah Cope
Cope Management
9538 Brighton Way Suite 322
Beverly Hills, CA 90210

VOL 21

0904

Robert H. Sulnick
Executive Director
American Oceans Campaign
725 Arizona Ave. Suite 102
Santa Monica, CA 90401

Michael D. Waks
Attorney at Law
One Civic Plaza Suite 300
Carson, CA 90745

Richard Foos
President
RHINO
10635 Santa Monica Blvd.
LA, CA 90025-4900

Kenneth A. Ehrlich
Reznik and Reznik Law Corporation
15456 Ventura Blvd. 5th floor
Sherman Oaks, CA 91403-3026

Robert Bell
Michael and Robert's Melange, Inc.
1718 S. Pacific Coast Highway
Redondo Beach, CA 90277

Andy Lipkis
President
Treepeople
12601 Mulholland Drive
Beverly Hills, CA 90210

Michael Ball
Sherman and Ball Architects
and Builders, Inc.
14852 Ventura Blvd.
Sherman Oaks, CA 91403

Janet Carpenter
Vice President
Artistic Environments, Inc.
2858 Colorado Ave.
Santa Monica, CA 90404

Jeanne M. Lawson
Law Offices of Jeanne M. Lawson
1876 E. Century Park, 5th Floor
LA, CA 90067

VOL 21

0905

R0065159

Chris Allaire
Veirup/Allaire
2868 Colorado Ave.
Santa Monica, CA 90404

Claus Veirup
Veirup/Allaire
2868 Colorado Ave.
Santa Monica, CA 90404

William Kohnen
President and CEO
SEAmagine Hydrospace Corp.
976 W. Foothill Blvd., Suite 215
Claremont, CA 91711

Dan Siwulec
Communications Marketing
11818 Courtleigh Drive,
Suite 204
LA, CA 90066

Joan Hartmann
Senior Policy Counsel
American Oceans Campaign
725 Arizona Ave. Suite 102
Santa Monica, CA 90401

Daniel L. Ehrler
Executive Director
501 Colorado Ave., Suite 150
Santa Monica, CA 90401-2430

Don Anderson
President
Color Design Art
17315 Sunset Blvd.
Pacific Palisades,CA 90272

David Matis
Rising Stars Talent Mang.
1322 2nd St. Suite #25
Santa Monica, CA 90401

Peter Abraham
President
MaxAir Media
741 N. Cahuenga Blvd.
Hollywood, CA 90038

VOL 21

0906

Sam Jackson
2050 S. Santa Cruz St.
Suite 1000
Anaheim, CA 92805-6816

Richard and Lauren Donner
Donner/Shuler-Donner Productions
4000 Warner Blvd. Building 102
Burbank, CA 91522

Douglas J. Gardner
Senior Vice President
Maguire Thomas Partners
13250 Jefferson Blvd.
LA, CA 90094

Robert A. Finkelstein
Attorney at Law
1999 Avenue of the Stars
Suite 500
LA, CA 90067

Rob Reiner
Castle Rock Entertainment
335 N. Maple Dr., Suite 135
Beverly Hills, CA 90210

Robert Lenihan
Act III Theatres
1999 Avenue of the Stars
Suite 500
LA, CA 90067

Michael Hyler
General Manager
Bel-Air Bay Club
16801 Pacific Coast Highway
Pacific Palisades, CA 90272

Debra Hill
Debra Hill Productions
5555 Melrose Ave. Trl. 9
Hollywood,CA 90038

Betty Thompson
No Address Listed

VOL 21

0907

Ann Douglas
HG Associates, Inc.
1999 Avenue of the Stars
Suite 500
LA, CA 90067

Sean Dwyer
Act III Productions
5555 Melrose Ave.
Hollywood, CA 90038

Hal Gaba
Act III Communications
1999 Avenue of the Stars
Suite 500
LA, CA 90067

Russ Lesser
President
Body Glove
530 6th St.
Hermosa Beach, CA 90254-4697

Warren Littlefield
President
NBC Entertainment
3000 W. Alameda Ave.
Burbank, CA 91523

???
1999 Avenue of the Stars
Suite 500
LA, CA 90067

Dianna Friedman
Hard Rock America
Corporate Offices
510 N. Robertson Blvd.
LA, CA 90048

Norman I. Pattiz
Westwood One, Inc.
9540 Washington Blvd.
Culver City, CA 90232-2689

Nina Feinberg
Senior Vice President
Witt-Thomas Productions
1438 North Gower Street
Hollywood, CA 90026

VOL 21

0908

Steve Bornstein
Consulting
28 Avenue 28th
Venice, CA 90291

John J. Agooglia
President
3000 W. Alameda Ave.
Burbank, CA 91523

Barry C. Groveman
2121 Avenue of the Stars
Suite 2700
LA, CA 90067-5010

Chris Harris
Harris and Company
100 N. Sepulveda Blvd.
Suite 300
El Segundo, CA 90245

Mark Ryavec
Delphi Associates
453 Rialto Ave.
Venice, CA 90291

Flody Suarez
NBC Entertainment
3000 W. Alameda Ave.
Burbank, CA 91523

Stephen A.. McPherson
Vice Pres. Primetime Series
NBC Entertainment
3000 W. Alameda Ave.
Burbank, CA 91523

Patricia Mann
NBC Entertainment
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**Memorandum of Understanding**
**To Coordinate Industrial/Business Storm Water Pollution Control Activities**
**Conducted by the Alameda County Urban Runoff Clean Water Program and the**
**California Regional Water Quality Control Board**
**San Francisco Bay Region**

## I. BACKGROUND AND PURPOSE

This memorandum of understanding (MOU) is entered into between the Alameda County Urban Runoff Clean Water Program (ACURCWP) and the San Francisco Bay Regional Water Quality Control Board (Regional Board) staff to define their mutual roles and responsibilities in implementing industrial/business storm water pollution control activities. There are parallel and overlapping responsibilities placed on both agencies in regulating storm water discharges from business and industry. This MOU addresses the need to describe the working relationship between the ACURCWP's and Regional Board staff's programs for the mutual benefit of the two programs and for the benefit of the industrial/business facilities being regulated.

The benefits to the ACURCWP member agencies and to the Regional Board staff include sharing information, coordinating the implementation of the industrial/business storm water program so that the limited resources available to both groups are used effectively, and communicating a clear and consistent message to industry/business about what the expectations and requirements are of both programs.

The following describes the basis for the Regional Board's involvement in regulating the discharge of pollutants in storm water from industrial/business facilities.

1. EPA's storm water regulations define storm water associated with industrial activity to include storm water from specific categories of industrial facilities which are required to obtain industrial storm water NPDES permit coverage.

2. The Regional Water Quality Control Boards and the State Water Resources Control Board (SWRCB) of the State of California are authorized by EPA to issue general or individual NPDES permits to regulate industrial storm water discharges as well as other types of discharges.

3. The California State Water Resources Control Board (SWRCB) adopted a General Industrial Storm Water NPDES permit on November 19, 1991 which provides a mechanism for industries subject to the EPA regulations to obtain NPDES permit coverage and as part of the NPDES permit these facilities are required to do the following:

    - Eliminate non-storm water discharges (including illicit connections) to storm water systems;

    - Develop and implement a storm water pollution prevention

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plan; and

- Perform monitoring of discharges to storm water systems.

4. The Regional Board already regulates certain categories of industry and business such as Publicly Owned Treatment Works (POTWs), municipal landfills, federal and state facilities (such as the Lawrence Livermore National Laboratory and U.C. and state university campuses), and certain NPDES permitted facilities which would be wasteful for the ACURCWP to try to duplicate, and which in some cases it may be pre-empted from regulating by state and federal regulations.

5. The Regional Board staff is responsible for implementation of the NPDES program and cannot delegate that authority to local agencies, but it can define its working relationships with other groups and agencies with similar programs.

The following describes the basis for the ACURCWP's involvement in regulating the discharge of pollutants from industrial/business facilities.

1. The Clean Water Act and EPA's storm water regulations require that municipalities obtain NPDES permit coverage to effectively prohibit illicit discharges to their storm drain system and to regulate the discharge of pollutants in storm water from all sources including commercial, retail, and industrial facilities to the maximum extent practicable.

2. The ACURCWP was formed in 1991 by the fourteen cities in Alameda County, Alameda County, the Alameda County Flood Control and Water Conservation District (District) and Zone 7 of the District to obtain a municipal storm water NPDES permit and to implement a Storm Water Management Plan.

3. The Storm Water Management Plan for the ACURCWP describes pollutant control activities that will be performed to as part of the industrial discharger identification and runoff control program component to include in part the following:

   - Maintain and update an industrial/business database;
   - Develop annually a preliminary list of industries/businesses to be inspected;
   - Develop minimum qualifications, standards, and procedures for conducting industrial/business inspections;
   - Notify and survey industries/businesses about the ACURCWP's program, current BMPs being used, and the role of the Regional

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Board;

- Develop inspection plans and implement an inspection program on a preliminary, partial basis in FY 1992-93 (July 1 - June 30) and fully in FY 1993-94;
- Develop BMP guidelines using available information and information developed as part of surveys and distribute these to the municipal agencies conducting inspections; and
- Develop and distribute educational material about target industrial/business groups to municipalities and to the target groups.

2. **UNDERSTANDINGS REACHED**

A. The Regional Board staff will be the lead regulatory contact in controlling the quality of storm water runoff from POTWs, municipal landfills, existing individual NPDES-permitted facilities, state and federal facilities and from any other industrial discharges which it so chooses. For purposes of this agreement the lead regulatory contact means the public agency which will have the primary role in inspecting, communicating, and enforcing storm water pollution prevention requirements as described either in the Storm Water Management Plan for ACURCWP member agencies or as described in available agreements, procedures, and guidance for the Regional Board staff.

B. The ACURCWP member agencies will be the lead regulatory contact for other business and industrial facilities which it has assigned a high priority for regulating as determined on an annual basis by each of the responsible ACURCWP member agencies and as reported to the Regional Board staff.

C. The Regional Board staff and the ACURCWP member agencies will share information when requested as follows:

1. The Regional Board staff will supply public information on Notifications of Intent that have been filed, storm water pollution prevention plans received, monitoring results submitted, inspections it has conducted, and any other public information it has that the ACURCWP member agencies request for the specific purpose of implementing its storm water program.

2. The ACURCWP member agencies will supply public information on industrial storm water NPDES permitted facilities it is acting as the lead regulatory contact for which is requested by the Regional Board staff for the specific purpose of implementing its storm water program.

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D. During ACURCWP member agencies' current municipal NPDES permit period (until October 16, 1996), the Regional Board staff and the ACURCWP member agencies will focus their resources on requiring that industries and businesses implement Best Management Practices (BMPs) to reduce pollutants to the maximum extent practicable and on effectively eliminating illicit discharges. The BMPs which will be implemented will include those developed by the Stormwater Quality Task Force in the BMP Handbook and other lists of BMPs proposed by industry, proposed by either the Regional Board staff or the ACURCWP member agencies which are acceptable to both parties.

E. The Regional Board staff and the ACURCWP member agencies agree to emphasize efforts to notify and educate the owners and operators of industries and businesses as the primary means of beginning to achieve reductions in pollutants in storm water runoff. Where information about the requirements of the storm water program has been provided and this has failed to result in the reduction of pollutant discharges or the activities being conducted require an immediate or more active response, the lead regulatory contact will take appropriate enforcement actions. The enforcement procedures contained in the ACURCWP's October 1991 (or as amended) "Minimum Procedures, Qualifications, and Standards for Conducting Industrial Inspections for the Alameda County Urban Runoff Clean Water Program" will be used by the ACURCWP member agencies and these procedures are acceptable to the Regional Board staff.

F. The Regional Board staff and the ACURCWP member agencies agree to coordinate enforcement activities so as to maximize the use of existing resources and minimize the chance for regulatory overlap. To achieve this coordination the lead regulatory contact will conduct the enforcement activity. Nonetheless, either agency can request that the other take over the lead enforcement if more effective and expeditious enforcement is likely to result. These requests may be rejected by the agency being requested to take over the lead enforcement.

G. The Regional Board staff and the ACURCWP member agencies agree that this agreement will be effective when signed by representatives from the Regional Board and the ACURCWP. The agreement is expected to be amended and revised as the relationship between the Regional Board staff and the ACURCWP becomes better defined through actual experience implementing this new program.

H. The Regional Board staff agrees to explore the possibility of reimbursing ACURCWP member agencies under the following conditions:

1. The ACURCWP member agency has an industrial and business regulatory program acceptable to the Regional Board staff.

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2. The activities being conducted by the ACURCWP member agency supplant industrial storm water NPDES permit activities which the Regional Board staff would otherwise have to conduct.

I. The ACURCWP member agencies agree to continue to assist industries to become informed about their responsibilities for obtaining industrial storm water NPDES permit coverage.

J. The ACURCWP member agencies agree to work with interested industrial storm water dischargers to coordinate pollutant monitoring of storm water runoff from their industrial facilities with the ACURCWP.

The Chairperson of the ACURCWP is authorized by the unanimous vote of all the representatives or alternates present at the June 23, 1992 Management Committee meeting to sign this MOU on their behalf.

Jack Lindley, Chairperson ACURCWP
Management Committee

July 15, 1992
Date

APPROVED AS TO FORM:

Alameda County Counsel

Steven R. Ritchie, Executive Officer
San Francisco Bay Regional Water
Quality Control Board

7/17/92
Date

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R0065242

State of California

# Memorandum

To: Storm Water Permit Program Coordinators

Date: September 8, 1994

From: Thomas Mumley
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500, Oakland, 94612

Subject: MUNICIPAL STORM WATER MANAGEMENT PLAN COMPONENTS

The attached draft Municipal Storm Water Management Plan Components is intended to provide a starting point for establishing a consistent framework for such plans for all municipal programs in the State. I have proposed the categorical program action areas based on experiences with existing programs and existing plans in the San Francisco Bay Region. As proposed, the categorical areas and sub-areas would be essential components of a Municipal Storm Water Management Plan. It would be the responsibility of a municipality to demonstrate that a specific area does not apply to their program or to propose equivalent alternatives with justification.

The categorical areas represent elements integral to the establishment of a storm water management program, as well as specific sources, specific areas of activities, or specific activities that need to managed. The actual management action, such as the type of control measures that would be implemented, or level of implementation of the control measure, would be determined mostly at the discretion of the municipal program. We should also recognize that at this time the appropriate action, in a specific area for a specific municipal program, may be to propose the steps that they will take to scope alternative control measures, prepare for implementation, implement on a reduced or pilot scale, and ultimately select and implement a control measure on a full scale. In such cases the plan would identify milestones and evaluation techniques that will be met and used in the process of progressing through the proposed steps.

Over time we would identify specific control measures that apply in each area and categorize the measure as mandatory, optional, or mandatory under specific conditions. (Mandatory would be interpreted to allow for implementation of equivalently effective alternative measures.) Over time we would also develop information of the effectiveness of specific control measures and develop performance standards for their design, operation, and maintenance. These performance standards would be developed through monitoring programs and serve as the building blocks for defining maximum extent practicable.

By establishing a consistent framework of action areas, we also provide a basis for coordination and collaboration of all municipal programs, and consistent reporting and evaluation standards.

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# MUNICIPAL STORM WATER MANAGEMENT PLAN COMPONENTS

The Municipal Storm Water Early Permit renewal process requires the submittal of a Storm Water Management Plan for the permitted area covering the entire five year period of the permit. A single plan is expected for each permit, with each of the permittees contributing to the plan. The plan should address all of the following components, including a discussion of how each of the components fit into a single unified program. Every element of the plan must contain compliance schedules with firm dates that will be met. The permittees should suggest schedules for submittals that are realistic for their particular fiscal year. The management plans should emphasize pollution prevention rather than relying solely on pollution control.

This document has been prepared by the staff of the State Water Resources Control Board and the Regional Water Control Boards, in an effort to assist permittees who hold municipal separate storm sewer permitsto comply with those permits. This document has not been adopted by either of the Boards. Its provisions, with the exception of the federal regulations, in italics, are not mandatory, and are provided solely as an aid to permittees.

*122.26(d)(1)(i) General information. The applicants' name, address, telephone number of contact person, ownership status and status as a State or local government entity.*

*122.26(d)(1)(v) Management programs. (A) A description of the existing management programs to control pollutants from the municipal separate storm sewer system. The description shall provide information on existing structural and source controls, including operation and maintenance measures for structural controls, that are currently being implemented. Such controls may include, but are not limited to: Procedures to control pollution resulting from construction activities; floodplain management controls; wetland protection measures; best management practices for new subdivisions; and emergency spill response programs. The description may address controls established under State law as well as local requirements.*

*122.26(d)(2)(iv) Proposed management program. A proposed management program covers the duration of the permit. It shall include a comprehensive planning process which involves public participation and where necessary intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques and system, design and engineering methods, and such other provisions which are appropriate. The program shall also include a description of staff and equipment available to implement the program. Separate proposed programs may be submitted by each coapplicant. Proposed programs may impose controls on a systemwide basis, a watershed basis, a jurisdiction basis, or on individual outfalls. Proposed programs will be considered by the Director when developing permit conditions to reduce pollutants in discharges to the maximum extent practicable. Proposed management programs shall describe priorities for implementing controls.*

I. PROGRAM MANAGEMENT - Area wide permits are permits that are issued to a group of municipal governments. The governments are given a single permit and pay a single fee. It is anticipated that although each governmental entity will have their own program, they will function as a unified entity in their permit responses. The area wide permits require cooperation by a number of government entities including cities, counties, agencies such as flood control districts or water districts, and state agencies such as CALTRANS. Each governmental entity will have, in addition, a variety of agencies that have responsibilities either directly, or indirectly for storm water related activities. The plan must include a discussion of who is involved in the program, how they will function together, what kind of interagency funding arrangements are made. For each permittee, the plan must also outline the funding and funding mechanism to be used, and the legal authority that will be used to enforce the program.

A. PROGRAM STRUCTURE - Each permit will require a structure for the participatory agencies to work together under a unified plan. While each permittee will have an individual program to address the particular needs of their city or agency, a framework must be developed to allow cooperation between them. In addition, cities will have common problems that will be more efficiently addressed as a whole rather than individually. For most area-wide permits, a city or county acts as the lead agency or coordinator for day to day business, setting meetings and preparing submittals. They assume no responsibility for any other city's program, and are not viewed as the responsible agency for the permit. Each area-wide permit will require a mechanism to make decisions for the permittees, develop program guidlines for each of the permit areas, assess the adequacy and consistency of each permittees submittals in each of the program areas, address the inadequate program areas with each of the permitteees, and prepare unified submittals for the Regional Boards. The mechanism can either be a single government entity such as a county, or it can be a Management Committee made up of representatives of the permittees.

1. Management Committee - An overall decision making body that is representative of all of the permittees.
   a. Describe the purpose of the committee, and how its responsibilities fit into the overall program framework.
   b. Describe the makeup of the committee, how the committee will communicate, and how it will coordinate its activities.

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c. Describe what the authority of the committee will be and its procedures for decision making.

2. Subcommittees - We expect that programs will have the need to establish focused subcommittees specific to program action areas. List the subcommittees to be formed (or that already exist), tell the focus of the group, the participants, the tasks to be accomplished, the products to come out of the group, and the time frame to be followed. These committees should develop guidelines for program implementation for each of the program areas and a methodology for determining the adequacy of each permittee's program. All of the permittees should participate on at least one of the committees.
   a. Roles/responsibilities - Develop methodology for compliance with the permit elements, and set levels of expected effort. Review the submittals of each permittee for adequacy according to the criteria established for each program element- submit the reviews as part of the annual report.

B. INSTITUTIONAL ARRANGEMENTS - Management of the storm water program will require the cooperation of all of the governmental entities named on the permit. No one agency within a city or county has the authority to assume the responsibility of all activities within the municipality. Consequently, the permit is issued to a city or county, and not to a specific agency within the municipality. (Although, certain agencies, such as flood control agencies, may be cited as a permittee.) It is expected that all of the organizations within each municipality who have programs that have an impact on storm water quality will be educated about the storm water program and actively participate in implementation of it. There must be formal arrangements whereby all municipalities can participate in the same permit program, share costs and work jointly. The agencies within a municipality must also be able to communicate with each other and work jointly.

*122.26(d)(2)(i)(D) Control through interagency agreements among coapplicants the contribution of pollutants from one portion of the municipal system to another portion of the municipal system;*

*122.26(d)(2)(vii) Where more than one legal entity submits an application, the application shall contain a description of the roles and responsibilities of each legal entity and procedures to ensure effective coordination.*

1. Program Participant Arrangements - Describe the relationship and formal arrangements among all permittees.
   a. City-City-County - Identify all of the governmental authorities involved, and who the lead agency will be within each of those authorities for the storm water program. Identify the lead agency for coordination of the permit. The lead agency provides no more than coordination, they do not assume responsibility for the adequacy of any city's program. Identify the responsibilities of each agency, how decisions will be made, and what communication protocols will be used. Identify what method will be used to develop a responsible management committee, or similar mechanism, and vest it with decision making powers.
   b. Format - What institutional arrangements have been used to formalize the agreement between the government entities, what arrangements have been made to allow cost sharing.
      i. Joint Powers Authority
      ii. Memorandum of Agreement/Understanding
2. Area-wide Interagency - Describe the function of each agency as it relates to the storm water program. Tell how each agency will be made aware of their responsibilities under the storm water program, and what they will do to comply with the regulations. Describe any responsibility or activity that impacts or overlaps the storm water program. Describe each activity/responsibility, how it impacts or overlaps the storm water program, how the agency will coordinate their activity with the storm water program, and how pertinent information will be exchanged. Describe the formal institutional arrangements or mechanisms that will be used to oversee or coordinate with each agency.
   a. County Hazmat - Waste regulations, Household hazardous waste program, Industrial Inspections
   b. County Health - Inspections of Restaurants and other food handling establishments.
   c. Flood Control - Operation and maintenance of the storm system
   d. Local Transportation/Congestion Management
   e. County (Regional) Parks
   f. Mosquito Abatement
   g. Fruit Fly Abatement
   h. Water Districts
   i. County Agricultural Agencies



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j. Others

3. City-specific Interagency Arrangements - This should reflect the structure in each city.
   a. Public works
      i. Engineering
      ii. Operations & Maintenance
      iii. Streets/roads - by law, these are part of the storm water conveyance system
      iv. Others
   b. Planning - New Construction and Redevelopment, coordination with CEQA and local permitting. Retrofit of existing structures.
   c. Parks and Recreation
   d. POTWs
   e. Others

C. FISCAL RESOURCES - Every permittee must have a mechanism for funding their storm water program. The plan should show what the funding is, the source of the funding, and how it will be distributed. The regulations require a budget for every year of the five year permit period. While it may not be possible for a city to commit to a set budget for future years, it is possible to make estimates about the cost of the program that is proposed. This should include an estimate of the cost of each of the elements, the personnel or contracts that will be required to implement the program, the anticipated funding source, and process and time schedule for establishing detailed annual budgets. Include a detailed budget for the first year.

*122.26(d)(1)(vi) Fiscal resources. (A) A description of the financial resources currently available to the municipality to complete part 2 of the permit application. A description of the municipality's budget for existing storm water programs, including an overview of the municipality's financial resources and budget, including overall indebtedness and assets, and sources of funds for storm water programs.*

*122.26(d)(2)(vi) Fiscal analysis. For each fiscal year to be covered by the permit, a fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the activities of the programs under paragraphs (d)(2) (iii) and (iv) of this section. Such analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds.*

1. Area-wide
   a. Funding source(s)
   b. Staff resources
   c. Contract services
   d. Cost share (funds associated with existing activities/related programs) - if management practices currently in place under another program are to be included as part of the storm water program, the costs associated with those practices should be included as part of the budget. The program should also have a demonstrable water quality perspective.
2. City-specific
   a. Funding source(s)
   b. Staff resources
   c. Contract services
   d. Cost share (funds associated with existing activities/related programs) - if management practices currently in place under another program are to be included as part of the storm water program, the costs associated with those practices should be included as part of the budget. The program should also have a demonstrable water quality perspective.

D. LEGAL AUTHORITY - The regulations require permittees to demonstrate adequate legal authority to carry out the storm water program, including controls on industry and construction. You must cite your legal authority, or where it does not yet exist, give a plan and timetable for developing it.

*122.26(d)(1)(vii) Legal authority. A description of existing legal authority to control discharges to the municipal separate storm sewer system. When existing legal authority is not sufficient to meet the criteria provided in paragraph (d)(2)(vi) of this section, the description shall list additional authorities as will be necessary to meet the criteria and shall include a schedule and commitment to seek such additional authority that will be needed to meet the criteria.*

*122.26(d)(2)(vi) Adequate legal authority. A demonstration that the applicant can operate pursuant to legal authority*



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*established by statute, ordinance or series of contracts which authorizes or enables the applicant at a minimum to:*
*(A) Control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity;*
*(B) Prohibit through ordinance, order or similar means, illicit discharges to the municipal separate storm sewer;*
*(C) Control through ordinance, order or similar means the discharge to a municipal separate storm sewer of spills, dumping or disposal of materials other than storm water;*
*(D) Control through interagency agreements among coapplicants the contribution of pollutants from one portion of the municipal system to another portion of the municipal system;*
*(E) Require compliance with conditions in ordinances, permits, contracts or orders; and*
*(F) Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer.*

1. List of essential authorities - Describe how the authority already existing in your municipality fills the requirements in the regulations. The ordinances must be adequate and they must be enforced.
2. Ordinance
   a. Exists
   b. Planned
3. Implementation procedures
4. Responsible parties

II. ILLICIT DISCHARGES - The regulations require every permittee to have a plan for finding and preventing illegal discharges, and a mechanism for enforcing against illegal dischargers.

*122.26(d)(1)(iii) Source identification. (A) A description of the historic use of ordinances, guidance or other controls which limited the discharge of non-storm water discharges to any Publicly Owned Treatment Works serving the same area as the municipal separate storm sewer system.*

*122.26(d)(2)(v)(B) A description of the existing program to identify illicit connections to the municipal storm sewer system. The description should include inspection procedures and methods for detecting and preventing illicit discharges, and describe areas where this program has been implemented.*

*122.26(d)(1)(iv)(D) Field screening. Results of a field screening analysis for illicit connections and illegal dumping for either selected field screening points or major outfalls covered in the permit application.*

*122.26(d)(2)(iv)(B) A description of a program, including a schedule to detect and remove (or require the discharger ... to obtain a ... NPDES permit for) illicit discharges and improper disposal into the storm sewer.*

A. ILLICIT CONNECTIONS - The storm drain system should have been surveyed during the first permit period to ensure that all of the connections made to the system are both legal and appropriate. If the system has not yet been surveyed the plan should contain a proposed plan for doing it. The plan should contain a proposal for how the system will be surveyed, who will do the survey and a time table for completion. It should also specify what will be done with the illicit connections that are found. In addition, there should be a plan for ongoing system inspections.
   1. System survey
   2. Ongoing system inspections - The extent of this program would vary widely based on the needs of an individual city.
   3. Reporting

B. ILLEGAL DUMPING - It is important to stop illegal dumping. Unfortunately, it is difficult to detect, because it is usually done both irregularly and covertly. The best method for stopping illegal dumping is educating the public, both to raise the awareness of what is illegal dumping so that people are not doing it, and to encourage the public to contact the authorities if they witness illegal dumping. All city inspectors and police and fire personnel should be trained to recognize and respond to illegal dumping. There should be a clear response mechanism, such as a hotline that anyone can use to report incidence of illegal dumping. In addition there should be ongoing system surveillance. If illegal dumping or spills are reported and responded to, there should be some follow up mechanism.
   1. Outreach



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2. System surveillance
3. Spill response - When a spill is identified, it must be cleaned up. The city must have the legal authority to act against the discharger, and the ability to handle the clean up or require the discharger to clean it up. The Regional Water Board and other State agencies can be brought in if a spill occurs that is beyond the ability of the city to the clean up.
4. Complaint response - When a complaint is made, it must be responded to. The city must have the legal authority to act against the discharger, and the ability to handle the clean up or require the discharger to clean it up. The Regional Water Board and other State agencies can be brought in if a spill occurs that is beyond the ability of the city to the clean up.
5. Coordination of alternative disposal - Household hazardous waste recycling programs are mandated for many of the items that are routinely illegally dumped, such as used oil. Describe these programs and any other alternative disposal programs that are available.
6. Reporting - Incidents of illegal dumping and spills should be reported to the Regional Board on a regular basis in writing. All complaint response should be tracked in writing and submitted to the Regional Board.

C. ENFORCEMENT PROCEDURES - Cite your local legal authority and describe your mechanism for enforcing against dischargers who are illegally dumping or who have illicit connections.

D. COORDINATION WITH STATE NON-STORM WATER PERMITS - All other state laws and programs that overlap with or are in conflict with the storm water program must be addressed. Non-storm water discharges are prohibited unless authorized by NPDES permit. Even if the Regional Board issues a permit for a discharge, the city can refuse to accept the discharge into their system. The regulations exclude certain non-storm water discharges from the prohibition unless a municipality identifies them as sources of pollutants. Permittees must identify the discharges they will allow, and the management measures that they will require on these discharges. However, all discharges that are prohibited by a Regional Board must also be prohibited by a municipality. A municipality cannot be less stringent than the state.
1. Identification of permissible/permitable discharges
2. Appropriate management practices
3. Reporting

III. INDUSTRIAL/COMMERCIAL SOURCES - Municipalities are responsible for all discharges from commercial facilities as well as industries and construction sites within their jurisdiction regardless of coverage under the statewide general permits. This includes facilities required to be permitted under the State Industrial Storm Water Program and industries and commercial facilities that are not required to be permitted. Pollution prevention should be emphasized. The Regional Water Board will enforce the General Permits and municipalities are expected to enforce their local ordinances.

*122.26(d)(2)(ii) Source identification. The location of any major outfall that discharges to waters of the United States that was not reported under paragraph (d)(1)(iii)(B)(1) of this section. Provide an inventory, organized by watershed of the name and address, and a description (such as SIC codes) which best reflects the principal products or services provided by each facility which may discharge, to the municipal separate storm sewer, storm water associated with industrial activity;*

*122.26(d)(2)(iv)(A) A description of structural and source control measures to reduce pollutants from runoff from commercial and residential areas that are discharged from the municipal storm sewer system that are to be implemented during the life of the permit, accompanied with an estimate of the expected reduction of pollutant loads and a proposed schedule for implementing such controls.*

*122.26(d)(2)(C) A description of a program to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system. The program shall:*
*(1) Identify priorities and procedures for inspections and establishing and implementing control measures for such discharges;*
*(2) Describe a monitoring program for storm water discharges associated with the industrial facilities identified in paragraph (d)(2)(iv)(C) of this section, to be implemented during the term of the permit, including the submission of quantitative data on the following constituents: any pollutants limited in effluent guidelines subcategories, where applicable; any pollutant listed in an existing NPDES permit for a facility; oil and grease, COD, pH, BOD5, TSS, total phosphorus, total Kjeldahl nitrogen, nitrate plus nitrite nitrogen, and any information on discharges required under 40 CFR 122.21(g)(7) (iii) and (iv).*



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A. IDENTIFICATION OF SOURCES - Indicate what sources were identified during the first permit period. Tell what measures will be taken to identify other sources, what agency will do the source identification, what methods of source identification will be used, and the time table for completing this investigation. This source identification should allow cities to prioritize industrial and commercial sources and to determine the schedule for inspection. At the minimum all potential sources should be inspected at least once during the permit period. Some facilities will require more frequent inspections.
   1. Categorical list
   2. Ranking
   3. Update procedure

B. CONTROL MEASURES (identification) - For each pollutant source, either by industrial or commercial category or specific activity, determine what measures are applicable for control of the source; which, of these measures, are technically and financially feasible, and which measures will be used. Indicate who will implement the measures, how they will be implemented and the time table for implementation. The plan should include a tiered approach. Describe what measures either have been implemented already, or can be immediately implemented, other measures that can be implemented over the short term and measures that are more costly or difficult that can be used if necessary in the long term. Describe any studies or pilot projects that are contemplated to study these measures.
   1. Pollution prevention measures - Education on source minimization and pollution prevention is an important control measure.
      a. Site design options
      b. Housekeeping/maintenance practices
   2. Structural (treatment) measures
      a. Applicability
      b. Effectiveness
      c. Retrofit opportunities

C. OUTREACH - Indicate the purpose of the outreach, the target audience, the intended messages, who will be responsible for the outreach, how the outreach will be done, and the time table for implementation.
   1. General guidance - All potential industrial and commercial dischargers should be informed of their obligations under the storm water program. Dischargers should also be informed of ways of complying with the storm water program, including general outreach on pollution prevention measures.
   2. Industrial category guidance - Specific outreach should be developed for industrial or commercial categories that permittee identify as high priority industries.
   3. Industrial activity guidance - Specific outreach should be developed for high priority activities such as loading docks or vehicle washing and maintenance.

D. INSPECTIONS - Most municipalities already have programs in which they inspect businesses, these include HAZMAT, Health and Pretreatment Programs among others. Inspections for the storm water program can either be incorporated into these other inspection programs, or they can be done as a stand alone program with separate inspectors. Indicate the purpose of the inspections, the priority for inspections, how the facilities were chosen for inspection, what the inspection will consist of, how the inspection will be carried out, who will be responsible for the inspections, how the inspectors will be trained, when the inspection program will be implemented and a schedule for completion of the inspections. Indicate also how the results will be reported and to whom. If an immediate problem is found how will it be handled? To whom will it be reported? How will follow up to these inspections be handled? Will there be a mechanism for a revisit inspection?
   1. Checklist
   2. Schedule
   3. Reports
   4. Follow-up procedures

E. LOCAL PERMITS / INCENTIVE PROGRAM - While not required by the Regulations, a municipality should consider controlling industrial and commercial sources through the use of local storm water permits, or clean business incentive programs.

F. TRAINING - Implementation of an industrial storm water program will require an informed and aware staff. All



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public employees should be trained in the storm water regulations, both so that they abide by the regulations in the course of their work day and so that they can tell if an activity that they witness is legal. In addition inspectors who visit commercial or industrial facilities, or who go to construction sites can determine compliance with the storm water regulations and educate the facilities about the requirements of the program.

1. Public employees
2. Inspectors

G. COORDINATION WITH STATE INDUSTRIAL STORM WATER PERMIT - It is anticipated that the municipalities will have regulations through ordinance or other legal mechanisms that would be written such that compliance with a municipality's regulations would cause an industrial discharger to be in compliance with the State General Permit. It is anticipated that coordination between the Regional Boards and the municipalities will be required. As such, the municipalities should discuss the anticipated relationship or agreement they would have with the Regional Board, and the mechanism they will pursue to enact such an agreement or relationship.

1. Memorandum of Understanding - An MOU can be used to formalize the agreement between municipalities and the Regional Board on the industrial compliance program.
2. Reports
3. Other issues

IV. NEW DEVELOPMENT AND RE-DEVELOPMENT - Each permittee must have a plan for managing storm water runoff from new construction and re-development. The plan must cover both construction covered by the State Construction Storm Water General Permit and construction under five acres. The plan should emphasize pollution prevention, especially erosion prevention.

*122.26(d)(2)(iv)(A)(2)* A description of planning procedures including a comprehensive master plan to develop, implement and enforce controls to reduce the discharge of pollutants from municipal separate storm sewers which receive discharges from areas of new development and significant redevelopment. Such plan shall address controls to reduce pollutants in discharges from municipal separate storm sewers after construction is completed.

122.26(d)(2)(iv)(D) A description of a program to implement and maintain structural and non-structural best management practices to reduce pollutants in storm water runoff from construction sites to the municipal storm sewer system, which shall include:
(1) A description of procedures for site planning which incorporate consideration of potential water quality impacts;
(2) A description of requirements for nonstructural and structural best management practices;
(3) A description of procedures for identifying priorities for inspecting sites and enforcing control measures which consider the nature of the construction activity, topography, and the characteristics of soils and receiving water quality; and
(4) A description of appropriate educational and training measures for construction site operators.

A. PLANNING PROCESS - The planning process for new development and re-development must address a comprehensive plan to develop, implement and enforce controls to reduce the discharge of pollutants from areas of new development and significant redevelopment. Master planning and other studies regarding flood management must assess the impact on water quality.

1. Watershed protection policies
2. Coordination with CEQA
3. Site planning practices
4. General Plan changes
5. Use of master plans
6. Other policies
7. Planning - public works interface
8. Implementation procedures

B. CONSTRUCTION SITES - Construction site management must consider the requirements of the State Construction Storm Water General Permit. Erosion prevention using vegetation, soil stabilization and timing of grading should be emphasized.

1. Erosion control requirements
2. Chemical and waste management requirements
3. Inspections
   a. Checklist
   b. Schedule
   c. Reports



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d. Follow-up procedures

C. LOCAL PERMITS - Optional
1. Coordination with existing permits
2. New permit issues

D. TRAINING
1. Planning personnel
2. Public Works personnel
3. Inspectors

E. CONTROL MEASURES - Permanent measures to be installed during construction to control runoff from the final development or redevelopment.
1. Pollution prevention measures
   a. Site design - inlet design to allow easy and frequent cleaning.
   b. Education/training
   c. Other
2. Post construction (treatment) measures - grassy swales, extended detention basins, sand filters, constructed wetlands, oil/water separators.
   a. Applicability
   b. Effectiveness
   c. Retrofit opportunities
3. Operation and maintenance - It must be clear who is responsible for the long term maintenance, and who will pay for it.
   a. Requirements
   b. Responsible party
4. Conflicts with other mandates - Regulations from other agencies can conflict with recommended practices in the storm water program. An example of this is the storage of materials. While the storm water program recommends covering materials, fire codes will not allow some materials to be covered. In another area, the minimization of impervious areas and design of landscaping to allow flow to the vegetated areas are recommended practices in storm water. Often local building ordinances dictate the amount of impervious areas and the configuration of the landscaping. These conflicts should be identified and an attempt made to resolve them.
   a. Identification of conflicts
      i. Landscaping
      ii. Pavement/curbs
   b. Conflict resolution

F. OUTREACH
1. Developers
2. Contractors
3. Other parties

G. ENFORCEMENT - Municipalities must enforce their ordinances, including their grading ordinances.

H. COORDINATION WITH STATE CONSTRUCTION STORM WATER PERMIT - It is anticipated that the municipalities will have regulations through ordinance or other legal mechanisms that would be written such that compliance with a municipality's regulations would cause a construction project to be in compliance with the State General Construction Permit. Coordination between the Regional Boards and the municipalities will be necessary. As such, the municipalities should discuss the anticipated relationship or agreement they would have with the Regional Board, and the mechanism they will pursue to enact such an agreement or relationship.

1. Memorandum of Understanding - An MOU can be used to formalize the agreement between municipalities and the Regional Board on the construction compliance program.
2. Reports



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3. Other issues

V. PUBLIC AGENCY ACTIVITIES - All municipalities perform functions that have an impact on storm water quality. These include among other things, vehicle maintenance, landscape maintenance and weed control, water body maintenance including swimming pool maintenance, construction and maintenance of streets and roads, and construction and maintenance of the flood control system. Since municipalities must address all significant sources of pollutants, all of these activities must be examined and if appropriate, controlled.

*122.26(d)(2)(v) Management programs. (A) A description of the existing management programs to control pollutants from the municipal separate storm sewer system. The description shall provide information on existing structural and source controls, including operation and maintenance measures for structural controls, that are currently being implemented. Such controls may include, but are not limited to: Procedures to control pollution resulting from construction activities; floodplain management controls; wetland protection measures, best management practices for new subdivisions; and emergency spill response programs. The description may address controls established under State law as well as local requirements.*

*122.26(d)(2)(iv)(A)(1) A description of maintenance activities and a maintenance schedule for structural controls to reduce pollutants (including floatables) in discharges from municipal separate storm sewers;*

*122.26(d)(2)(iv)(A)(3) A description of practices for operating and maintaining public streets, roads and highways and procedures for reducing the impact on receiving waters of discharges from municipal storm sewer systems, including pollutants discharged as a result of deicing activities;*

*122.26(d)(2)(iv)(A)(4) A description of procedures to assure that flood management projects assess the impacts on the water quality of receiving water bodies and that existing structural flood control devices have been evaluated to determine if retrofitting the device to provide additional pollutant removal from storm water is feasible;*

*122.26(d)(2)(iv)(A)(5) A description of a program to monitor pollutants in runoff from operating or closed municipal landfills or other treatment, storage, or disposal facilities for municipal waste, which shall identify priorities and procedures for inspections and establishing and implementing control measures for such discharges;*

*122.26(d)(2)(iv)(A)(6) A description of a program to reduce to the maximum extent practicable, pollutants in discharges from municipal separate storm sewers associated with the application of pesticides, herbicides, and fertilizer which will include, as appropriate, controls such as educational activities, permits, certifications and other measures for commercial applicators and distributors, and controls for application in public right-of-ways and at municipal facilities.*

A. SEWAGE SYSTEMS - Sewage spills must not be allowed to go into the storm drain. Sewage must be contained and vacuum pumped. Storm drains must be protected during a sewage spill.

B. CORPORATION YARDS - Corporation yards include any area or facility that is used for vehicle maintenance or washing, other maintenance, chemical storage or use, such as a paint facility, and waste management. Identify all corporation yards and give their locations and describe their functions.

1. Storm Water Pollution Prevention Plans - SWPPP are not required, however, municipalities are required to control any potential source of pollution, and SWPPP are a good vehicle for compliance. Identify what the potential storm water problems are, who is responsible for implementing the storm water measures, what management practices will be used, and how they will be implemented. For measures that are not already in place give a timetable for implementation. Tell how the effectiveness of the BMPs will be judged. If a municipality chooses not to use SWPPP, they must use an equivalent method to handle their corporation yard discharges.

C. PARKS AND RECREATION - Park Departments manage landscaping and swimming pools. Both of these activities involve the use of chemicals, waste management, and non-storm water discharges. Their use of chemicals must be addressed in the storm water management plan. In addition maintenance of swimming pools requires the periodic discharge of large quantities of swimming pool water.

1. Fertilizers/Pesticides
   a. Use / Application management
   b. Storage
2. Facility Management
   a. Wash waters
   b. Maintenance
   c. Swimming pool waters



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D. STORM DRAIN SYSTEM OPERATION AND MANAGEMENT - The maintenance and operation of the storm drain system has an impact on storm water quality and must be addressed in the management plan. Material clogging storm drains can not be discharged into drains. It must be removed and disposed of properly.
   1. Inlet maintenance
   2. Drain maintenance
   3. Waste management
   4. New system designs
   5. Retro-fit opportunities

E. STREETS AND ROADS - Construction, operation, and maintenance of roads has an impact on storm water quality and must be addressed in the management plan..
   1. Sweeping - Street sweeping waste cannot be dumped in storm drain.
      a. Storm water quality based operation
      b. Waste management
   2. Street/pavement washing - Wash waters must be managed as non-storm water discharges.
   3. Maintenance
      a. Saw-cut slurry management
      b. Paving practices
      c. Waste management
      d. Medians/Landscaped Right of Way
         i. Irrigation
         ii. Fertilizer/pesticides

F. FLOOD CONTROL - Flood control practices have an impact on storm water quality and must be addressed in the management plan. Flood control managers must be educated about storm water quality requirements. Water quality must be a consideration in moving the water through the system.
   1. Coordination with new projects
   2. Coordination of maintenance activities
      a. Desilting/sediment removal
      b. Vegetation management
      c. Waste management
   3. Operation of facilities
      a. Detention basins - BMPs must be implemented when draining or pumping detention basins. Risers should not be directed into storm drain inlets.
      b. Other
   4. Retrofit opportunities

G. PUBLIC FACILITIES - Storm water runoff and non-storm water discharges from other public facilities must be addressed. Chemical use by these facilities should also be included. Address pressure blasting/cleaning sidewalks and concrete.
   1. Parking facilities
   2. Golf courses
   3. Schools
   4. Hospitals
   5. Parks / Landscapes
   6. Other buildings/plazas/etc.

H. PONDS, FOUNTAINS, AND OTHER PUBLIC WATER BODIES - Maintenance practices used on public water bodies, including waste management and non-storm water discharges, must be addressed in the plan.
   1. Algae control
      a. Use of chemicals
   2. Chlorine management
   3. Maintenance

VI. RESIDENTIAL (Not Elsewhere Covered) - Residential activities including private vehicle washing and maintenance; use of chemicals such as pesticides, herbicides and paints; private swimming pool maintenance; and other household



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and landscape maintenance can contribute to storm water pollution. Identify measures that can be taken to improve the quality of the runoff from residential area. Emphasize pollution prevention and the identification and use of safe substitutes.

VII. PUBLIC INFORMATION AND PARTICIPATION - It is necessary to involve the public in the storm water program in order to have an effective municipal program. The outreach program should be focused on the specific needs of individual cities. Tell how the public education needs were determined, who is responsible for developing and implementing the education program, what program and what materials will be developed, give a timetable for implementing the program, and the method to be used to determine its effectiveness.

*122.26(d)(2)(iv) Proposed management program. A proposed management program covers the duration of the permit. It shall include a comprehensive planning process which involves public participation and where necessary intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques and system, design and engineering methods, and such other provisions which are appropriate.*

*122.26(d)(2)(iv)(B)(5) A description of a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or water quality impacts associated with discharges from municipal separate storm sewers;*

*122.26(d)(2)(iv)(B)(6) A description of educational activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials; and*

A. GENERAL OUTREACH - Describe your outreach materials developed for the general public. Tell what the focus of the materials are, and how you arrived at that focus. Tell what materials have already been developed and how they are distributed. Tell what materials are still to be produced, what they address, who is producing them, how they will be distributed, what kind of follow up opportunities are provided, and the timetable for production and distribution.
   1. Written material
   2. Audio material
   3. Video material
   4. Distribution plan

B. FOCUSED OUTREACH - Describe your outreach materials developed for specific groups. Tell how these groups were identified and prioritized. Tell what the focus of the materials are, and how you arrived at that focus. Tell what materials have already been developed and how they are distributed. Tell what materials are still to be produced, what they address, who is producing them, how they will be distributed, what kind of follow up opportunities are provided, and the timetable for production and distribution.
   1. Pollutant specific
   2. Practice/activity specific
   3. Business specific

C. EDUCATION PROGRAMS
   1. Public employees - It is important to educate all of the public employees about the storm water program both so that they do not continue with practices that are counter productive and so that they can participate in its implementation and enforcement. Describe your public employee outreach programs. Tell what the focus of the training is, how it is implemented, who is implementing it, the schedule for training, and the opportunities for continuing education.
   2. K-12 - Describe programs developed for schools. These programs should include storm water awareness, illegal dumping awareness, source minimization and pollution prevention.
   3. Other

D. CITIZENS PARTICIPATION
   1. Volunteer monitoring
   2. Cooperative outreach
   3. Complaint procedures - Describe any mechanism available for citizen reports of illegal discharge illicit connections or potential pollution problems.

E. EFFECTIVENESS EVALUATION - Quantifying the effectiveness of education and outreach efforts may be



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difficult. Municipalities must develop a process by which they can evaluate the effectiveness of their program, and recommend changes to it.

VIII. PROGRAM EVALUATION - The storm water program developed under this plan must be evaluated for its effectiveness on a regular basis. The plan for this evaluation must include a schedule for evaluation, a methodology for the evaluation, a discussion of who will carry out the evaluation, and what will be evaluated. In addition, there must be a mechanism to follow up on the information generated by the evaluation. The plan should be adjusted based on the program evaluation.

*122.26(d)(2)(v) Assessment of controls. Estimated reductions in loadings of pollutants from discharges of municipal storm sewer constituents from municipal storm sewer systems expected as the result of the municipal storm water quality management program. The assessment shall also identify known impacts of storm water controls on ground water.*

A. PERFORMANCE STANDARDS - The permittees, possibly through management-committee sub-committees, must develop standards to judge the effectiveness of their activities and control measures. As an example, for street sweeping, permittees must devise a way of determining if the street sweeping has an impact on water quality. This could include determining what kind of pollutants are removed by the sweeping, measuring the size of the pollutants and the amount removed. Methodologies should be developed for each, which if followed, will assure that each control measure or action is implemented to the maximum extent practicable. For street sweeping, this would include the frequency of sweeping, the method of sweeping, the equipment used, how the equipment is cleaned and maintained, and the method of disposal for the material collected. Contol measure studies can be coordinated on a larger scale, such as statewide, so that each municipality is studying a different procedure.
   1. Development procedure
   2. Role of subcommittees
   3. Activity/source/action area specific

B. ANNUAL REPORTS - Reports must be submitted after the end of each fiscal year. Permittees should propose a date for submittals that works for them. The reports should be more than a simple compilation of activities. Rather, they should be used to evaluate the program and the effectiveness of the management measures. Each annual report should contain a report on the program implemented during the previous year and a plan that will be implemented during the current year. In addition, the findings of the evaluation of the previous years program should be used to suggest changes that are appropriate for implementation during the next year. Any revisions to the five year plan should be addressed here.
   1. Format/Structure - Each group of permittees under an area wide permit should develop a format that all the permittees will use for the annual report.
   2. Effectiveness measures - The co-permittees are responsible for developing methods for determining the effectiveness of the BMPs that they implement, for their particular program, and developing a level of effort that will be required in each area.
   3. Content

C. SUB-ANNUAL REPORTS - Each year, before the end of the fiscal year, the permittees should submit a report that contains a draft preliminary report addressing the implementation of that years program, a preliminary budget for the next year program addressing the funding issues for the upcoming budget process, and a preliminary plan for the next year showing what revisions to the five year plan will be required. In some regions, rather than a sub-annual report, the permittees will meet with the Regional Board to discuss these issues.
   1. Purpose
   2. Format/Structure
   3. Content

D. INTERNAL REPORTING - We suggest the development of a process for interagency - intragency exchange information among themselves and to develop the annual and semiannual reports
   1. Standard forms
   2. Procedures
   3. Record keeping - The Regional Board does not need to see all of the extraneous information, but there should be a mechanism for storage of records in case they are needed.



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E. STORM WATER MANAGEMENT PLAN REVISIONS - There should be a review process which will allow you to revise the plan for the next year and for the rest of the permit period.
   1. Process
   2. Reporting

IX. MONITORING - Monitoring serves several purposes. It allows a baseline characterization of storm water/urban runoff from the permitted area, it identifies the problems and their sources and evaluates impacts on receiving waters, it allows the permittee to determine what are appropriate, and it allows a permittee to judge the effectiveness of its control measures. Monitoring is not limited to water sampling. It can include such elements as visual inspections of above and underground systems or compilation of chemical use data.

Characterization of the permitted area, the watershed, the storm drain system, the receiving waters, and the land use was required in the previous permits. The information collected from previous efforts should be used in baseline characterization. This plan should also tell what the future monitoring objectives are, what information will be collected, the purpose of the information, how it will be collected and used, and how the information will be analyzed, reported and stored.

*122.26(d)(1)(B) Existing quantitative data describing the volume and quality of discharges from the municipal storm sewer, including a description of the outfalls sampled, sampling procedures and analytical methods used.*

*122.26(d)(2)(F) Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer.*

*122.26(d)(2)(ii) Source identification. The location of any major outfall that discharges to waters of the United States that was not reported under paragraph (d)(1)(iii)(B)(1) of this section. Provide an inventory, organized by watershed of the name and address, and a description (such as SIC codes) which best reflects the principal products or services provided by each facility which may discharge, to the municipal separate storm sewer, storm water associated with industrial activity;*

*122.26(d)(1)(iii)(C) A list of water bodies that receive discharges from the municipal separate storm sewer system, including downstream segments, lakes and estuaries, where pollutants from the system discharges may accumulate and cause water degradation and a brief description of known water quality impacts*

*122.26(d)(2)(D) A proposed monitoring program for representative data collection for the term of the permit that describes the location of outfalls or field screening points to be sampled (or the location of instream stations), why the location is representative, the frequency of sampling, parameters to be sampled, and a description of sampling equipment.*

*122.26(d)(2)(B) Estimates of the annual pollutant load of the cumulative discharges to waters of the United States from all identified municipal outfalls and the event mean concentration of the cumulative discharges to waters of the United States from all identified municipal outfalls during a storm event (as described under Section 122.21(c)(7)) for BOD5, COD, TSS, dissolved solids, total nitrogen, total ammonia plus organic nitrogen, total phosphorus, dissolved phosphorus, cadmium, copper, lead, and zinc. Estimates shall be accompanied by a description of the procedures for estimating constituent loads and concentrations, including any modelling, data analysis, and calculation methods;*

*122.26(d)(2)(C) A proposed schedule to provide estimates for each major outfall identified in either paragraph (d)(2)(ii) or (d)(1)(iii)(B)(1) of this section of the seasonal pollutant load and of the event mean concentration of a representative storm for any constituent detected in any sample required under paragraph (d)(2)(iii)(A) of this section;*

A. SYSTEM CHARACTERIZATION - The previous permit required a complete characterization of the entire system. This included the storm drain system, the receiving waters and the land use activities.
   1. Watershed - Characterize each watershed including the storm drain system, the land uses and the particular problems of the receiving waters.
   2. Storm drain system - Characterize the system including all major outfalls.
      a. Inlets
      b. Outlets
   3. Receiving waters - Identify and evaluate water bodies. Use existing water quality data along with current monitoring efforts to characterize and prioritize the receiving waters. Perform additional monitoring as necessary to characterize the receiving waters.
      a. Streams
      b. Lakes
      c. Bays
      d. Wetlands



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e. Other habitat

4. Land use - Characterize the land use in the permitted area. Characterize the storm water discharges from specific land use categories and mixed land use.
   a. General categories
   b. Specific features/sources

B. SOURCE IDENTIFICATION - Do focused monitoring on pollutants of concern.
   1. Specific land-use
   2. Specific activities

C. CONTROL MEASURE EFFECTIVENESS - Monitor to determine the effectiveness of control measures. Identify what control measure studies will be done and how they will be prioritized. Give a schedule for doing the studies.
   1. Specific Sources (e.g., corp yards)
   2. Specific Activities (e.g., waste management)
   3. Special Studies

D. POLLUTANT LOADING - An initial determination of the pollutant loading, both system wide and specific to land use types should be made through monitoring and modeling. Once the initial determination is made, it is important to continue a minimal long term monitoring program to track trends in the pollutant loading over time.

   1. System-wide
   2. Land-use specific
   3. Long-term stations

E. COMPONENTS OF A MONITORING PROGRAM PLAN - These are the expected elements of a monitoring plan. The elements suggested here do not replace any directions from the regulating Regional Board.
   1. Monitoring/sampling points with map
      a. rationale for sampling points
   2. Dry weather sampling
      a. frequency
      b. monitored parameters
      c. method for documentation of outfall field inspections
   3. Storm sampling plan
      a. number of storm events to be samples
      b. method for determining representative event
      c. worker safety plan
      d. sampling plan
      e. timing of sampling
      f. monitored parameters
         i. how were parameters chose?
      g. method to be used for flow weighted compositing of samples
         i. time duration between samples
         ii. minimum number of samples per hour
   4. Manual of field techniques
      a. general field techniques
      b. manual vs automatic sampling
      c. appropriate sampling technique for each pollutant
         i. grab vs composite
      d. appropriate sample size for each pollutant
   5. Flow analysis for sampled storm event
      a. method for determining flow
         i. flow rate
         ii. flow volume
   6. USEPA Title 40 CFR Part 136 compliance
      a. container type



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i. preparation/cleaning of containers
b. preservation procedures
i. were composite samples preserved/stabilized during sampling?
c. maximum holding times
d. use of approved analysis method
7. Laboratory
8. Analyses to be performed
9. Monitoring report format
a. date, exact place, time of sampling
b. individual performing sampling
c. dates analysis performed
i. were analyses performed within specified holding times?
d. individual performing analysis
e. analytical techniques/methods used
i. were approved methods used?
f. results of analysis
g. quality assurance/quality control
i. sampling
ii. analytical
iii. field QC samples
(a) QC for field analyses
(b) QC for samples for laboratory
iv. laboratory QC samples
v. analysis of accuracy
(a) average accuracy
(b) standard deviation
vi. aalysis of precision
(a) average precision for each measurement parameter
(b) standard deviation
vii. detection limits
(a) do detection limits exceed target detection limits?
viii. data outside QC target limits
(a) listing
(b) explanation
h. chain of custody
i. authorized signature
j. composite/grab sample
k. method for making composite sample
i. pollutant concentration/total mass based on flow-weighted samples

F. DATA MANAGEMENT
1. Data analyses
2. Database system
3. Accessibility
4. Reports
5. Modeling - Use and applicability



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# MUNICIPAL STORM WATER MANAGEMENT PLAN COMPONENTS

The Municipal Storm Water Early Permit renewal process requires the submittal of a Storm Water Management Plan for the permitted area covering the entire five year period of the permit. A single plan is expected for each permit, with each of the permittees contributing to the plan. The plan should address all of the following components, including a discussion of how each of the components fit into a single unified program. Every element of the plan must contain compliance schedules with firm dates that will be met. The permittees should suggest schedules for submittals that are realistic for their particular fiscal year. The management plans should emphasize pollution prevention rather than relying solely on pollution control.

This document has been prepared by the staff of the State Water Resources Control Board and the Regional Water Control Boards, in an effort to assist permittees who hold municipal separate storm sewer permits to comply with those permits. This document has not been adopted by either the State Water Resources Control Board or the Regional Water Control Boards. Its provisions, with the exception of the federal regulations, in italics, are not mandatory, and are provided solely as an aid to permittees.

*122.26(d)(1)(i) General information. The applicants' name, address, telephone number of contact person, ownership status and status as a State or local government entity.*

*122.26(d)(1)(v) Management programs. (A) A description of the existing management programs to control pollutants from the municipal separate storm sewer system. The description shall provide information on existing structural and source controls, including operation and maintenance measures for structural controls, that are currently being implemented. Such controls may include, but are not limited to: Procedures to control pollution resulting from construction activities; floodplain management controls; wetland protection measures; best management practices for new subdivisions; and emergency spill response programs. The description may address controls established under State law as well as local requirements.*

*122.26(d)(2)(iv) Proposed management program. A proposed management program covers the duration of the permit. It shall include a comprehensive planning process which involves public participation and where necessary intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques and system, design and engineering methods, and such other provisions which are appropriate. The program shall also include a description of staff and equipment available to implement the program. Separate proposed programs may be submitted by each coapplicant. Proposed programs may impose controls on a systemwide basis, a watershed basis, a jurisdiction basis, or on individual outfalls. Proposed programs will be considered by the Director when developing permit conditions to reduce pollutants in discharges to the maximum extent practicable. Proposed management programs shall describe priorities for implementing controls.*

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I. PROGRAM MANAGEMENT - Area wide permits are permits that are issued to a group of municipal governments. The governments are given a single permit and pay a single fee. It is anticipated that although each governmental entity will have their own program, they will function as a unified entity in their permit responses. The area wide permits require cooperation by a number of government entities including cities, counties, agencies such as flood control districts or water districts, and state agencies such as CALTRANS. Each governmental entity will have, in addition, a variety of agencies that have responsibilities either directly, or indirectly for storm water related activities. The plan must include a discussion of who is involved in the program, how they will function together, what kind of interagency funding arrangements are made. For each permittee, the plan must also outline the funding and funding mechanism to be used, and the legal authority that will be used to enforce the program.

A. PROGRAM STRUCTURE - Each permit will require a structure for the participatory agencies to work together under a unified plan. While each permittee will have an individual program to address the particular needs of their city or agency, a framework must be developed to allow cooperation between them. In addition, cities will have common problems that will be more efficiently addressed as a whole rather than individually. For most area-wide permits, a city or county acts as the lead agency or coordinator for day to day business, setting meetings and preparing submittals. They assume no responsibility for any other city's program, and are not viewed as the responsible agency for the permit. Each area-wide permit will require a mechanism to make decisions for the permittees, develop program guidlines for each of the permit areas, assess the adequacy and consistency of each permittees submittals in each of the program areas, address the inadequate program areas with each of the permittees, and prepare unified submittals for the Regional Boards. The mechanism can either be a single government entity such as a county, or it can be a Management Committee made up of representatives of the permittees.

1. Management Committee - An overall decision making body that is representative of all of the permittees.
   a. Describe the purpose of the committee, and how its responsibilities fit into the overall program framework.
   b. Describe the makeup of the committee, how the committee will communicate, and how it will coordinate its activities.
   c. Describe what the authority of the committee will be and its procedures for decision making.
2. Subcommittees - We expect that programs will have the need to establish focused subcommittees specific to program action areas. List the subcommittees to be formed (or that already exist), tell the focus of the group, the participants, the tasks to be accomplished, the products to come out of the group, and the time frame to be followed. These committees should develop guidelines for program implementation for each of the program areas and a methodology for determining the adequacy of each permittee's program. All of the permittees should participate on at least one of the committees.
   a. Roles/responsibilities - Develop methodology for compliance with the permit elements, and set levels of expected effort. Review the submittals of each permittee for adequacy according to the criteria established for each program element- submit the reviews as part of the annual report.

B. INSTITUTIONAL ARRANGEMENTS - Management of the storm water program will



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require the cooperation of all of the governmental entities named on the permit. No one agency within a city or county has the authority to assume the responsibility of all activities within the municipality. Consequently, the permit is issued to a city or county, and not to a specific agency within the municipality. (Although, certain agencies, such as flood control agencies, may be cited as a permittee.) It is expected that all of the organizations within each municipality who have programs that have an impact on storm water quality will be educated about the storm water program and actively participate in implementation of it. There must be formal arrangements whereby all municipalities can participate in the same permit program, share costs and work jointly. The agencies within a municipality must also be able to communicate with each other and work jointly.

*122.26(d)(2)(i)(D) Control through interagency agreements among coapplicants the contribution of pollutants from one portion of the municipal system to another portion of the municipal system.*

*122.26(d)(2)(vii) Where more than one legal entity submits an application, the application shall contain a description of the roles and responsibilities of each legal entity and procedures to ensure effective coordination*

1. Program Participant Arrangements - Describe the relationship and formal arrangements among all permittees.
   a. City-City-County - Identify all of the governmental authorities involved, and who the lead agency will be within each of those authorities for the storm water program. Identify the lead agency for coordination of the permit. The lead agency provides no more than coordination, they do not assume responsibility for the adequacy of any city's program. Identify the responsibilities of each agency, how decisions will be made, and what communication protocols will be used. Identify what method will be used to develop a responsible management committee, or similar mechanism, and vest it with decision making powers.
   b. Format - What institutional arrangements have been used to formalize the agreement between the government entities, what arrangements have been made to allow cost sharing.
      i. Joint Powers Authority
      ii. Memorandum of Agreement/Understanding
2. Area-wide Interagency - Describe the function of each agency as it relates to the storm water program. Tell how each agency will be made aware of their responsibilities under the storm water program, and what they will do to comply with the regulations. Describe any responsibility or activity that impacts or overlaps the storm water program. Describe each activity/responsibility, how it impacts or overlaps the storm water program, how the agency will coordinate their activity with the storm water program, and how pertinent information will be exchanged. Describe the formal institutional arrangements or mechanisms that will be used to oversee or coordinate with each agency.
   a. County Hazmat - Waste regulations, Household hazardous waste program, Industrial Inspections
   b. County Health - Inspections of Restaurants and other food handling establishments.
   c. Flood Control - Operation and maintenance of the storm system
   d. Local Transportation/Congestion Management
   e. County (Regional) Parks
   f. Mosquito Abatement
   g. Fruit Fly Abatement
   h. Water Districts



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i. County Agricultural Agencies
j. Others

3. City-specific Interagency Arrangements - This should reflect the structure in each city.
   a. Public works
      i. Engineering
      ii. Operations & Maintenance
      iii. Streets/roads - by law, these are part of the storm water conveyance system
      iv. Others
   b. Planning - New Construction and Redevelopment, coordination with CEQA and local permitting. Retrofit of existing structures.
   c. Parks and Recreation
   d. POTWs
   e. Others

C. FISCAL RESOURCES - Every permittee must have a mechanism for funding their storm water program. The plan should show what the funding is, the source of the funding, and how it will be distributed. The regulations require a budget for every year of the five year permit period. While it may not be possible for a city to commit to a set budget for future years, it is possible to make estimates about the cost of the program that is proposed. This should include an estimate of the cost of each of the elements, the personnel or contracts that will be required to implement the program, the anticipated funding source, and process and time schedule for establishing detailed annual budgets. Include a detailed budget for the first year.

*122.26(d)(1)(vi) Fiscal resources. (A) A description of the financial resources currently available to the municipality to complete part 2 of the permit application. A description of the municipality's budget for existing storm water programs, including an overview of the municipality's financial resources and budget, including overall indebtedness and assets, and sources of funds for storm water programs.*

*122.26(d)(2)(vi) Fiscal analysis. For each fiscal year to be covered by the permit, a fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the activities of the programs under paragraphs (d)(2) (iii) and (iv) of this section. Such analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds.*

1. Area-wide
   a. Funding source(s)
   b. Staff resources
   c. Contract services
   d. Cost share (funds associated with existing activities/related programs) - if management practices currently in place under another program are to be included as part of the storm water program, the costs associated with those practices should be included as part of the budget. The program should also have a demonstrable water quality perspective.
2. City-specific
   a. Funding source(s)
   b. Staff resources
   c. Contract services
   d. Cost share (funds associated with existing activities/related programs) - if management practices currently in place under another program are to be included as part of the storm water program, the costs associated with those practices should be included as



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part of the budget. The program should also have a demonstrable water quality perspective.

D. LEGAL AUTHORITY - The regulations require permittees to demonstrate adequate legal authority to carry out the storm water program, including controls on industry and construction. You must cite your legal authority, or where it does not yet exist, give a plan and timetable for developing it.

*122.26(d)(1)(iii) Legal authority. A description of existing legal authority to control discharges to the municipal separate storm sewer system. When existing legal authority is not sufficient to meet the criteria provided in paragraph (d)(2)(ii) of this section, the description shall list additional authorities as will be necessary to meet the criteria and shall include a schedule and commitment to seek such additional authority that will be needed to meet the criteria.*

*122.26(d)(2)(i) Adequate legal authority. A demonstration that the applicant can operate pursuant to legal authority established by statute, ordinance or series of contracts which authorizes or enables the applicant at a minimum to:*
*(A) Control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity.*
*(B) Prohibit through ordinance, order or similar means, illicit discharges to the municipal separate storm sewer;*
*(C) Control through ordinance, order or similar means the discharge to a municipal separate storm sewer of spills, dumping or disposal of materials other than storm water;*
*(D) Control through interagency agreements among coapplicants the contribution of pollutants from one portion of the municipal system to another portion of the municipal system;*
*(E) Require compliance with conditions in ordinances, permits, contracts or orders; and*
*(F) Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal seporate storm sewer.*

1. List of essential authorities - Describe how the authority already existing in your municipality fills the requirements in the regulations. The ordinances must be adequate and they must be enforced.
2. Ordinance
   a. Exists
   b. Planned
3. Implementation procedures
4. Responsible parties



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Katella Yard Fax:714-5[illegible] Sep [illegible]

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|---|---|
| To PAULOVA VITALE | From RICHARD BOON |
| Co | Co OCEMA |
| Dept | Phone (714) 567-6371 |
| Fax # | Fax # |

# ...OGRAM POSITION PAPER

## PREFACE

...rce, a coalition of stormwater interests from the regulatory and regulated communities, is recognized by the State Water Resources Control Board as its principle advisor on stormwater quality program issues. Since its inception, the Task Force has guided the development of the State's stormwater regulatory framework, including early permitting of major metropolitan areas, adoption of general permits for industrial activities and construction, and completion of permittee guidance manuals.

In 1993 the Task Force formed a Monitoring Committee which defined its mission as:

1. Facilitating the exchange of information related to urban runoff monitoring,
2. Promoting statewide coordination of urban runoff monitoring activities, and
3. Establishing a Task Force consensus on the future direction of urban runoff monitoring efforts.

This paper presents this Committee's review and analysis of stormwater monitoring practices among municipal stormwater permittees in California, and identifies options for Task Force assistance in the continued development and implementation of municipal stormwater monitoring programs.

## PURPOSE AND ORGANIZATION OF THIS PAPER

The purpose of this paper is to identify ways in which the Task Force can assist municipalities in developing monitoring programs which are cost-effective and which address real needs within municipal stormwater management programs. The paper reviews current municipal monitoring efforts in the context of the regulatory requirements, the findings of NURP, and recent municipal experience of stormwater monitoring. Recommendations are then made for steps which could be taken by the Task Force to assist municipal permittees in developing a diversified, useful, coordinated and cost effective monitoring programs.

## INTRODUCTION

Municipalities regulated under the NPDES stormwater permitting program have invested considerable amounts of time, effort, and public funds in monitoring programs to characterize stormwater discharge quality and its impact upon receiving waters (Monitoring Committee Report, 1993). Despite this effort, there remains, however, no regulated discharge about which less is known than stormwater (Harrison, 1993).

Further, as municipalities prepare for permit renewal, the experience of other NPDES permitted dischargers, with respect to monitoring, needs to be considered by stormwater management agencies. In 1994, the Water Resource Task Force Report (SWRCB, 1994) reported that a twenty year investment of over $200,000,000 in coastal monitoring, mostly in compliance with the requirements of NPDES permits, had failed to provide environmental decision makers with the information they require. Perhaps more significantly, the report contended that the entire

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structure of permit imposed monitoring requirements had failed to foster the higher level planning and coordination needed to assess cumulative and large scale environmental problems

Stormwater monitoring should ideally provide practical, useful information in furtherance of the overall stormwater program goal of reducing stormwater pollution to the maximum extent practicable. As the first stormwater permits near the end of their first five year term, it is therefore appropriate to review past and current monitoring practices, and evaluate future monitoring needs and priorities given the salutory experience of other NPDES permitees.

**Regulatory Background**

The 1987 Water Quality Act added to the Clean Water Act (CWA) a provision that directed the USEPA to establish final regulations governing stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) Program. Final regulations, promulgated in 1990, established a two part permit application process for municipal separate storm sewer systems. The application requirements applied initially to systems serving populations greater than 250,000, and then one year later to populations greater than 100,000 but less than 250,000.

Prior to EPA's final 1990 rule, staff of EPA Region IX and the California State Water Resources Control Board worked with many municipalities to obtain early NPDES stormwater permitting. This action was taken to give municipalities and their respective Regional Water Quality Control Boards the flexibility to develop permits specific to the climate and conditions of the region. The central tenets of the federal regulations are, however, reflected in these permits.

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Part 1 of the permit application requires information on types and characteristics of stormwater discharges, including a proposed characterization plan for more intensive investigation of discharges from 5-10 representative outfalls. Part 2 of the application requires inclusion of the monitoring results for the designated outfalls, and preparation of a monitoring program covering the term of the permit.

The regulations and the Part 1 and Part 2 permit application guidance manuals are specific in the types of water quality monitoring data to be collected for the initial year of discharge characterization, and the methodologies to be used in its collection. A long list of physical and chemical monitoring parameters is specified. Further, for each of the 5-10 representative outfalls, samples must be collected from at least three separate storm events at least one month apart, and flow weighed composite samples (three discrete aliquots per hour) must be taken for the majority of the pollutants. The outfalls must be representative of the commercial, industrial, and residential land use activities of the drainage area.

In contrast to the initial (Part 1) monitoring, municipalities have considerable latitude in developing their long-term (permit) monitoring program. For the Part II stormwater permit application, 40 CFR 122.26(d)(2)(iii) states:

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*The applicant must provide information characterizing the quality and quantity of discharges covered in the permit application, including:*

(D) *A proposed monitoring program for representative data collection for the term of the permit that describes the location of outfalls or field screening points to be sampled (or the location of instream stations), why the location is representative, the frequency of sampling, parameters to be sampled, and a description of sampling equipment.*

Neither section 122.26(d)(2)(iii)(D) nor the EPA guidance manual for Part 2 applications (USEPA, 1992) specifies the number of sampling locations or storm events to be monitored, nor the pollutants to be analyzed for the permit monitoring program. The regulation requires only that the applicant submit a proposed monitoring program to collect representative data for the five year term of the permit. "Representative data collection" is generally taken to mean outfall monitoring for the purpose of discharge characterization.

As with holders of early permits, the Part II applicant is given the opportunity to propose a monitoring program for stormwater discharge characterization which is appropriate for the climatic characteristics and stormwater drainage patterns within the regulated area. The development of the permit monitoring program typically is based on an assessment of the characteristics of stormwater discharges in the metropolitan area, together with the initial monitoring results.

However, the EPA Part II application guidance for the development of the permit monitoring program discusses a more diverse range of needs for monitoring data, extending beyond "representative data collection". Specifically, the guidance recommends:

- continued discharge characterization,
- evaluating sources of specific pollutants,
- evaluating the performance of specific source controls, and
- identifying the full range of chemical, physical, and biological water quality impacts on receiving waters.

These four monitoring needs categories were used to varying degrees by California municipalities in preparing Part II NPDES stormwater permit applications.

## MONITORING METHODS

The four EPA monitoring needs categories can provide a framework for diversification of municipal monitoring efforts, help make monitoring programs more responsive to management program needs, and provide a basis for integration of stormwater monitoring into the overall municipal stormwater management program. This section discusses each of EPA's four monitoring needs categories separately, under the following subtitles:

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- Discharge Characterization/Outfall Monitoring,
- Pollutant Source Identification,
- Source Control Effectiveness, and
- Receiving Water Impacts.

Included are suggestions for ways in which permittees can adapt the various elements of their monitoring programs to be of more practical use within the municipal stormwater management program.

## I. Discharge Characterization/Outfall Monitoring

Discharge characterization is what typically comes to mind when one thinks of stormwater monitoring. The Nationwide Urban Runoff Program (NURP), completed in 1983, was the first major investigation of urban runoff. NURP included an evaluation of stormwater quality from 28 representative cities throughout the United States. The investigation was prompted by an EPA review of 93 Section 208 Areawide Agency Workplans that commonly cited urban runoff as an issue of concern, albeit with little local understanding of its nature or impact. The intent of NURP, a support function to water quality planning efforts, and its methodological approach form the foundation of current municipal monitoring programs. It therefore appropriate to consider regulatory expectations of monitoring in the context of NURP's findings

Following the lead of the NURP study, the NPDES permit application regulations require that the monitoring be designed to determine the discharge characteristics of single land uses (i.e., commercial, industrial, residential). It involves collection and analysis of samples from representative watersheds to characterize wet weather discharges from the permitted area. Watershed monitoring data is used to estimate mass loadings from the permitted area and can serve as input to water quality modeling efforts.

The selection of representative outfall sampling locations must balance two fundamental criteria: the sites must be representative of stormwater discharges within the regulated area, and they must be compatible with the practical constraints of sample collection and flow measurement. To be representative of specific land uses, monitoring sites ideally will be at the discharge points of small to medium sized watersheds (generally less than 300 acres) of homogeneous land use. In this way, monitoring results can be extrapolated to other watersheds of similar land use. The practical constraints to site selection include the feasibility of properly installing sampling and flow monitoring equipment, vehicular and pedestrian access during storm conditions, field crew safety, and site security.

It has been widely assumed that outfall monitoring data would be useful in evaluating long term trends in stormwater discharge quality. This has in fact proven to be problematic because the improvements wrought by stormwater management programs have not generally been adequate to overcome the inherent variability in the monitoring data. Although in one instance, it has been possible to show a differences between average NURP data and contemporary data for lead

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(Larry Walker Associates, 1992). This difference is thought to derive from the benefits of strict air quality controls on lead in gasoline. Also, in climates with a strongly seasonal rainfall pattern (such as California), within-season trends in pollutant concentrations can sometimes be detected, and the influence of precipitation factors can be determined using statistical techniques (Bumgardner et al., 1993).

Ordinarily discharge characterization may serve only to validate the transferability of the NURP data to a particular catchment. In an assessment of stormdrain sources of contaminants to Santa Monica Bay, Stenstrom and Strecker (1993), for example, used the median site concentrations of local water quality data to select the most representative NURP data for use in calculating contaminant mass emissions.

In an effort to gain some insight into the scope of stormwater monitoring activities in California, the Monitoring Committee conducted a survey of the monitoring practices of permitted municipalities in 1993. Among the notable results of this survey was the annual investment in 1993 of $3.6 million in monitoring reported by survey respondents. It is widely felt that this level of expenditure warrants careful scrutiny to ensure that data collection strategies are appropriate to the stipulated goals of the program.

The Monitoring Committee survey highlighted the propensity of municipalities during the first permit term to invest heavilly in discharge characterization. The limited utility of discharge characterization now needs to be recognized by stormwater management agencies in order to ensure that it is not the pre-eminent element of all municipal monitoring programs. Also, that the utility of discharge characterization data may be maximised by coordination with adjacent municpal monitoring initiatives.

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## II. Pollutant Source Identification

EPA guidance recommends monitoring to improve the understanding of sources of stormwater pollution. Based on the results of the outfall monitoring program, the illicit discharge program, land use maps, and other available information, samples can be collected downstream of suspected sources of pollutants during storm events. The samples can be analyzed for the specific constituent(s) thought to be present, or for suitable indicator parameters.

In contrast to the outfall monitoring sites, the sites selected for monitoring as potential significant pollutant sources tend to be upstream of the typical stormwater outfall points in the watersheds, and characterize the discharge from a smaller area. Whereas the outfall monitoring data is used to develop a long term characterization of stormwater discharges, the pollutant source identification program is designed to identify significant pollutant sources over a shorter term, with the hope that remedial action can be undertaken to reduce any significant stormwater quality impacts.

Monitoring of municipal waste facilities, hazardous waste facilities, and industrial facilities typically is required separately under the Part II application requirements as part of the

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stormwater management program. Monitoring of such facilities is appropriate given that these land uses may contribute relatively high proportions of select pollutant loadings in urban runoff.

Municipalities also typically are required to identify illegal storm drain discharges or locations of illegal disposal practices. While this task typically involves monitoring in some form, many permittees meet this requirement through a separate illicit discharge program.

The data generated by both the waste facilities monitoring and the illicit discharge program can be useful in identifying sources of specific pollutants, and should be incorporated within the data review process for identification of specific pollutant sources. The most extensive body of water quality data relating to the quality of runoff from particular facilities is, however, being generated by industrial facilities subject to the monitoring requirements of General permit No. CAS000001 which encompasses the categories of acitivity that municipal programs are required to investigate. Municipalities should therefore be party to this information before being separately required to duplicatethis effort.

**III. Source Control Effectiveness**

It may be difficult to demonstrate the effectiveness of source control best management practices (BMPs) and other stormwater management program elements through outfall monitoring, because of the inherent variability of storm water quality data and the difficulty in achieving statistically valid demonstrations of watershed-wide BMP performance. The NPDES stormwater permit guidelines define a representative storm as one that has a rainfall greater than 0.1 inch, is preceded by at least 72 hours of dry weather (less than 0.1 inches of rainfall), and does not vary by more than 50% from the average rainfall volume and duration when feasible. Depending on how many representative storms occur or are monitored during a season, the collection of enough samples to demonstrate statistically significant improvements may take many years to complete.

The NURP study concluded that the site-to-site variability in runoff water quality could not be explained in terms of land use or other factors such as precipitation characteristics. This conclusion supports the broader contention in the State BMP Manual (CDM et al. 1993) that catchment discharge water quality integrates so many factors that the specific influence of a single determinant may be impossible to elucidate.

Determining the effectiveness of specific BMPs by spatial (watershed to watershed) comparison of water quality is also problematic. For typical outfall monitoring stations, the effect of the BMP is likely to be masked by the variability of the data. Similarly, before and after comparisons of watershed-wide BMP implementation can be extremely difficult to demonstrate with normal outfall monitoring. In addition to the expense and time required to obtain representative event concentrations, scheduling can be problematic. Collection of baseline information may be occurring at nearly the same time BMP implementation is required. As a result, it may not be possible to collect adequate

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pre-BMP data to test the before and after conditions, making demonstration of the true effectiveness of the implemented BMPs impossible.

For these reasons, the effectiveness of BMPs are more effectively assessed through other means, including indirect measurements, as well as monitoring in the form of special studies.

Two general types of methods are available to assess the effectiveness of stormwater management program elements: direct water quality (conventional) monitoring and indirect (non-conventional) monitoring.

## Direct Monitoring

Direct water quality monitoring in this case refers to research (or special study) projects used to determine pollutant reductions by a specific facility, device, or set of source controls. This technique is commonly used for treatment controls, such as detention basins and constructed wetlands, where there is an accessible inflow and outflow. Inflow and outflow results can then be compared synoptically to determine pollutant removal and thus effectiveness.

Direct water quality monitoring of site runoff before and after implementation of source controls is also possible. However, it is difficult to demonstrate source control effectiveness at a statistically significant level, because of the high degree of variability in stormwater pollutant concentrations and mass loadings. The water quality improvement due to source controls is generally expected to be less dramatic than that achieved through treatment controls; a larger number of samples is therefore required to produce a statistically significant result.

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This is especially problematic in relation to the monitoring of the pre-source control conditions. Collection of adequate baseline information is necessary prior to the implementation of source controls. Direct monitoring of source control effectiveness is feasible typically only under experimentally controlled conditions (e.g., selection of small, well-defined watersheds; control of BMP implementation; effective siting and timing of monitoring activities), including a sufficient number of samples to achieve statistical significance.

For municipal stormwater programs, it is important to design studies that are both scientifically sound and cost-effective. Two key elements of this involve controlling the experimental conditions as fully as is practical, and maximizing the effectiveness of the data produced by the study.

A study intended to evaluate BMP effectiveness following implementation of BMPs must minimize other differences in the "before" and "after" conditions. That is, all conditions other than the implemented control measures ideally should be held constant, so as not to confound the

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before and after comparison. Typically such studies are conducted over two or more rainy seasons, so that both the pre- and post-implementation phases have the benefit of samples from throughout at least one full wet season, including the seasonal first flush storms.

To maximize data effectiveness, it is especially important to consider the issue of statistical significance in the experimental design. The ability to discern statistically significant differences between two data sets (such as stormwater data collected before and after implementation of BMPs) hinges on the variability within each of the two data sets and the number of data points in each set, as well as the differences in the before and after numbers. When data variability is high, it is necessary to have either correspondingly large data sets or a relatively large difference in their average values to demonstrate a statistically significant difference. Experience has shown that storm to storm and site to site variability tend to be quite high among stormwater samples. An effective strategy may involve collection and analysis of samples from the maximum number of storms, but with a focus on the pollutants that are known or expected to be present. In this way, money is spent where it can produce the most useful data.

As with outfall monitoring, it is also crucial to prepare a monitoring plan that contains state-of-the-art sampling and analytical protocols, including "clean" sampling techniques and extensive Quality Assurance/Quality Control (QA/QC) throughout all stages of the operation.

Indirect Monitoring

Indirect monitoring currently is the primary method of choice for assessment of the effectiveness of management programs. The techniques typically involve verification of stormwater management program implementation and pollutant removal inventories.

Verification of program implementation is a method that can be used to provide indirect evidence that stormwater pollution is being reduced to the maximum amount practicable. The technique involves verification of the extent to which management program elements are being implemented. While qualitative in nature, this method provides essentially anecdotal evidence of pollutant reductions.

Pollutant removal inventories can be used to indicate the amount of pollutant that has been prevented from entering the municipal storm drain system. This involves quantitative measurements or estimates of actual material removed from urban runoff, such as pounds of silt removed from catch basins. Provided data are available on the concentrations of particular pollutants in catch basin silt and appropriate assumptions regarding fate and transport, it is possible to estimate loading reductions achieved by the specific BMP.

"Indirect monitoring" techniques for assessment of existing management programs can be evaluated and selected using the following criteria:

- Ease of acquiring data,

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- Acquisition of data appropriate for a database system, and
- Relative usefulness in assessing BMP effectiveness.

## IV. Receiving Water Impacts

All discharges to surface waters in California, including stormwater discharges, must comply with the water quality objectives of the local Basin Plan, as well as the Inland Surface Waters Plan and the Enclosed Bays and Estuaries Plan (or other applicable water quality regulations in the absence of a valid statewide plan). Municipal monitoring programs often include sampling and analysis to characterize the quality of selected receiving waters. The receiving water data may then be used in conjunction with the results of the ongoing outfall monitoring program to assess, in terms of compliance/non-compliance with objectives, the impact of county-wide stormwater discharges upon receiving water quality.

NURP noted that end-of-pipe metals concentrations, particularly copper, lead, and zinc, frequently exceeded EPA's water quality criteria and drinking water standards. These end-of-pipe exceedences also translated into frequent exceedence of heavy metals ambient water quality criteria for freshwater aquatic life in receiving waters. The Denver NURP project, for example, found that concentrations of copper, lead, zinc, and cadmium exceeded ambient water quality standards during "essentially all" storm events.

Citing an extensive bioassay-based investigation into the impact of urban runoff on the Hillsborough River in Florida, NURP also recognized, however, that the frequency of ambient criteria exceedence does not always match the observed level of beneficial use impairment. This conclusion is qualified by the recognition that urban runoff impacts on receiving waters will necessarily be highly site-specific. More recent commentators (Lee and Jones-Lee, 1994) also advise caution in attaching significance to exceedences of water quality standards.

The identification of control program priorities, such as an impaired beneficial use, is a necessary early step in the implementation of an effective control program (State BMP Manual, 1993). It appears evident, however, that identification of water quality standard exceedences alone may be insufficient basis for justifying a major pollutant control initiative. Indeed, EPA (1992) recognizes the implementation of complementary monitoring strategies including bioassessments, biosurveys, receiving water monitoring, and sediment testing as necessary for effective receiving water impact evaluation.

Biological methods for determining the impact of urban runoff on receiving waters include toxicity testing, biotic community analysis, and exposure measures (bioaccumulation and biomarker studies). Toxicity testing involves the exposure of test organisms, on an acute or chronic basis, to runoff or receiving water samples. The tests are quick, relatively inexpensive, and may be performed according to well established protocols. Further, such testing may readily indicate the adverse effect of particular pollutants on sensitive species. Since the test does not

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mimic natural conditions the response of the test organism may be difficult to relate to field conditions. This disadvantage may further be compounded by test protocols that specify the use of organisms not typically found at the site. Also, the test will not recognize the potential impact bioaccumulatory substances that may impart subtle detrimental effects over a long period of time.

Biotic community analysis involves the examination of physically similar sites in terms of the number of species and the number of individuals representing each species present in the community. Although this method may provide a direct measure of the environmental effect of a discharge it has a number of significant disadvantages notably its considerable cost and ultimately a possible an inability to distinguish extraneous environmental factors from pollutant effects. Jones and Jones-Lee (1992), for example, caution that the goal of defining receiving waters impacts in terms of eco-system functioning or biotic community diversity may, even with massive funding, be rarely attained.

Exposure monitoring techniques include tissue analysis for the presence of bioaccumulatory substances such PAHs and DDT or enzymes (biomarkers) that are produced by organisms in response to the presence of pollutants such as metals. Bioaccumulation monitoring provides a direct measure of bioavailability although subsequent biologic effects may be difficult to determine. Similarly, with biomarkers analysis although it measures actual biological response the significance of the ecological effects may be unknown.

Monitoring receiving waters for exceedence of water quality standards due to stormwater discharges is best accomplished by simultaneously monitoring upstream of an urban area to obtain background concentrations, and downstream of the urban area to determine water quality impacts due to urban runoff. If possible, the upstream location should be relatively unaffected by urban runoff, so downstream changes can be more easily quantified. The downstream site should be located at the downstream limit of the targeted urban area to prevent inflow of extraneous runoff from other jurisdictions or undeveloped areas.

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To ensure that the samples collected are useful to the stormwater management program, the drainage area should be located within a permitted jurisdiction and should be comprised primarily of urban land uses. The drainage area also should contain a minimum of point source discharges to facilitate the process of identifying the water quality impacts of urban runoff. The sites should be monitored during storm events for the same duration and with similar chemical analyses as the urban runoff sites. This will permit a direct assessment of the impact of urban runoff from a specific urban area on receiving water quality, as well as build a database describing receiving water quality during storm events. The information gathered in this program should be used in conjunction with receiving water quality monitoring programs, utilizing the biological methods discussed earlier, to assess the contribution of stormwater discharges to loss of beneficial uses

The use of biological methods of monitoring may be necessary to determine the impact of stormwater discharges on beneficial uses. Given the uncertainty regarding methodologies, the

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Intergovernmental Task Force on Water Quality's (ITFWQ, 1994) recognition of the need to develop comparable biological methods for use by monitoring agencies as a priority task is therefore timely.

Jones and Jones-Lee (1992) caution, however, that the goal of defining receiving water impacts in terms of eco-system functioning or biotic community diversity may, even with massive funding, be rarely attained. A watershed approach to monitoring, that integrates the efforts of point and non-point source dischargers, may thus be the only means of overcoming the potentially prohibitive costs likely to be associated with single agency efforts to implement monitoring programs that fulfill all of EPA's monitoring needs. Further, it may represent the only means of ensuring that the monitoring data that is generated is relevant to the needs of environmental managers.

## RECOMMENDATIONS

The Monitoring Committee recommends that the Task Force work to make stormwater monitoring more cost-effective and of greater practical usefulness within municipal stormwater management programs by supporting the following goals:

### I. Coordinate Monitoring Efforts Within California, By State or Region

Municipal permittees can minimize unnecessary duplication of effort and reduce monitoring program costs by coordinating monitoring programs on a regional or perhaps even statewide basis. This is particularly true in the case of outfall monitoring for discharge characterization, wherein each municipal permittee likely already possesses adequate data to effectively confirm or dispute the NURP conclusions for urban land uses.

### II. Encourage Diversification of Monitoring Programs

Permittees should direct stormwater program resources to areas which will provide the most useful information for program management, and be more directly applicable to the goal of reducing stormwater pollution to the maximum extent practicable. In many cases this means a redirection of program resources away from outfall monitoring and towards other types of monitoring.

### III. Facilitate Technology Transfer/Information Exchange

Both of the preceding recommendations can be made more effective by increasing efforts to disseminate information on all types of monitoring programs amongst municipal permittees.

To help further these goals, the following specific activities could be undertaken by the Task Force:

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- Encourage permittees to form regional associations (such as BAASMA), and meet together with regional water quality control board personnel for the purpose of coordinating outfall monitoring and special study/research efforts.

- Consider funding a comparative study of outfall monitoring results. Using statistical methods, modern stormwater monitoring data (collected since circa 1990) can be evaluated to determine whether significant differences in runoff quality or pollutant loadings exist among municipalities in California. The study could include in-depth investigation of the question of land use differences, regional patterns, and differences between modern data and the NURP results. If, as expected, statistically significant water quality differences among urban runoff discharge sources are rare, such a study could provide support for reduced outfall monitoring requirements.

- Consider sponsoring a monitoring workshop to explore alternative monitoring strategies. The workshop should be designed to provide permittees with tools to develop monitoring programs which have practical usefulness in the overall stormwater management program. The workshop could cover a variety of monitoring methods, to address the several goals expressed in EPA guidance, as described previously. Topics should include study planning and design, data analysis, and providing feedback loops from project results to program management.

- Include recently completed, ongoing, and planned research as a regular agenda item for the monthly Task Force meetings.

- Consider establishing a statewide database for stormwater research projects and special studies.

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# FINAL NPDES PERMIT APPLICATION REGULATIONS FOR STORM WATER - AREAS OF SIGNIFICANT CHANGE FROM THE PROPOSED REGULATIONS

(1) Definition of a municipal separate storm sewer system.

(2) Requirements for industrials discharging to a municipal system.

(3) Definition of storm water associated with industrial activity.

(4) Non-illicit discharges.

(5) Field screening survey for illicit connections and illegal dumping.

(6) Requirements for oil and gas facilities, mining and construction.

(7) Sampling procedures.

(8) Application deadlines.

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# DEFINTION OF

# MUNICIPAL SEPARATE STORM SEWER SYSTEM

Proposed Regulations Included:

i) storm sewers owned or operated by cities with a population of 100,000 or more.

ii) interrelated municipal storm sewers designated by Director.

Final Regulations include:

i) publicly owned storm sewers within boundaries of cities with population of 100,000 or more.

ii) publicly owned storm sewers within boundaries of counties having unincorporated urbanized areas with a population of 100,000 or more.

iii) interrelated municipal storm sewers designated by Director.

iv) as an alternative to (i), (ii) and (iii), the Director may designate a storm sewer system based on the boundaries of a storm water management regional authority.

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STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITY
WHICH IS DISCHARGED TO A MUNICIPAL SYSTEM

## Proposed Regulations:

- discharges to large and medium systems would be covered by municipal permit.
- discharges to small systems would be addressed in 402(p)(5) studies.

## Final Regulations:

- all discharges must be permitted.

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# DEFINITION OF STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITY

Proposed definition: storm water runoff from industrial areas of specified industries.

Final definition: deletes certain industries where industrial activity is usually indoors; however, if industrial activity is exposed to rainfall, regulations would apply.

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# NON-ILLICIT DISCHARGES TO STORM SEWER

Unless identified as significant sources of pollutants, discharges such as the following need not be prohibited by storm water management programs:

fire hydrant flushing

landscape irrigation

uncontaminated ground water

foundation drains

air conditioning condensation

lawn watering

individual residential car washing

fire fighting runoff

dechlorinated swimming pool discharges

0044

# FIELD SCREENING SURVEY TO DETECT ILLICIT CONNECTIONS AND ILLEGAL DUMPING

## Proposed Regulations:

- field screening survey required for all major outfalls.

## Final Regulations Provide Two Options:

- screen all major outfalls, or
- sample strategic points established within a grin overlayed onto a map of the storm sewer system. Grid would consist of north-south and east-west lines 1/4 mi. apart. If grid is used, a maximum of 250 points (medium systems) or 500 points (large systems) would be sampled.

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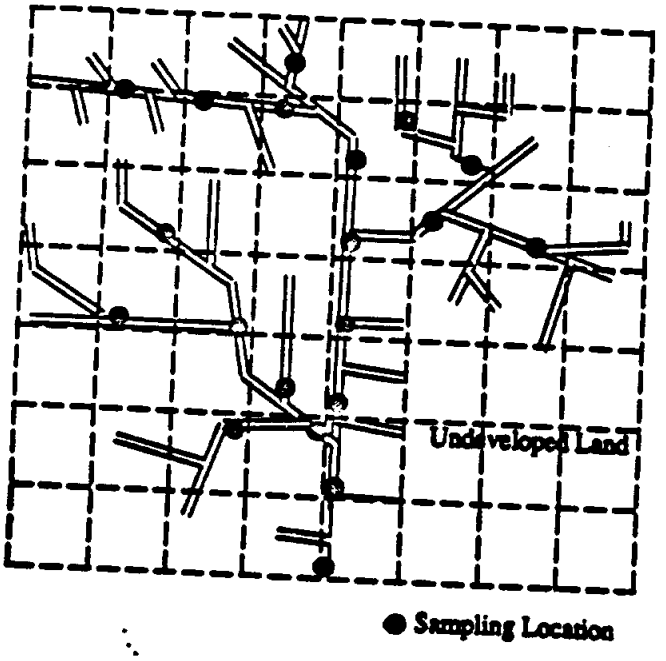


. Storm sewer system showing locations of sampling points and grid used to locate them

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APPLICATION REQUIREMENTS FOR MINING OPERATIONS

## Proposed Regulations:

- would require an application if discharge exceeds background concentration.

## Final Regulations:

- would require an application if runoff contacts overburden, raw material, intermediate product, finished product, by-product or waste product at the site.

- include active mines, and inactive mines for which an owner/operator can be identified.

- do not include undisturbed sites where claims are being maintained prior to land disturbance.

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# APPLICATION REQUIREMENTS FOR CONSTRUCTION

Proposed regulations required application for:

- commercial or industrial developments of 1 or more acres.

- residential developments of 5 or more acres.

Final regulations require application for:

- developments of all kinds of 5 or more acres.

Final regulations also specify that applications must be received 90 days prior to commencement of discharge (proposal was 180 days).

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STORM WATER SAMPLING REQUIREMENTS

Proposed regulations required:

- first flush grab sample taken in the first 20 minutes of discharge, and
- flow-weighted composite sample.

Final regulations require:

- for industrials, first flush grab sample (taken in the first 30 minutes of discharge), and a flow-weighted composite sample.
- for municipals, only a flow-weighted composite sample.

0049

# APPLICATION DEADLINES

Large Municipals

Part 1 – Mid-November, 1991

Part 2 – Mid-November, 1992

Medium Municipals

Part 1 – Mid-May, 1992

Part 2 – Mid-May, 1993

Industrials – Mid-November, 1991

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NPDES PERMIT APPLICATION REQUIREMENTS FOR STORM WATER

FACT SHEET

**ACTION:** National Pollutant Discharge Elimination System (NPDES) permit application requirements for storm water discharges - Final Regulation.

**PURPOSE:** This regulation defines the initial scope of the NPDES permit program for storm water discharges. It defines the terms "storm water discharges associated with industrial activity", and "large and medium municipal separate storm sewer systems" and the permit application requirements for these discharges.

**COVERAGE:** Operators of large and medium municipal separate storm sewer systems including 173 cities with a population of 100,000 or more, and 47 counties which EPA has identified as having large populations in unincorporated, urbanized areas. (see attached lists)

Operators of storm water discharges associated with industrial activity, including those discharging to municipal separate storm sewers. (see attached list).

**REQUIREMENTS:** Operators of large and medium-sized municipal separate storm sewer systems must submit two part permit applications. For large municipal separate storm sewer systems, Part 1 must be submitted within 12 months of the date of publication of the final rule. Part 2 must be submitted within 24 months of the date of publication of the final rule. Medium municipal separate storm sewer systems must submit Part 1 within 18 months from the date of publication of the final rule. Part 2 must be submitted within 30 months of the date of publication of the final rule.

Part one of the application requires information regarding existing programs and the means available to the municipality to control pollutants in storm water discharges. In addition, part one requires field screening of major outfalls to detect illicit connections. Part two of the permit application requires a limited amount of representative quantitative data and a description of proposed storm water management plans. The purpose of the two-part application process is to develop information, in a reasonable time frame, that builds successful municipal storm water management programs and allows permit writers to make informed decisions with regard to developing permit conditions.

EPA is developing a strategy for permitting storm water discharges associated with industrial activity. In developing this strategy, the Agency recognizes that the CWA provides flexibility in the manner in which NPDES permits are issued. EPA intends to use this flexibility in designing a workable and reasonable permitting system that emphasizes reduction of risk to human health and aquatic resources.

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STRATEGY: For storm water discharges associated with industrial activity which require an individual permit, applicants must submit an individual application within one year of the date that the final rule is published in the Federal Register or participate in a group application. Part one of the group applications are to be submitted within four months of publication of the final rule, and part two within 15 months of publication of the final rule.

For operators of storm water discharges associated with industrial activity, the NPDES regulatory scheme provides three potential options for applying for permit coverage for storm water discharges associated with industrial activity: (1) individual permit applications; (2) group applications; and (3) filing a notice of intent requirements to be covered by an established general permit. A general permit is a permit that covers discharges from more than one facility within a State. General permits are either issued by EPA or, in States with authorized NPDES programs, by the State. Notices of intent requirements are established in general permits, and generally only require information such as the type of industry, location and name of receiving waters.

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## CLASSES OF FACILITIES THAT DISCHARGE STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITY

- Facilities subject to National effluent limitation guidelines;
- Facilities classified as Standard Industrial Codes (SIC) 24 (except 2434), 26 (except 265 and 267), 28, 29, 30, 311, 32, 33, 3441, and 373 (including lumber; paper; chemical; petroleum; rubber; leather tanning and finishing; stone, clay, glass, and concrete; metal; enameled iron and metal sanitary ware; and ship/boat manufacturers);
- Facilities classified as SIC codes 10 through 14 (including active and inactive mining and oil and gas operations with contaminated storm water discharges, except for areas of coal mining operations which have been reclaimed and the performance bond has been released by the appropriate SMCRA authority, or non-coal mining operations which have been released from applicable State or Federal reclamation requirements after 30 days after publication of the final regulation;
- Hazardous waste treatment, storage, or disposal facilities;
- Landfills, land application sites, and open dumps that receive industrial wastes;
- Recycling facilities (including metal scrapyards, battery reclaimers salvage yards, and automobile junkyards (classified as SIC codes 501 and 5093 only));
- Steam electric power generating facilities (including coal handling sites);
- Transportation facilities classified as SIC Codes 40, 41, 42, 44, and 45 (including vehicle maintenance, equipment cleaning, and airport de-icing areas);
- Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of sewage (including land used for the disposal of sludge located within the confines of the facility) with a design flow of 1.0 mgd or more;
- Construction activity (except for disturbances of less than 5 acres of total land area which are not part of a larger common plan of development or sale); and
- For the following facilities, if materials are exposed to storm water: facilities classified under SIC codes 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 31 (except 311), 34 (except 3441), 35, 36, 37 (except 373), 38, 39, and 4221-25 (including food; tobacco; textile; apparel; wood kitchen cabinets; furniture; paperboard containers and boxes; converted paper/paperboard products; printing; drugs; leather; fabricated metal products; industrial and commercial machinery and computer equipment; electronic equipment; transportation equipment; measuring, analyzing, and controlling instruments and photographic, medical, and optical goods, and watches and clocks; miscellaneous; and certain warehousing and storage manufacturers).

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COUNTIES WITH
LARGE OR MEDIUM MUNICIPAL SEPARATE STORM SEWER SYSTEMS

| STATE | COUNTY |
|---|---|
| AL | Jefferson |
| AR | Pima |
| CA | Alameda |
| CA | Conta Costa |
| CA | Kern |
| CA | Los Angeles* |
| CA | Orange |
| CA | Riverside |
| CA | Sacramento* |
| CA | San Bernadino |
| CA | San Diego* |
| DE | New Castle* |
| FL | Dade* |
| FL | Broward |
| FL | Escambia |
| FL | Hillsborough |
| FL | Orange |
| FL | Palm Beach |
| FL | Pinellas |
| FL | Polk |
| FL | Sarasota |
| GA | Decalb* |
| GA | Clayton |
| GA | Cobb |
| GA | Richmond |
| HA | Honolulu* |
| KY | Jefferson |
| LA | Jefferson |
| MD | Anne Arundel* |
| MD | Baltimore* |
| MD | Mongomery* |
| MD | Prince George's* |
| NC | Cumberland |
| NV | Clark |
| OR | Multnomah |
| OR | Washington |
| SC | Greenville |
| SC | Richland |
| TX | Harris* |
| UT | Salt Lake* |
| VA | Arlington |
| VA | Chesterfield |
| VA | Fairfax* |
| VA | Henrico |
| WA | King* |
| WA | Snohomish |
| WA | Pierce |

* Counties with large municipal separate storm sewer systems

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CITIES WITH A POPULATION OF 100,000 OR MORE IN 1980

* City of 250,000 or more inhabitants

**ALABAMA**
- Birmingham*
- Huntsville
- Mobile
- Montgomery

**ALASKA**
- Anchorage

**ARIZONA**
- Mesa
- Phoenix*
- Tempe
- Tucson*

**ARKANSAS**
- Little Rock

**CALIFORNIA**
- Anaheim
- Bakersfield
- Berkeley
- Concord
- Fremont
- Fresno
- Fullerton
- Garden Grove
- Glendale
- Huntington Beach
- Long Beach*
- Los Angeles*
- Modesto
- Oakland*
- Oxnard
- Pasadena
- Riverside
- Sacramento*
- San Bernardino
- San Diego*
- San Francisco*
- San Jose*
- Santa Ana
- Stockton
- Sunnyvale
- Torrance

**COLORADO**
- Aurora
- Colorado Spg
- Denver*
- Lakewood
- Pueblo

**CONNECTICUT**
- Bridgeport
- Hartford
- New Haven
- Stamford
- Waterbury

**DISTRICT OF COLUMBIA***

**FLORIDA**
- Ft Lauderdale
- Hialeah
- Hollywood
- Jacksonville*
- Miami*
- Orlando
- St. Petersburg
- Tampa*

**GEORGIA**
- Atlanta*
- Columbus
- Macon
- Savannah

**IDAHO**
- Boise City

**ILLINOIS**
- Chicago*
- Peoria
- Rockford

**INDIANA**
- Evansville
- Fort Wayne
- Gary
- Indianapolis*
- South Bend

**IOWA**
- Cedar Rapids
- Davenport
- Des Moines

**KANSAS**
- Kansas City
- Topeka
- Wichita*

**KENTUCKY**
- Lexington-Fayette
- Louisville*

**LOUISIANA**
- Baton Rouge
- New Orleans*
- Shreveport

**MARYLAND**
- Baltimore*

**MASSACHUSETTS**
- Boston*
- Springfield
- Worcester

**MICHIGAN**
- Ann Arbor
- Detroit*
- Flint
- Grand Rapids
- Lansing
- Livonia
- Sterling Heights
- Warren

**MINNESOTA**
- Minneapolis*
- St. Paul*

**MISSISSIPPI**
- Jackson

**MISSOURI**
- Independence
- Kansas City*
- St. Louis*
- Springfield

**NEBRASKA**
- Lincoln
- Omaha*

**NEVADA**
- Las Vegas
- Reno

**NEW JERSEY**
- Elizabeth
- Jersey City
- Newark*
- Patterson

**NEW MEXICO**
- Albuquerque*

**NEW YORK**
- Albany
- Buffalo*
- Bronx Borough*
- Brooklyn Borough*
- Manhattan Borough*
- Queens Borough*
- Staten Island Borough*
- Rochester
- Syracuse
- Yonkers

**NORTH CAROLINA**
- Charlotte*
- Durham
- Greensboro
- Raleigh
- Winston-Salem

**OHIO**
- Akron
- Cincinnati*
- Cleveland*
- Columbus*
- Dayton
- Toledo*
- Youngstown

**OKLAHOMA**
- Oklahoma City*
- Tulsa*

**OREGON**
- Eugene
- Portland*

**PENNSYLVANIA**
- Allentown
- Erie
- Philadelphia*
- Pittsburgh*

**RHODE ISLAND**
- Providence

**SOUTH CAROLINA**
- Columbia

**TENNESSEE**
- Chattanooga
- Knoxville
- Memphis*
- Nashville/Davidson*

**TEXAS**
- Amarillo
- Arlington
- Austin*
- Beaumont
- Corpus Christi
- Dallas*
- El Paso*
- Fort Worth*
- Garland
- Houston*
- Irving
- Lubbock
- Pasadena
- San Antonio*
- Waco

**UTAH**
- Salt Lake City

**VIRGINIA**
- Alexandria
- Chesapeake
- Hampton
- Newport News
- Norfolk*
- Portsmouth
- Richmond
- Roanoke
- Virginia Beach*

**WASHINGTON**
- Seattle*
- Spokane
- Tacoma

**WISCONSIN**
- Madison
- Milwaukee*

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# Municipal NPDES Stormwater Permit Comparison

Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much M

| Los Angeles County December 18, 1995 Draft | | Riverside County November 1995 Draft | | |
|---|---|---|---|---|
| Section | Title of Section | Page | Level | Comments |
| A. | Discharge Prohibitions and Receiving Water Limitations | | 2 | SLIGHTLY LESS TO SIMILAR |
| A.I | Discharge Prohibition | 12 | 3 | |
| A.II | Receiving Water Limitations | 14 | 3 | Language is still under negotiation. Permittee to determine impact. |
| B. | Compliance with Discharge Prohibitions and Receiving Water Limitations | 14 | 2 | More clearly states BMPs = compliance. Defines MEP. |
| C. | Stormwater Management Program Requirements | | 2 | Average of Overall Level Sections I through VI. |
| I. | Requirements for Program Management | | 2 | SIMILAR |
| I.A. | Principal Permittee | 9 | 2 | Not as specific |
| I.B. | Permittees | 11 | 2 | Not as specific |
| I.C. | EAC External Agency Coordination | | 3 | |
| I.D. | Executive Advisory Committee (EAC) | N/A | 1 | Does not exisit, have other subcommittees |
| I.E. | Watershed Management Committees (WMCs) | N/A | 1 | Committees established more like focus groups |
| I.F. | Watershed Management Subcommittees | | 5 | The subcommittees develop most of the programs. |
| I.G. | Fiscal Resources | 20 | 2 | Not as specific |
| I.H. | Legal Authority | 17 | 2 | 40 CFR. and model ordinance or equivalent. |
| I.I. | Program Substitution | | 1 | Define MEP in many other places. |
| I.J. | Administrative Review | | N/A | |
| I.K. | Public Review | 8 | 4 | Must solicit public comments and include them in the reports. |
| II. | Requirements for Illicit Connections/Discharges | | 4 | MOST SIMILAR - S.D. SURVEY IS SIGNIFICANTLY MORE |
| II.A. | Illicit Connections | SURVEY | 5 | An extensive survey was already conducted. |
| | Model | 11 | 5 | Conduct SD inspections in accord w/ Principal Perm. criteria. Must physically remove all illicit connections. |
| II.B. | Illicit Discharges | DAMP 3-14 | 3 | Public Education and Hotline efforts. Similar training reqs. |
| | Model | | 3 | |
| II.C. | Other Prohibited Activities | | 1 | Based on Analysis of Ordinance |
| II.D. | Non-stormwater Discharges | | 1 | |



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## Municipal NPDES Stormwater Permit Comparison

Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much M

| Los Angeles County December 18, 1995 Draft | | Riverside County November 1995 Draft | | |
|---|---|---|---|---|
| Section | Title of Section | Page | Level | Comments |
| II.D.1 | Exempted Discharges | 13 | 1 | Includes street wash water. |
| II.D.2 | Conditionally Exempted Discharges | | 1 | Many are "exempted" in the Riverside permit. |
| II.D.3 | Designated Discharges | | N/A | |
| II.D.4 | Procedures for Exemption | 14 | 2 | Develop procedures to "address" the discharges. |
| II.E. | Public Reporting | | 3 | |
| | Reporting Model | | N/A | |
| | Hazardous Substance Reporting | | 3 | |
| | Hazardous Substance Model | | N/A | |
| III. | Program Requirements for Industrial/Commercial Sources | | 1 | SIGNIFICANTLY LESS |
| III.A. | Identification of Sources | 17 | 2 | Must report threats and those w/o GISP permits. |
| | Format | N/A | 1 | Data base not required. |
| | Compile | N/A | 1 | |
| III.B. | Prioritization of Sources | DAMP 3-17 | 2 | Sort of pilot study to look at gas & restaurants in particular. |
| | Rank Groups | | 1 | |
| III.C. | Source Control Measures | DAMP 3-31 | 2 | Educate/inform re: good housekeeping & some structural BMPs |
| III.D. | Source Inspection | 5 | 2 | Piggy back on to existing inspections to educate re: SW. |
| | Enhanced Inspection | 18 | 1 | Enforcement strategy to be developed. |
| IV. | Program Requirements for Development Planning/Construction | SPLMNT A | 1 | # AFFECTED SIGNIFICANTLY LESS-REQS. SLIGHTLY LESS |
| IV.A. | Development Planning | SPLMNT A | 2 | |
| IV.A.1 | Prioritization of Development Projects | SPLMNT A | 1 | Jurisdictions define the projects to be targeted (other than |
| IV.A.2 | Countywide Guidelines | | N/A | To be developed. |
| IV.A.3 | Planning Process | SPLMNT A | 2 | Process is not as specific. |
| | Model EIR | | N/A | |
| | CEQA | 20 | 2 | Review and revise CEQA process if necessary. |
| | Model CEQA | | N/A | |



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| unicipal NPDES Stormwater Permit Comparison | | | Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much Mo | |
|---|---|---|---|---|
| Los Angeles County December 18, 1996 Draft | | Riverside County November 1995 Draft | | |
| Section | Title of Section | Page | Level | Comments |
| IV.A.4 | Planning Control Measures | SPLMNT A | 2 | |
| IV.B. | Development Construction | 17 | 2 | Must have erosion control and GCSP coverage over 5 acres. |
| IV.B.1 | Identification of Development Construction Sites | SPLMNT A | 1 | |
| IV.B.2 | Countywide Guidelines | 11 | 2 | Must adopt model or equiv. Erosion and Grading ordinance. |
| IV.B.3 | Best Management Practices (BMPs) | SPLMNT A | 2 | |
| IV.B.4 | Source Inspection | 17 | 2 | Must report threats and those w/o GCSP permits. |
| | Model | | N/A | |
| V. | Public Agency Requirements | 18 | 2 | SIMILAR, BUT LESS SPECIFIC |
| | Model | | N/A | Permittees to develop their own strategies. Specifics aren't given. |
| V.A. | Sewage Systems Operations | 14 | 2 | |
| V.B. | Public Construction Activities Management | 19 | 3 | Must meet same reqs as private construction. |
| V.C. | Vehicle Maintenance/Material Storage Facilities Management | | 2 | Permittees to determine which facilities & determine strategies. |
| V.D. | Parks and Recreation/Facilities Management | | 2 | |
| V.E. | Storm Drain Operation and Management | | 2 | |
| V.F. | Streets and Roads Maintenance | | 2 | |
| V.G. | Flood Control Maintenance | DAMP 3-23 | 3 | Specific req. to investigate sediment from basins. |
| V.H. | Parking Facilities Management | | 2 | |
| V.I. | Public Industrial Activities | | 2 | |
| VI. | Program Requirements for Public Information and Participation | 18 | 2 | SIMILAR, BUT MUCH LESS SPECIFIC |
| VI.A. | Immediate Outreach | | 3 | |
| | Distribution | | 3 | |
| | Goals and Target Audience Analysis | | 1 | |
| VI.B. | Five Year Stormwater Public Education Strategy | | 1 | |
| VI.B.1.b.i | For Residents | | 3 | |
| VI.B.1.b.ii | For K-12 School Children | | 1 | |



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| | Municipal NPDES Stormwater Permit Comparison | | Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much [illegible] | |
|---|---|---|---|---|
| Los Angeles County December 18, 1995 Draft | | Riverside County November 1995 Draft | | |
| Section | Title of Section | Page | Level | Comments |
| VI.B.1.b.iii | For Businesses | | 3 | |
| VI.B.1.b.iv | Permittee Employees | | 2 | |
| VII. | Requirements for Monitoring Program | APPDX. | 1 | SIGNIFICANTLY LESS, but not "fair" due to LACDPW lawsuit. |
| VII.A. | Plan | | 1 | |
| VII.B. | Monitoring Program | | 1 | |
| VIII. | Program Evaluation and Reporting | 27 | 2 | SIMILAR |
| VIII.A. | Demonstration of Compliance | N/A | 1 | |
| VIII.B. | Internal Reporting and Record Keeping | | 2 | |
| VIII.C. | Program Reporting | | 3 | |
| VIII.D. | Program Evaluation | | 3 | |
| VIII.E. | Performance Standards | 11 | 3 | Principal Permittee to develop and implement. |
| VIII.F. | Annual Reports | | 3 | |
| IX. | Additional Provisions | 21 | 2 | SIMILAR |



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| Municipal NPDES Stormwater Permit Comparison | | | Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much M | |
|---|---|---|---|---|
| Los Angeles County December 18, 1995 Draft | | Orange County November 1995 Draft | | |
| Section | Title of Section | Page | Level | Comments |
| A. | Discharge Prohibitions and Receiving Water Limitations | | 2 | SLIGHTLY LESS TO SIMILAR |
| A.I | Discharge Prohibition | 13 | 3 | |
| A.II | Receiving Water Limitations | 14 | 3 | Permittee to determine impact. |
| B. | Compliance with Discharge Prohibitions and Receiving Water Limitations | 14 | 2 | More clearly states BMPs = compliance. Defines MEP. |
| C. | Stormwater Management Program Requirements | | 3 | Average of Overall Level for Sections I through VI |
| I. | Requirements for Program Management | | 2 | SIMILAR |
| I.A. | Principal Permittee | 11 | 2 | Not as specific |
| I.B. | Permittees | 12 | 2 | Not as specific |
| I.C. | External Agency Coordination | | 3 | |
| I.D. | Executive Advisory Committee (EAC) | N/A | 1 | Does not exisit, have other subcommittees |
| I.E. | Watershed Management Committees (WMCs) | N/A | 1 | Committees established more like focus groups |
| I.F. | Watershed Management Subcommittees | | 5 | The subcommittees develop most of the programs. |
| I.G. | Fiscal Resources | 29 | 2 | Not as specific |
| I.H. | Legal Authority | 17 | 2 | 40 CFR. and model ordinance or equivalent. |
| I.I. | Program Substitution | | 1 | Define MEP in many other places. |
| I.J. | Administrative Review | | N/A | |
| I.K. | Public Review | | N/A | |
| II. | Requirements for Illicit Connections/Discharges | | 4 | MOST SIMILAR - S.D. SURVEY IS SIGNIFICANTLY MORE |
| II.A. | Illicit Connections | 17 | 5 | Must identify all illicit connections and schedule their removal. |
| | Model | 13 | 5 | Conduct SD inspections in accord w/ Principal Perm. criteria. Must physically remove all illicit connections. |
| II.B. | Illicit Discharges | DAMP 28 | 2 | Public Education and Hotline efforts. Similar training reqs. |
| | Model | | N/A | |
| II.C. | Other Prohibited Activities | | 3 | Based on Analysis of Ordinance. |
| II.D. | Non-stormwater Discharges | | 1 | |
| II.D.1 | Exempted Discharges | 13 | 1 | Includes street wash water. |



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| | Municipal NPDES Stormwater Permit Comparison | | Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much More | |
|---|---|---|---|---|
| Los Angeles County December 18, 1995 Draft | | Orange County November 1995 Draft | | |
| Section | Title of Section | Page | Level | Comments |
| II.D.2 | Conditionally Exempted Discharges | | 1 | Many are "exempted" in the Orange County permit. |
| II.D.3 | Designated Discharges | | N/A | |
| II.D.4 | Procedures for Exemption | 14 | 3 | Develop plan to eliminate the discharges. |
| II.E. | Public Reporting | | 2 | |
| | Reporting Model | | N/A | |
| | Hazardous Substance Reporting | | 2 | |
| | Hazardous Substance Model | | N/A | |
| III. | Program Requirements for Industrial/Commercial Sources | | 1 | SIGNIFICANTLY LESS |
| III.A. | Identification of Sources | DAMP 37 | 1 | Must report threats and provide sw related info to Board. |
| | Format | DAMP 37 | 1 | Data base only of facilities w/ permits. |
| | Compile | DAMP 37 | 2 | |
| III.B. | Prioritization of Sources | | 2 | Perform monitoring at various sites and will follow-up. |
| | Rank Groups | | 1 | |
| III.C. | Source Control Measures | DAMP 37 | 2 | Informational packets are sent to those in database. |
| III.D. | Source Inspection | DAMP 37 | 1 | Notify dischargers of the GISP. |
| | Enhanced Inspection | 18 | 1 | Procedures to be developed. |
| IV. | Program Requirements for Development Planning/Construction | APPX. G | 4 | # AFFECTED MORE - REQS. SLIGHTLY LESS |
| IV.A. | Development Planning | APPX. G | 3 | |
| IV.A.1 | Prioritization of Development Projects | APPX. G | 5 | All projects. |
| IV.A.2 | Countyside Guidelines | | N/A | To be developed. |
| IV.A.3 | Planning Process | APPX. G | 5 | Checklist of specific BMPs to be incorporated in developer plan. |
| | Model EIR | | N/A | |
| | CEQA | APPX. G | 2 | Review and revise CEQA process if necessary. |
| | Model CEQA | | N/A | |
| IV.A.4 | Planning Control Measures | APPX. G | 4 | Source control and routine structural control measures required. |



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## Municipal NPDES Stormwater Permit Comparison

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| Los Angeles County December 18, 1996 Draft | | Orange County November 1995 Draft | | |
|---|---|---|---|---|
| Section | Title of Section | Page | Level | Comments |
| IV.B. | Development Construction | 17 | 2 | Must have erosion control and GCSP coverage over 5 acres. |
| IV.B.1 | Identification of Development Construction Sites | | 2 | Those visited already by municipal grading inspectors. |
| IV.B.2 | Countywide Guidelines | | 2 | Must adopt model or equiv. Erosion and Grading ordinance. |
| IV.B.3 | Best Management Practices (BMPs) | | 2 | |
| IV.B.4 | Source Inspection | | 2 | Must report threats and those w/o GCSP permits. |
| | Model | | N/A | |
| V. | Public Agency Requirements | 18 | 2 | SIMILAR, BUT LESS SPECIFIC |
| | Model | | N/A | Permittees to develop their own strategies. Specifics aren't given. |
| V.A. | Sewage Systems Operations | | 2 | |
| V.B. | Public Construction Activities Management | 19 | 3 | Must meet same reqs as private construction. |
| V.C. | Vehicle Maintenance/Material Storage Facilities Management | | 2 | Permittees to determine which facilities & determine strategies. |
| V.D. | Parks and Recreation/Facilities Management | | 2 | |
| V.E. | Storm Drain Operation and Management | | 2 | |
| V.F. | Streets and Roads Maintenance | | 2 | |
| V.G. | Flood Control Maintenance | | 2 | |
| V.H. | Parking Facilities Management | | 2 | |
| V.I. | Public Industrial Activities | | 2 | |
| VI. | Program Requirements for Public Information and Participation | DAMP 27 | 1 | SIMILAR, BUT MUCH LESS SPECIFIC |
| VI.A. | Immediate Outreach | | 1 | Poster and mailers. |
| | Distribution | | 1 | Distributed as a county-wide effort. |
| | Goals and Target Audience Analysis | | 1 | |
| VI.B. | Five Year Stormwater Public Education Strategy | | 1 | |
| VI.B.1.b.i | For Residents | | 2 | |
| VI.B.1.b.ii | For K-12 School Children | | 1 | |
| VI.B.1.b.iii | For Businesses | | 3 | |



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| | Municipal NPDES Stormwater Permit Comparison | | Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much | |
|---|---|---|---|---|
| Los Angeles County December 18, 1995 Draft | | Orange County November 1995 Draft | | |
| Section | Title of Section | Page | Level | Comments |
| VI.B.1.b.iv | Permittee Employees | 18 | 2 | Not as specific. |
| VII. | Requirements for Monitoring Program | APPDX. | 1 | SIGNIFICANTLY LESS, but not "fair" due to LACDPW lawsuit. |
| VII.A. | Plan | | 1 | |
| VII.B. | Monitoring Program | | 1 | |
| VIII. | Program Evaluation and Reporting | 29 | 2 | SIMILAR |
| VIII.A. | Demonstration of Compliance | N/A | 1 | |
| VIII.B. | Internal Reporting and Record Keeping | | 2 | |
| VIII.C. | Program Reporting | | 3 | |
| VIII.D. | Program Evaluation | | 3 | |
| VIII.E. | Performance Standards | 12 | 3 | Principal Permittee to develop and implement. |
| VIII.F. | Annual Reports | | 3 | |
| IX. | Additional Provisions | 29 | 2 | SIMILAR |

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## Municipal NPDES Stormwater Permit Comparison

Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much M...

| Los Angeles County December 18, 1995 Draft | | Riverside County November 1995 Draft | | |
|---|---|---|---|---|
| Section | Title of Section | Page | Level | Comments |
| A. | Discharge Prohibitions and Receiving Water Limitations | | 2 | SLIGHTLY LESS TO SIMILAR |
| B. | Compliance with Discharge Prohibitions and Receiving Water Limitations | 14 | 2 | More clearly states BMPs = compliance. Defines MEP. |
| I. | Requirements for Program Management | | 2 | SIMILAR |
| II. | Requirements for Illicit Connections/Discharges | | 4 | MOST SIMILAR - S.D. SURVEY IS SIGNIFICANTLY MORE |
| II.C. | Other Prohibited Activities | | 1 | Based on Analysis of Ordinance |
| III. | Program Requirements for Industrial/Commercial Sources | | 1 | SIGNIFICANTLY LESS |
| IV. | Program Requirements for Development Planning/Construction | SPLMNT A | 1 | # AFFECTED SIGNIFICANTLY LESS-REQS. SLIGHTLY LESS |
| V. | Public Agency Requirements | 18 | 2 | SIMILAR, BUT LESS SPECIFIC |
| VI. | Program Requirements for Public Information and Participation | 18 | 2 | SIMILAR, BUT MUCH LESS SPECIFIC |
| VII. | Requirements for Monitoring Program | APPDX. | 1 | SIGNIFICANTLY LESS, but not "fair" due to LACDPW lawsuit. |
| VIII. | Program Evaluation and Reporting | 27 | 2 | SIMILAR |
| IX. | Additional Provisions | 21 | 2 | SIMILAR |

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|---|---|
| To CARLOS VERUNAGA | From MIKE KANTOR |
| Co. | Co. |
| Dept. | Phone # |
| Fax # 266-7600 | Fax # |



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## Municipal NPDES Stormwater Permit Comparison

Scale 1=Much Less; 2=Less; 3=Same; 4=More; 5=Much More

| Los Angeles County December 18, 1995 Draft | | Orange County November 1995 Draft | | |
|---|---|---|---|---|
| Section | Title of Section | Page | Level | Comments |
| A. | Discharge Prohibitions and Receiving Water Limitations | | 2 | SLIGHTLY LESS TO SIMILAR |
| B. | Compliance with Discharge Prohibitions and Receiving Water Limitations | 14 | 2 | More clearly states BMPs = compliance. Defines MEP. |
| I. | Requirements for Program Management | | 2 | SIMILAR |
| II. | Requirements for Illicit Connections/Discharges | | 4 | MOST SIMILAR - S.D. SURVEY IS SIGNIFICANTLY MORE |
| II.C. | Other Prohibited Activities | | 3 | Based on Analysis of Ordinance. |
| III. | Program Requirements for Industrial/Commercial Sources | | 1 | SIGNIFICANTLY LESS |
| IV. | Program Requirements for Development Planning/Construction | APPX. G | 4 | # AFFECTED MORE - REQS. SLIGHTLY LESS |
| V. | Public Agency Requirements | 18 | 2 | SIMILAR, BUT LESS SPECIFIC |
| VI. | Program Requirements for Public Information and Participation | DAMP 27 | 1 | SIMILAR, BUT MUCH LESS SPECIFIC |
| VII. | Requirements for Monitoring Program | APPDX. | 1 | SIGNIFICANTLY LESS, but not "fair" due to LACDPW lawsuit. |
| VIII. | Program Evaluation and Reporting | 29 | 2 | SIMILAR |
| IX. | Additional Provisions | 20 | 2 | SIMILAR |



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VOL 22

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## Municipal NPDES Stormwater Permit Comparison
## Development and Implementation of Planning and Construction Programs

| Los Angeles County December 18, 1995 Draft | | Riverside County - Art Diaz (909) 275-1329 | Orange County - Richard Boon (714) 567-6371 |
|---|---|---|---|
| Section | Title of Section | Comments | Comments |
| IV. | Program Requirements for Development Planning/Construction | Modified the program from Orange County's. It is much more flexible. | The subcommittee worked for 2 yrs in developing the process. It has been in implementation for 3 yrs now. |
| IV.A. | Development Planning | During the tentative planning process, applicable BMPs are suggested to the developer. But are not yet required. They could be put into the conditions of approval. | |
| IV.A.1 | Prioritization of Development Projects | Each jurisdiction should develop criteria for determining which projects will be subject. | All new development and significant redevelopment regardless of size. Ind/comm construction greater than 1 acre and residential const. greater than 5 acres. |
| IV.A.2 | Countywide Guidelines | Currently, they are working on implementation guidelines which are also very flexible. | Tables list BMPs to be implemented based on the type of development. Some are source control measures and some are structural BMPs. |
| IV.A.3 | Planning Process | It is up to the plan checker or reviewer to suggest BMPs. But, to date, none of these people have been trained. | One person in the planning dept. is responsible for all sw issues. She uses a checklist to make sure all required BMPs are included in plan. |
| IV.A.4 | Planning Control Measures | Use the same table of source control and "routine" structural BMPs that Orange County does. But, no plan or BMPs are required. (Only proof of GCSP) | The tables are given to the developers and the BMPs must be included, but no design standards are given. The developer must propose the BMP design. |
| IV.B. | Development Construction | GSCP projects must show proof of coverage prior to receiving a building or grading permit. | Construction activities greater than 5 acres are required to comply with GCSP. |
| IV.B.1 | Identification of Development Construction Sites | Only sites greater than 5 acres and those determined by the individual jurisdictions. | Field screening is conducted at 90 locations w/in the drainage system, if a problem is found and may be related to construction, follow up is conducted. |
| IV.B.2 | Countywide Guidelines | Have developed a model ordinance, but most have simply modified their grading ordinance to better address erosion control. | |
| IV.B.3 | Best Management Practices (BMPs) | | The planning person is responsible for seeing that the required BMPs are being implemented. |
| IV.B.4 | Source Inspection | During the current inspection process, inspectors ask to see the SWPPP and report facilities without one. | Inspectors will only commit to informing the Board of stormwater related issues at construction sites. They will not enforce GCSP in any way. |



R0065302

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

VOL 22

December 22, 1994
FACT SHEET

for draft National Pollutant Discharge Elimination System (NPDES) Permit No. OKS000101, for the Oklahoma City Municipal Separate Storm Sewer System to discharge to waters of the United States.

1. **NOTICE OF INTENT TO ISSUE A PERMIT.** The Environmental Protection Agency (EPA) has made a tentative determination to issue a permit, after consultation with the State of Oklahoma, for the discharge of storm water from the Municipal Separate Storm Sewer System described in the application. Permit requirements are based on the Clean Water Act (33 U.S.C. 1251 *et seq.)*, hereafter referred to as the Act, and NPDES regulations (40 CFR Parts 122 and 124).

2. **PERMITTING AUTHORITY.** The NPDES permitting authority is: U.S. Environmental Protection Agency, Region 6, Permits Branch, 1445 Ross Avenue, Dallas, Texas 75202-2733.

3. **APPLICANT(S).** The Applicant(s) is(are): City of Oklahoma City. Oklahoma Department of Transportation (ODOT) and Oklahoma Turnpike Authority (OTA) also own/operator portions of the Oklahoma City Municipal Separate Storm Sewer System. Oklahoma City, ODOT, and OTA have been working on co-applicant status for some time and the Agency wishes to encourage, and not hinder, the cooperative efforts of these owners of portions of the Oklahoma City Municipal Separate Storm Sewer System. The Agency proposes to include ODOT; and OTA as co-permittees in the final permit provided (1) Oklahoma City, ODOT, and OTA provide an agreement in principle to be co-permittees; (2) Oklahoma City, ODOT, and OTA commit to expeditious schedules to complete interjurisdictional agreements; and (3) ODOT, and OTA provide initial Storm Water Management Programs for their portions of the Municipal Separate Storm Sewer System (subject to appropriate schedules for program implementation and augmentation) prior to issuance of the Agency's final permit decision. Oklahoma City, ODOT, and OTA are to be commended for their consensus, cooperation, and partnership building efforts necessary to be co-permittees.

4. **PERMIT WRITER.** The permit writer is: Brent Larsen, Municipal Permits Section (6W-PM).

5. **DESCRIPTION OF THE MUNICIPAL SEPARATE STORM SEWER SYSTEM.** As authorized by Section 402(p) of the Act, this permit is being proposed on a system basis. This permit covers all areas within the corporate boundary of the City of Oklahoma City (hereafter referred to as Oklahoma City) served by, or otherwise contributing to discharges from municipal separate storm sewers owned or operated by the applicant(s) listed above.

6. **DISCHARGES AUTHORIZED BY THIS PERMIT.**

*a. Storm water.* This permit authorizes all existing or new storm water point source discharges to waters of the United States from the Municipal Separate Storm Sewer System (MS4).

*b. Non-storm water.* This permit does authorize the discharge of storm water commingled with flows contributed by process wastewater, non-process wastewater, or Storm Water Associated with Industrial Activity provided such discharges are authorized under, or applied for, separate NPDES permits. In addition, certain types of non-storm waters listed in 40 CFR 122.26(d)(2)(iv)(B)(1) are allowable if appropriately addressed in the Storm Water Management Program (SWMP).

The following demonstrates the difference between the Act's statutory requirements for

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discharges from municipal storm sewers and industrial sites:

i. Section 402(p)(3)(B) of the Act required an effective prohibition on non-storm water discharges to a MS4 and controls to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP).

ii. Section 402(p)(3)(A) of the Act requires compliance with treatment technology (BAT/BCT) and Section 301 water quality requirements on discharges of Storm Water Associated with Industrial Activity.

Because of the difference in the statutory requirements, and the fact that the Act does not exempt Storm Water Associated with Industrial Activity from the requirement to obtain a separate NPDES permit, these storm water discharges can not be authorized by the MS4 permit. Such discharges would require a separate NPDES permit. However, the permittees are responsible for the quality of the combined discharge, and have a vested interest in locating uncontrolled and unpermitted illicit and industrial storm water discharges.

*c. Spills.* This permit does not authorize discharges of material resulting from a spill. If discharges from a spill are necessary to prevent imminent threat to human life, personal injury, or severe property damage, the permittees have the responsibility to take (or insure the party responsible for the spill takes) reasonable and prudent measures to minimize the impact of discharges on human health and the environment.

7. **RECEIVING STREAM SEGMENTS AND DISCHARGE LOCATIONS.** The discharges from the MS4 are into Cimarron River, Deer Creek, Canadian River, W. Elm Creek, E. Elm Creek, Little River, Sprink Creek, Cow Creek, Deer Creek, Walnut Creek, Chisolm Creek, Bluff Creek, Deep Fork River, Arkansas River and tributaries thereto in the North Canadian River Basin (Water Quality Management Basin 5 - Segments 520510, 520520, 520810, 520610, et. al.) and the Upper Arkansas River Basin (Water Quality Management Basin 6 - Segment 620910). The discharges are located on those waters in the City of Oklahoma City, in Oklahoma, Canadian, Pottawatomie, and Cleveland Counties, Oklahoma. The designated uses of the receiving streams include: Public and Private Water Supply, Warm Water Aquatic Community, Habitat Limited Aquatic Community Agriculture, Municipal and Industrial Process and Cooling Water, Primary Recreation, Secondary Recreation, and Aesthetics.

8. **EFFECTIVE DATES.** Compliance with permit conditions is required 30 days from the issuance of the permit, except:

a. as specified in the Part III compliance schedules; and

b. for SWMP conditions in Part II.A (refer to section 13 of this fact sheet).

9. **PUBLIC NOTICE.** Upon publication of the public notice and this fact sheet, a 30 day public comment period shall begin. During this period, any interested persons may submit written comments on the draft permit, including the proposed SWMP, to the EPA point of contact listed below. Also during this period any person may request a public hearing to clarify issues involved in the permit decision. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

10. **EPA POINT OF CONTACT.** For additional information contact Ms. Ellen Caldwell at (214) 665-7513, Permits Branch (6W-PS), U.S. Environmental Protection Agency, 1445 Ross Ave, Dallas, Texas 75202-2733

11. **BASIS FOR PERMIT CONDITIONS.**

*a. Statutory basis for permit conditions.* The conditions established by this permit are based on Section 402(p)(3)(B) of the Act which mandates that a permit for discharges from MS4s must: effectively prohibit the discharge of non-storm water to the MS4; and require controls to reduce pollutants in discharges from the MS4 to the maximum extent practicable including best management practices, control techniques, and system, design and engineering methods, and such other provisions determined to be appropriate. MS4s are not exempt from compliance with Water Quality Standards. Section 301(b)(1)(C) of the Act requiring that NPDES permits include limitations, including those necessary to meet water quality standards, applies. The intent of the permit conditions is to meet the statutory mandate of the Act.

As authorized by 40 CFR 122.44(k), the permit will be utilizing Best Management Practices, a comprehensive SWMP, as the mechanism to implement the statutory requirements. Section 402(p)(3)(B)(iii) of

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the Act clearly includes structural controls as a component of maximum extent practicable requirement. The EPA has encouraged permittees to explore opportunities for pollution prevention measures, while reserving the more costly structural controls for higher priority watersheds, or where pollution prevention measures are unfeasible or ineffective.

***b. Regulatory basis for permit conditions.*** As a result of the statutory requirements of the Act the EPA promulgated the MS4 Permit application regulations, 40 CFR 122.26(d). These regulations described in detail the permit application requirements for operators of MS4s. The information in the application (Part 1 and 2) was utilized by the EPA to develop the permit conditions and determine permittees status in relationship to these conditions.

***c. Discharge goals and limitations.***

*i. Discharge Goals:* The following goals apply to discharges from MS4s and were considered in review of the SWMP and in preparation of the draft permit. In implementing the SWMP, the permittees are required to espire to these goals. The goals are included to further define the intent of the permit, but are not to be directly interpreted as discharge limitations independent of the SWMP and any numeric or narrative limitations under Parts II and IV of the permit.

*No discharge of toxics in toxic amounts.* It is the National Policy that the discharge of toxics in toxic amounts be prohibited (Section 101(a)(3) of the Act). The Oklahoma Water Quality Standards (Section 785:45-5-12(e)(6)) states "Surface waters of the state shall not exhibit acute toxicity and shall not exhibit chronic toxicity outside the mixing zone."

*No discharge of pollutants in quantities that would cause a violation of State water quality standards.* Section 301(b)(1)(C) of the Act and 40 CFR 122.44(d) require that NPDES permits include "...any more stringent limitations, including those necessary to meet water quality standards, treatment standards, or schedule of compliance, established pursuant to State law or regulations..." Implementation of the SWMP is reasonably expected to provide for protection of State water quality standards.

*No discharge of floatable debris, oils, scum, foam, or grease in other than trace amounts.* The Oklahoma Water Quality Standards (OAC 785:45-5-19) require waters of the State to "...be maintained so as to be essentially free of floating debris, bottom deposits, scum, foam and other materials, including suspended substances of a persistent nature, from other than natural sources."

*No discharge of non-storm water from the municipal separate storm sewer system, except in accordance with Part I.B.2.* Permits issued to MS4s are specifically required by Section 402(p)(3)(B) of the Act to "...include a requirement to effectively prohibit non-storm water discharges into the storm sewers..." The regulation (40 CFR 122.26(d)(2)(iv)(B)(1)) allows the permittee to accept certain non-storm water discharges where they have not been identified as significant sources of pollutants. Any discharge subject to its own NPDES permit is not subject to the ban on non-storm water.

*No degradation or loss of State-designated beneficial uses of receiving waters as a result of storm water discharges from the municipal separate storm sewer (unless authorized by the State in accordance with the State's Antidegradation Policy).* The State of Oklahoma has adopted an Antidegradation Policy as part of their Water Quality Standards (OAC 785:45-3-1) which provides for maintenance of: existing instream water uses; existing water quality levels where existing water quality exceeds the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water (except where the State has determined that lowering water quality is necessary to accommodate important economic or social development in the area where the waters are located); existing water quality where high quality waters constitute an outstanding natural resource (e.g. waters of National and State parks and wildlife refuges or exceptional recreational or ecological significance); and compliance with Section 316 of the Act where potential water quality impairment is associated with a thermal discharge.

*ii. Discharge Limitations:* No numeric limitations are proposed at this time. In accordance with 40 CFR 122.44(k), the EPA has required a series of Best Management Practices, in the form of a comprehensive SWMP, in lieu of numeric limitations. Numeric limitations will be included in the final permit if required by the State es e condition for certification of the permit under Section 401 of the Act.

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12. **STORM WATER MANAGEMENT PROGRAM.** The SWMP submitted by the permittees was required to contain program elements for each of the items in **Table A.**

**Table A - Storm Water Management Program Elements**

| Required Program Element | Permit Parts | Regulatory References (40 CFR 122.26) |
|---|---|---|
| Structural Controls | II.A.1 | (d)(2)(iv)(A)(1) |
| Areas of new development & significant redevelopment | II.A.2 | (d)(2)(iv)(A)(2) |
| Roadways | II.A.3 | (d)(2)(iv)(A)(3) |
| Flood Control Projects | II.A.4 | (d)(2)(iv)(A)(4) |
| Pesticides, Herbicides, & Fertilizers Application | II.A.5, A.10.c | (d)(2)(iv)(A)(6) |
| Illicit Discharges and Improper Disposal | II.A.6, A.10.a-.b | (d)(2)(iv)(B)(1)-(3), (iv)(B)(7) |
| Spill Prevention and Response | II.A.7 | (d)(2)(iv)(B)(4) |
| Industrial and High Risk Runoff | II.A.8, A.11.c | (d)(2)(iv)(C), (iv)(A)(5) |
| Construction Site Runoff | II.A.9 | (d)(2)(iv)(D) |
| Public Education | II.A.10 | (d)(2)(iv)(A)(6), (iv)(B)(5), (iv)(B)(6) |
| Monitoring Program | II.A.11, V | (d)(2)(iv)(B)(2), (iii), (iv)(A), (iv)(C)(2) |

Federal regulations [40 CFR 122.26(d)(2)(iv)] authorize separate proposed programs for co-permittees, and imposition of controls for different areas of the MS4 on a watershed, jurisdiction, or individual outfall basis. Due to differences in climate, topography, historical development patterns, legal authority, sensitivity of receiving waters, and many other factors; the EPA believes some flexibility in prioritizing the scope and timing of individual program elements must be afforded the permittees. The standard of reducing the pollutants to the maximum extent practicable, is therefore applied to the SWMP as a whole, rather than to each individual program element. The EPA believes this approach is in accordance with Section 402(p)(3)(B) of the Act and the intent of Congress. For the purposes of this document the SWMP is considered a single document attached to the permit with each permittee's individual SWMP constituting a "chapter". All references to SWMP refer to this single "combined" document.

The following summarize the SWMP elements submitted by the permittee(s) to satisfy the requirements. Where elements were deemed by the EPA to require augmentation, or where significant submittals were indicated in the SWMP, schedules were included in Part III of the permit. Dates contained in the Part III schedules were based on the assumption that the permit will have an effective date of March 1, 1995, and may be adjusted appropriately if this date is significantly delayed or if comments received on the draft permit during the public comment period warrant.

*a. Structural Controls: The MS4 and any storm water structural controls shall be operated in manner to reduce the discharge of pollutants to the Maximum Extent Practicable.*

Oklahoma City will maintain and inspect the MS4's structural controls owned or operated by the City. Permittees will update the SWMP to include operation and maintenance procedures and schedules for storm water structural controls by July 1, 1996

*b. Areas of New Development and Significant Redevelopment: A comprehensive master planning process (or equivalent) to develop, implement, and enforce controls to minimize the discharge of pollutants from areas of new development and significant re-development after construction is completed.*

Oklahoma City has existing ordinances regulating development, and is in the process of updating these ordinances to better address water quality concerns. The policy described in the SWMP includes reliance on existing and proposed policies for permitting development and construction. The City is currently working on revisions to local ordinances and procedures for new and significant redevelopment. The permit requires the

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City to complete any necessary revisions to ordinances or rules and update the SWMP to include criteria and procedures for determining end enforcing requirements for structurel and non-structural controls on new and significent by July 1, 1997. The City has proposed establishment of e master plan for development, which would be developed on a besin by besin basis. Education of building inspectors and the regulated community on current and future locel requirements hes already begun.

ODOT end OTA, if included as permittees, will be required to adopt programs for controlling runoff from new roadwey drainage systems by July 1, 1996.

The permit requires the City and any co-permittees to develop (or adopt) a guidence manual of planning technical criterie to address weter quality concerns for davelopment projects after construction by July 1, 1997, end implement the development control progrems by July 1, 1998.

*c. Roadways: Public streets, roeds, and highways shall be operated and maintained in a manner to minimize discharge of pollutants, including those pollutants related to deicing or sanding activities.*

Oklahoma City has a progrem for the operation and maintenance of public roadweys to minimize the discharge of pollutents. The current progrem includes sweeping of streets for the removal of trash, litter, and sediment and a litter and debris removal program. Oklehoma City's Public Education Program will include elements for litter prevention.

The permit requires updating the SWMP to include specific procedures and schedules for roadway operation and maintenance, by all co-permittees, by July 1, 1995, but actual implementation of this program would be required to start by July 1, 1995. ODOT and OTA would also be responsible for preperation of additional information on the roedway storm sewers they operate, primarily for management and planning purposes, during the first year of the permit.

*d. Flood Control Projects: Impacts on receiving water quality impacts shall be assessed for all flood control projects. The feasibility of retro-fitting existing structural flood control devices to provide additional pollutant removal from storm water shall be evaluated.*

Permittees are required to prepare criteria to assure that flood control projects are assessed for the projects' impact on water quality; and evaluete existing flood control devices to determine if retrofitting is feasible. The Flood Control Program will added to the SWMP by July 1, 1996, with implementation beginning by July 1, 1996.

*e. Pesticide, Herbicide, and Fertilizer Application: Each permittee shall implement controls to reduce the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied, by the permittee's employees or contractors, to public property.*

A public education program is under development to increase public awereness on the impacts of improper storege and use of herbicides, fertilizers end pesticides. The permit requires permittees implement annual training and education on herbicide, pesticide, and fertilizer use by July 1, 1995.

*f. Illicit Discharges and Improper Disposal: An ongoing program to detect and eliminate illicit discharges and improper disposal into the MS4. Non-storm water discharges shall be effectively prohibited. However, the permittee may allow certain non-storm water discharges as listed in 122.26(d)(2)(iv)(B)(1). The SWMP shall identify any allowed non-storm water discharges, along with any conditions placed on discharges.*

Implementation of a public education progrem on illicit discharges and improper disposal is required by July 1, 1995. Oklahoma City, and any co-permittees will be required to submit e list of non storm water discharges that are allowed or not allowed to discharge to the MS4 and reasons for these determinations by October 15, 1995.

*Each permittee shall prevent (or require the operator of the sanitary sewer to eliminate) unpermitted discharges of dry and wet weather overflows from sanitary sewers into the MS4. Each permittee shall limit*

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*the infiltration of seepage from sanitary sewers into the MS4.*

Oklahoma City currently implements a program for maintenance of the sanitary sewer system. The City is required to update the SWMP to include a program for limiting seepage from sanitary sewers into separate storm sewers by October 15, 1995. Neither OTA nor ODOT operate any sanitary sewers.

*The discharge of floatables (e.g.: litter and other human generated solid refuse) into the MS4 shall be reduced.*

The permittees have litter control programs. The permit requires permittees to implement a floatables control education program by July 1, 1995, install two floatables monitoring stations by July 1, 1995, and complete a study for targeting of floatables controls and a schedule for implementation by July 1, 1997.

*The discharge or disposal of used motor vehicle fluids, household hazardous wastes, grass clippings, leaf litter, and animal wastes into the MS4 shall be prohibited. The permittees shall ensure the implementation of programs to collect used motor vehicle fluids (at a minimum, oil and antifreeze) for recycle, reuse, or proper disposal and to collect household hazardous waste materials (including paint, solvents, pesticides, herbicides, and other hazardous materials) for recycle, reuse, or proper disposal.*

Oklahoma City plans to implement a public education program aimed at proper management and disposal of household hazardous waste and used motor fluids. Semi-annually, the City will be having a collection event for household hazardous wastes and by July 1, 1997, will be completing a study on alternatives for a long term plan which will also include opportunities for dropoff of certain materials on a more frequent basis.

ODOT and OTA address used motor vehicle fluids at their vehicle maintentance yards. It is anticipated that OTA and ODOT would participate in public education on household hazardous waste, but would serve in more of a support capacity (e.g. traffic control, signs, public service announcements, other contributions of resources, etc.) for collection events.

*A program to locate and eliminate illicit discharges and improper disposal into the MS4 shall be implemented. This program shall include dry weather screening activities to locate portions of the MS4 with suspected illicit discharges and improper disposal. Follow-up activities to eliminate illicit discharges and improper disposal may be prioritized on the basis of magnitude and nature of the suspected discharge; sensitivity of the receiving water; and/or other relevant factors. This program shall establish priorities and schedules for screening (described in Part II.A.11.a and b.) the entire MS4 at least once per five years. Facility inspections may be carried out in conjunction with other permittee programs (e.g. pretreatment inspections of industrial users, health inspections, fire inspections, etc.), but must include random inspections for facilities not normally visited by the permittee.*

Oklahoma City will conduct an on-going system wide dry weather screening program for the MS4, with at least 20% of the system screened each year. ODOT and OTA would be included in this program. Oklahoma City will also be inspecting industrial and commercial facilities.

*Each permittee shall require the elimination of illicit discharges as expeditiously as possible and the immediate ending of improper disposal practices upon identification of responsible parties. Where elimination of an illicit discharge within thirty (30) days is not possible, the permittee shall require an expeditious schedule for removal of the discharge.*

By October 15, 1995, the permittee(s) must update the SWMP to include follow-up activities, with priorities and schedules, for suspected illicit discharges, and expeditious elimination of identified sources of such discharges.

*g. Spill Prevention and Response: A program to prevent, contain, and respond to spills that may discharge into the MS4 shall be implemented. The spill response program may include a combination of spill response actions by the permittee (and/or another public or private entity), and legal requirements for private*

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*entities within the permittees' jurisdiction.*

Oklahoma City currently implements a spill response program as part of general public protection. ODOT and OTA also participate in spill response on their roadway rights of way. The permit requires incorporation of spill response procedures as part of the SWMP by October 1, 1995.

*h. Industrial & High Risk Runoff: A program to identify and control pollutents in storm water discharges to the MS4 from municipal landfills; other treatment, storage, or disposal facilities for municipal waste (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal and recovery facilities and facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee determines are contributing a substantial pollutant loading to the MS4 shall be implemented. The program shall include inspections, a monitoring program (described in Part II.A.11.c), and a list of industrial storm water sources discharging to the MS4 shall be maintained and update as necessary.*

Oklahoma City will be implementing a storm water permitting program for high risk runoff, complete with enforcement and inspection programs. The permit contains compliance schedules for the implementation of this program by July 1, 1996. ODOT and OTA are not expected to have any high risk facilities discharging into their storm sewers that are not addressed under the Oklahoma City program.

*I. Construction Site Runoff: A program to reduce the discharge of pollutants from constructions sites shall be implemented. This program shall include: requirements for the use and maintenance of appropriate structural and nonstructural control measures to reduce pollutants discharged to the MS4 from construction sites; inspection of construction sites and enforcement of control measures requirements; appropriate education and training measures for construction site operators; and notification of appropriate building permit applicants of their potential responsibilities under the NPDES permitting program for construction site runoff.*

Oklahoma City has already begun educations efforts aimed at both City personnel and the regulated community. A formalized construction site runoff pollution prevention program, including permitting of construction site operators, is under development. The program will be fully implemented by July 1, 1998.

OTA and ODOT are already subject to Federal storm water permitting requirements for construction sites disturbing over five acres. Incorporation of a comprehensive program for controlling runoff form roadway projects during construction would follow the same schedule proposed for Oklahoma City, but would not delay ongoing activities.

*J. Public Education: A public education program with the following elements shall be implemented: (a) a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or improper disposal of materials into the MS4; (b) a program to promote, publicize, and facilitate the proper management and disposal of used oil and household hazardous wastes; and (c) a program to promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by public, commercial, and private applicators and distributors.*

Oklahoma City plans a series of public education activities on the following topics: general awareness on storm water quality; proper use and storage of pesticides, fertilizers, etc.; compliance with local development and construction site controls; illicit discharges and improper disposal (including a storm water hotline); and implementation of the Storm Water Management Program. The City anticipates using public meetings, brochures, public access TV, classroom instruction materials, etc. as part of the public education program. ODOT and OTA would be expected to cooperate in these efforts.

*k. Monitoring Programs: The following monitoring programs shall be implemented in eddition to the monitoring required by Part V. of the permit:*

*Dry Weather Screening Program;* Discussed above under Illicit Discharges and Improper Disposal.

*Wet Weather Screening Program;* Oklahoma City anticipates using a simple biological indicator for screening the relative quality of storm water from different portions of the MS4. This program will be

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developed by July 1, 1995.

*Industrial and High Risk Runoff Monitoring Program.* Oklahoma City will develop an Industrial and High Risk Monitoring Program. The program will be completed by July 1, 1995, with screening of the entire system by July 1, 1999.

13. **STORM WATER MANAGEMENT PROGRAM COMPLIANCE.** Compliance with Part II.A will be accomplished by the implementation of and compliance with the described activities of the various elements of the permittees' SWMP, as modified by compliance schedules contained in the Part III. Permittees' must fully implement the SWMP, except as indicated Part III, within 90 days from permit issuance. At the end of the 90 days all the required support and initiation procedures for Program elements should be established, and the elements' activities performed as described and scheduled.

The SWMP contains implementation schedules for some of the program elements. In addition there are SWMP augmentation schedules in Part III of the permit. The schedules in Part III will take precedence in the case of any conflict between the Part III schedules and the SWMP schedules. Permittees adherence to the SWMP, including implementation schedules contained in the SWMP, and schedules contained in Part III will be considered compliance with Part II.A of the permit.

14. **ROLES AND RESPONSIBILITIES OF PERMITTEES.** The regulation 40 CFR 122.26(d)(2)(vii) requires permittees to describe the roles and responsibilities of each entity applying for the permit to ensure effective coordination. Interagency Agreements are the means by which the permittees propose to implement the SWMP and monitoring program. Each of the permittees plan to implement their individual programs on the portion of the system which they own and operate. Permittees are accountable for understanding their role and responsibilities regarding permit conditions.

15. **PERMITTEES LEGAL AUTHORITY.** The permittees are required to have the legal authority necessary to successfully enforce, implement, and complete the various activities described in the permit and SWMP. Oklahoma City stated in the application that adequate legal authority exists or is being sought for the following requirements: control the contribution of pollutants to, and quality of storm water from industrial sites contributing to the storm sewer system; prohibit illicit discharges to the storm sewer system; control spills, dumping or improper disposal to the storm sewer system; control of the contribution of pollutants from one portion of the storm sewer system to the other; require compliance with ordinances; perform site inspections and monitoring.

16. **PERMITTEES RESOURCES.** Part II.F. of the permit requires permittees to provide adequate support capabilities to implement their activities under the SWMP. Compliance with Part II.F. will be demonstrated by the permittees ability to fully implement the SWMPs, monitoring programs, and other permit requirements. The permit does not require specific funding or steffing levels, thus providing the permittees the ability, and incentive, to adopt the most efficient and cost effective methods to comply with permit requirements.

17. **TYPE AND QUANTITY OF POLLUTANT PARAMETERS DISCHARGED.** Table B is a summary of some of the permittees' application representative monitoring deta.

**Table B - Representative Monitoring Data**

| Parameter (pounds/year) | Annual Loading Estimates from Permit Application MS4 and Major Watershed Totals | | | | |
|---|---|---|---|---|---|
| | System Annual Loading | Deer Creek | Deep Fork | North Canadian | South Canadian |
| Biochemical Oxygen Demand ($BOD_5$) | 113,563 | 12,100 | 36,800 | 47,700 | 17,000 |
| Chemical Oxygen Demand (COD) | 777,853 | 114,000 | 192,000 | 319,000 | 153,000 |
| Total Suspended Solids (TSS) | 694,337 | 42,000 | 220,000 | 378,000 | 54,900 |
| Dissolved Solids | 19,200,000 | 3,000,000 | 3,410,000 | 6,710,000 | 6,100,000 |

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| Parameter (pounds/year) | Annual Loading Estimates from Permit Application MS4 and Major Watershed Totals | | | | |
|---|---|---|---|---|---|
| | System Annual Loading | Deer Creek | Deep Fork | North Canadian | South Canadian |
| Nitrate + Nitrite | 24,148 | 2,280 | 3,260 | 13,700 | 4,930 |
| Ammonia + Organic Nitrogen (TKN) | 36,515 | 4,830 | 8,810 | 13,500 | 9,380 |
| Total Phosphorus | 8442 | 943 | 1,270 | 3,860 | 2,380 |
| Total Cadmium | 16.1 | 2.4 | 3.6 | 6.4 | 3.7 |
| Total Copper | 276.5 | 26.7 | 54.1 | 138.6 | 57 |
| Total Lead | 715.6 | 68.4 | 132.5 | 378 | 136.6 |
| Total Zinc | 1683.0 | 198.1 | 401 | 820 | 263.5 |
| Oil & Grease | 1,340,000 | 116,500 | 156,000 | 579,000 | 485,000 |
| Total Thallium | 117.9 | 31.7 | 41.2 | 64.4 | 40.6 |
| Total Mercury | 7.4 | 0.7 | 0.9 | 5.0 | 0.9 |

The permittees sampled five locations which were selected to provide representative data on the quality and quantity of discharges from the Oklahoma City MS4 as a whole. Parameters sampled included conventional, non-conventional, organic toxics, and other toxic pollutants. The EPA reviewed this information during the permitting process. Monitoring data was intended to be used by the permittees to assist in their determination of appropriate storm water management practices. EPA used the data to review the application and to determine pollutants of concern discharging from the MS4 that should be monitored during the permit term.

**18. MONITORING AND REPORTING.**

*a. Reports Required:* Permittees are required (40 CFR 122.42(c)(1)) to contribute to the preparation of an annual system-wide report including status of implementing the SWMP; proposed changes to the SWMPs; revisions, if necessary, to the assessments of controls and the fiscal analysis reported in the permit application; a summary of the data, including monitoring data, that is accumulated throughout the reporting year; annual expenditures and the budget for the year following each annual report; a summary describing the number and nature of enforcement actions, inspections, and public education programs; and identification of water quality improvements or degradation. The permittees are required to do annual evaluations on the effectiveness of the SWMP, and institute or propose modifications necessary to meet the overall permit standard of reducing the discharge of pollutants to the maximum extent practicable. In order to allow the orderly collection of budgetary and monitoring data it was determined to allow the annual report due date to relate to the permittees' annual fiscal year and monitoring seasons. Oklahoma City's fiscal year and first dry season ends on June 31st, the annual report is due October 15th. Copies of these reports will be available to the public.

*b. Monitoring:* The permittees are required (40 CFR 122.26(d)((2)(iii)(C) and (D)) to monitor the MS4 to provide data necessary to assess the effectiveness and adequacy of SWMP control measures; estimate annual cumulative pollutant loadings from the MS4; estimate event mean concentrations and seasonal pollutants in discharges from major outfalls; identify and prioritize portions of the MS4 requiring additional controls, and identify water quality improvements or degradation. The permittees are responsible for conducting any additional monitoring necessary to accurately characterize the quality and quantity of pollutants discharged from the MS4.

Due to the variability of storm water discharges, the cost of the monitoring program needs to be balanced with the monitoring objectives and the more important goal of actually implementing controls that will directly effect the quality of the storm water discharged. However, the municipalities must realize that the EPA will have to make future permitting decisions based on the monitoring data collected during the permit

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term. The public will also be looking for evidence of pollutant reductions. Where the required permit term monitoring proves insufficient to show pollutant reductions, the EPA may be forced to resort to limitations in the next permit. Two types of monitoring are required by the permit: storm event representative monitoring and floatables monitoring.

*i. Representative monitoring.* The monitoring of the discharge of representative outfalls during actual storm events will provide information on the quality of runoff from the MS4, a basis for estimating annual pollutant loads, and a mechanism to evaluate reductions in pollutants discharged from the MS4. Results from the monitoring program will be submitted annually on Discharge Monitoring Reports.

*(1) Requirements:* The permittees are required to monitor for the parameters listed in Table V.A.1.a of the permit throughout the permit term. Monitoring will be conducted at the five monitoring locations indicated in Table V.A.1.b. of the permit.

*(a) Parameters:* The EPA established permit parameter monitoring requirements based on the information available regarding storm water discharges and potential impacts of these discharges. The basic parameter list allows satisfaction of the regulatory requirement [40 CFR 122.26(d)(2)(iii)] to provide estimates of pollutant loadings for each major outfall. Total mercury for all outfalls, total thallium for outfalls 001 and 005, and priority pollutants listed at 40 CFR 122, Appendix D, Table II for outfalls 002, 004, and 005 were added based on review of application monitoring results that indicate the need for additional information.

The monitoring of Diazinon is required due to the EPA's experience with other MS4 and POTW treatment plant discharge monitoring data. It was not included in the application monitoring requirements and therefore it was not indicated if Diazinon is a problem for the Oklahoma City MS4 but it is reasonable to assume that it is present in the MS4's discharge. Diazinon will serve as an indicator of the effectiveness of public education programs designed to reduce pollution from pesticides, fertilizer, and herbicide use.

*(b) Frequency:* The frequency of annual monitoring is based on monitoring at least one representative storm event per season. The four seasons in the Oklahoma City area are as follows: July - October, November - February, and March - June. The permittees are to monitor once per season. Monitoring frequency is based on permit year, not a calendar year. The first complete calendar year monitoring could be less than the stated frequency.

*(2) Representative Monitoring - Rapid Bioassessment Option.* Biological monitoring techniques offer the ability to indirectly assess the quality of storm water discharges from the municipal separate storm sewer system by assessing the "health" of the receiving water. Rapid bioassessment protocols evaluate the number, diversity, and relative "pollution tolerance" of aquatic species in the receiving waterbodies (e.g. streams, rivers, lakes, estuaries, etc.). Either fish or benthic organisms (bottom-dwelling insects, etc. that serve as food supply for higher organisms) can be studied. Comparing the types and numbers of organisms collected from waterbodies receiving discharges from the MS4 to those collected from a "reference site" relatively un-impacted by urban runoff, provides an indication of how degraded the waterbody is. For example, a healthy stream would typically have greater species diversification and a higher number of species that require clean water to survive and reproduce. A degraded stream would have relatively fewer species and a larger proportion of species that are tolerant of pollution.

While rapid bioassessments do not directly measure the quality of storm water discharges, they can be an important (and cost effective) tool in tracking trends in water quality. The permittees will be given the option of replacing a portion of the parameter representative monitoring required by the permit with a rapid bioassessment monitoring program. Upon approval by the EPA, the permittees may

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replace the representative monitoring for years 2, 3, and 5 with rapid bioassessment of at least two receiving waters plus a reference site. Representative monitoring of actual storm water discharges will still be required during years 1 and 4.

*ii. Floatebles Monitoring.* Installation of two floatables monitoring stations will be accomplished to investigate trends in water quality issues related to manmade debris and floatables. The comparison of yearly monitoring results should allow the permittees and the EPA to assess the impact of the SWMP elements as they relate to the reduction and elimination of floatables discharge from the MS4.

19. **PERMIT MODIFICATIONS.**

***a. Reopener Clause:*** The EPA may reopen and require modifications to the permit (including the SWMP) based on the following factors: changes in the State's Water Quality Management Plan and State or Federal requirements; adding permittees; SWMP changes impacting compliance with permit requirements; other modifications deemed necessary by the EPA to adhere to the requirements of the Act. Implementation of the SWMP is expected to result in the protection of water quality standards. The permit does, however, contain a reopener clause should new information indicate the discharges from the MS4 are causing, or significantly contributing to, a violation of the State's water quality standards.

***b. Other changes:*** The EPA has attempted to develop permit language to clarify the permit requirements concerning possible changes to the SWMP, permittees status, and other changes.

*i. Terminated Permittees:* The process for terminating coverage for an existing permittee shall adhere to the regulations 40 CFR 122.64. A notice of intent to terminate will be issued in accordance with draft permit procedures.

*ii. SWMP Changes:* The SWMP is intended as a functioning mechanism for the permittees' use. Therefore minor changes and adjustments to the various SWMP elements are expected. Incorporating this form of document into an NPDES permit has some inherent conflicts. The regulatory rules concerning permit changes and modifications do not easily translate to the minor changes that will be necessary to occur to the various elements during the permit term. The changes may be necessary to more successfully adhere to the goals of the permit. The EPA has determined that these minor changes that are specifically described in the permit shall not be considered permit modifications as defined in the regulations. Part II.G.2. of the permit describes the allowable procedure for the permittees to perform additions and minor changes to the SWMP. This section in no way implies that the permittees are allowed to impact or change elements that directly relate to permit conditions for the SWMP. Any changes requested by the permittees shall be reviewed by the EPA. The EPA has 60 days to respond to the permittees and inform them if the suggested changes will impact or change the SWMP's compliance with a permit requirement and therefore are either disallowed or requires a formal permit modification procedure.

*iii. Additions:* The EPA's intent is to allow the permittees to annex lands and accept the transfer of operational authority over portions of the MS4 without mandating a permit modification. Implementation of appropriate SWMP elements for these additions (annexed land or transferred authority) is required. Upon notification of the additions in the Annual Report the EPA may require a modification to the permit based on the new information.

*iv. Monitoring outfalls:* The permit is issued on a system-wide basis in accordance with Section 402(p)(3)(i) of the Act and authorizes discharges from all portions of the MS4 owner or operated by the permittees. Since all outfalls are authorized, changes in monitoring locations, other than those with specific numeric effluent limitations, shall be considered minor modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.63.

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20. **CONSIDERATIONS UNDER FEDERAL LAW.** The discharge which is being controlled by the terms of this permit is the result of natural precipitation, and as such would continue to be discharged regardless of the federal action represented here. The terms of this permit do require that the municipalities minimize or reduce to the maximum extent practicable the pollutants in the storm water runoff from the municipality. We believe therefore that this permit will not effect any listed endangered or threatened species, and/or critical habitat.

Based on the information provided to date no sites listed or eligible for listing in the National Historic Register will be effected by proposed activities to reduce pollutants in the permittees' natural runoff. The applications for this permit were forwarded to the Oklahoma State Historical Preservation Officer (SHPO) for comment. No comments were received. Standard permit condition Part VI.U. in the draft permit requires the permittees to provide information to the SHPO thirty days prior to commencing earth disturbing activities. Only activities meeting all of the following criteria are subject to this permit condition: 1) is a permittee conducted activity for implementing permit requirements; 2) excavation and/or construction; and 3) disturbance of previously undisturbed land. Assuming they meet the criteria listed above some examples of activities subject to the permit condition include, but are not limited to: retention/detention basin construction; storm drain line construction; infiltration basin construction; dredging; and stabilization projects (e.g., retaining walls, gabions). The requirement to submit information on plans for future earth disturbing is not intended for activities such as: maintenance; and private development construction projects.

21. **STATE CERTIFICATION OF THE DRAFT PERMIT.** Concurrently with Public Notice of today's draft permit, the EPA is formally requesting State Certification of the permit, as required by Section 401(a)(1) of the Act, and 40 CFR 124.53. The final permit will contain any condition required by the State as a condition for Certification.

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NPDES PERMIT NO. OKS000101
OKLAHOMA CITY MUNICIPAL SEPARATE STORM SEWER SYSTEM
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NPDES Permit No. OKS000101

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. 1251 *et seq.*, as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

Oklahoma City
Department of Public Works
420 West Main, 7th Floor
Oklahoma City, Oklahoma 73102

is(are) authorized to discharge, in accordance with the Storm Water Management Program(s), effluent limitations, monitoring requirements, and other provisions set forth in Parts I, II, III, IV, V, VI, VII, and VIII herein,

from all portions of the Oklahoma City Municipal Separate Storm Sewer System (MS4) owned or operated by any permittee listed above, to waters of the United States.

This permit will become effective <insert effective date>.

This permit and the authorization to discharge under the National Pollutant Discharge Elimination System shall expire at midnight, on <insert date 5 years from the effective date>.

Signed this day of

Brent E. Larsen
Environmental Scientist
Municipal Section (6W-PM)

Myron O. Knudson, P.E.
Director
Water Management Division (6W)



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**PART I. DISCHARGES AUTHORIZED UNDER THIS PERMIT.**

A. **Permit Area.** This permit covers all areas located within the corporate boundary of the city of Oklahoma City that are served by municipal separate storm sewers owned or operated by the permittee(s).

B. **Authorized Discharges.**

1. Except for discharges prohibited under Part I.B.2, this permit authorizes all existing or new storm water point source discharges to waters of the United States from those portions of the Municipal Separate Storm Sewer System owned or operated by the permittee(s).

2. The following discharges, whether discharged separately or commingled with municipal storm water, are not authorized by this permit:

a. *Non-storm Water and Industrial Storm Water:* discharges of non-storm water; any Storm Water Discharge Associated with Industrial Activity; or other storm water discharges required to obtain an NPDES permit, except where such discharges are:

(1) regulated by a separate NPDES permit (or the discharger has applied for such permit); or

(2) identified by and in compliance with Part II.A.6.a.

b. *Spills:* discharges of material resulting from a spill. Where discharge of material resulting from a spill is necessary to prevent loss of life, personal injury, or severe property damage, the permittee(s) shall take, or insure the responsible party for the spill takes, all reasonable ateps to minimize or prevent any adverse effects on human health or the environment. (See also Part II.A.7 and Part VI.E.) This permit does not transfer liability for a spill itself from the party(ies) responsible for the spill to the permittee(s) nor relieve the party(ies) responsible for a spill from the reporting requirements of 40 CFR Part 117 and 40 CFR Part 302.

C. **Permittee Responsibilities.**

1. Each permittee is responsible for:

a. Compliance with permit conditions relating to discharges from portions of the Municipal Separate Storm Sewer System where the permittee is the operator;

b. Storm Water Management Program implementation on portions of the Municipal Separate Storm Sewer System where the permittee is the operator;

c. Compliance with annual reporting requirements as specified in Part V.C.;

d. Collection of representative wet weather monitoring data required by Part V.A., according to such agreements as may be established between permittees; and



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e. A plan of action to assume responsibility for implementation of storm water management and monitoring programs on their portions of the Municipal Separate Storm Sewer System should interjurisdictional agreements allocating responsibility between permittees be dissolved or in default.

2. Permittees are jointly responsible for permit compliance on portions of the Municipal Separate Storm Sewer System where operational or Storm Water Management Program implementation authority over portions of the Municipal Separate Storm Sewer System is shared or has been transferred from one permittee to another in accordance with legally binding agreements.

D. **Discharge Goals.**

The following goals are established for discharges from the Municipal Separate Storm Sewer System:

1. No discharge of toxics in toxic amounts.

2. No discharge of pollutants in quantities that would cause a violation of State Water Quality Standards.

3. No discharge of floatable debris, oils, scum, foam, or grease in other than trace amounts.

4. No discharge of non-storm water from the municipal separate storm sewer system (except as provided in Part I.B.2.).

5. No degradation or loss of State-designated beneficial uses of receiving waters as a result of storm water discharges from the municipal separate storm sewer (unless authorized by the State in accordance with the State's Antidegradation Policy).

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**PART II. STORM WATER POLLUTION PREVENTION & MANAGEMENT PROGRAM(S).**

Each permittee shall contribute to the development, revision and implementation of a comprehensive Storm Water Management Program including pollution prevention measures, treatment or removal techniques, storm water monitoring, use of legal authority, and other appropriate means to control the quality of storm water discharged from the Municipal Separate Storm Sewer System. The Storm Water Management Program shall be implemented in accordance with Section 402(p)(3)(B) of the Act, and the Storm Water Regulations (40 CFR Part 122.26).

Controls and activities in the Storm Water Management Program shall identify areas of permittee responsibility on a jurisdiction, applicability, or specific area basis. The Storm Water Management Program shall include controls necessary to effectively prohibit the discharge of non-storm water into municipal separate storm sewers and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System to the Maximum Extent Practicable (MEP).

The Storm Water Management Program shall cover the term of the permit and shall be updated as necessary, or as required by the Director, to ensure compliance with the statutory requirements of Section 402(p)(3)(B) of the Act. Modifications to the Storm Water Management Program shall be made in accordance with Parts II.G., and III. Compliance with the Storm Water Management Program and any schedules in Part III. shall be deemed compliance with Parts II.A, and II.B. The Storm Water Management Program, and all updates made in accordance with Part II.G., are hereby incorporated by reference.

Implementation of the Storm Water Management Program may be achieved through participation with other permittees, public agencies, or private entities in cooperative efforts to satisfy the requirements of Part II. in lieu of creating duplicate program elements for each individual permittee. The Storm Water Management Program, taken as a whole, shall achieve the "effective prohibition on the discharge of non-storm water" and "MEP" standards from Section 402(p)(3)(B) of the Act.

A. <u>Storm Water Management Program Requirements.</u>

1. *Structural Controls and Storm Water Collection System Operation:* The Municipal Separate Storm Sewer System and any storm water structural controls shall be operated in manner to reduce the discharge of pollutants to the Maximum Extent Practicable.

2. *Areas of New Development and Significant Redevelopment:* A comprehensive master planning process (or equivalent) to develop, implement, and enforce controls to minimize the discharge of pollutants from areas of new development and significant re-development after construction is completed shall be implemented. The goals of such controls shall be:

   a. New development - limiting increases in the discharge of pollutants in storm water as a result of development, and

   b. Re-development - reducing the discharge of pollutants in storm water.

3. *Roadways:* Public streets, roads, and highways shall be operated and maintained in a manner to minimize discharge of pollutants,



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including those pollutants related to deicing or sanding activities.

4. *Flood Control Projects:* Impacts on receiving water quality shall be assessed for all flood management projects. The feasibility of retro-fitting existing structural flood control devices to provide additional pollutant removal from storm water shall be evaluated.

5. *Pesticide, Herbicide, and Fertilizer Application:* Each permittee shall implement controls to reduce the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied, by the permittee's employees or contractors, to public right of ways, parks, and other municipal property. Permittee(s) with jurisdiction over lands not directly owned by that entity (e.g. incorporated city) shall implement programs to reduce the discharge of pollutants related to commercial application and distribution of pesticides, herbicides, and fertilizers.

6. *Illicit Discharges and Improper Disposal:* Non-storm water discharges to the municipal separate storm sewer system shall be effectively prohibited.

   a. In accordance with 40 CFR 122.26(d)(2)(iv)(B)(1), certain non-storm water discharges to the municipal separate storm sewer system need not be addressed as illicit discharges or improper disposal. The Storm Water Management Program shall identify any non-storm water discharges that the permittee(s) does not prohibit, along with any conditions placed on such non-storm water discharges to the municipal separate storm sewer system. The permittee(s) shall prohibit, on a case-by-case basis, any individual non-storm water discharge (or class of non-storm water discharges) otherwise allowed under this paragraph that is determined to be contributing significant amounts of pollutants to the municipal separate storm sewer system.

   b. Each permittee shall prevent (or require the operator of the sanitary sewer to eliminate) unpermitted discharges of dry and wet weather overflows from sanitary sewers into the Municipal Separate Storm Sewer System. Each permittee shall limit the infiltration of seepage from sanitary sewers into the Municipal Separate Storm Sewer System.

   c. The permittee(s) shall ensure the implementation of a program to reduce the discharge of floatables (e.g. litter and other human-generated solid refuse). The floatables control program shall include source controls and, where necessary, structural controls.

   d. The discharge or disposal of used motor vehicle fluids, household hazardous wastes, grass clippings, leaf litter, and animal wastes into separate storm sewers shall be prohibited. The permittee(s) shall ensure the implementation of programs to collect used motor vehicle fluids (at a minimum, oil and antifreeze) for recycle, reuse, or proper disposal and to collect household hazardous waste materials (including paint, solvents, pesticides, herbicides, and other hazardous materials) for recycle, reuse, or proper disposal. Such programs shall be readily



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available to all private residents and shall be publicized and promoted on a regular basis.

e. A program to locate and eliminate illicit discharges and improper disposal into the Municipal Separate Storm Sewer System shall be implemented. This program shall include dry weather screening activities to locate portions of the Municipal Separate Storm Sewer System with suspected illicit discharges and improper disposal (described in Part II.A.11.a.). Follow-up activities to eliminate illicit discharges and improper disposal may be prioritized on the basia of magnitude and nature of the suspected discharge; sensitivity of the receiving water; and/or other relevant factors. This program shall establish priorities and schedules for screening the entire Municipal Separate Storm Sewer System at least once per five years. Facility inspections may be carried out in conjunction with other municipal programs (e.g. pretreatment inspections of industrial users, health inspections, fire inspections, etc.), but must include random inspections for facilities not normally visited by the municipality.

f. Each permittee shall require the elimination of illicit discharges and improper disposal practices as expeditiously as reasonably possible. Where elimination of an illicit discharge within thirty (30) days is not possible, the permittee shall require an expeditioua schedule for removal of the discharge. In the interim, the permittee shall require the operator of the illicit discharge to take all reasonable and prudent measures to minimize the discharge of pollutants to the Municipal Separate Storm Sewer System.

g. The permittee(s) shall maintain, and update as necessary, a list of discharges to municipal separate storm sewers that has been issued a NPDES permit. The list shall include the name, location and NPDES permit number of the discharger.

7. *Spill Prevention and Response:* A program to prevent, contain, and respond to spills that may discharge into the Municipal Separate Storm Sewer System shall be implemented. The spill response program may include a combination of spill response actions by the permittee(s) (and/or another public or private entity), and legal requirements for private entities within the permittee's municipal jurisdiction.

8. *Industrial & High Risk Runoff:* A program to identify and control pollutants in storm water discharges to the Municipal Separate Storm Sewer System from municipal landfills; other treatment, storage, or disposal facilities for municipal waste (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee(s) determines are contributing a substantial pollutant loading to the Municipal Separate Storm Sewer System shall be implemented. The program shall include:

a. priorities and procedures for inspections and establishing and implementing control measures for such discharges;

b. a monitoring program (Part II.A.11.c.); and



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c. a list of industrial storm water sources discharging to the Municipal Separate Storm Sewer System shall be maintained and update as necessary.

9. *Construction Site Runoff:* A program to reduce the discharge of pollutants from constructions sites shall be implemented. This program shall include:

a. requirements for the use and maintenance of appropriate structural and nonstructural best management practices to reduce pollutants discharged to the Municipal Separate Storm Sewer System during the time construction is underway;

b. inspection of construction sites and enforcement of control measures (in accordance with priorities and procedures established in the Storm Water Management Program);

c. appropriate education and training measures for construction site operators; and

d. notification of appropriate building permit applicants of their potential responsibilities under the NPDES permitting program for construction site runoff.

10. *Public Education:* A public education program with the following elements shall be implemented:

a. a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or improper disposal of materials, including floatables, into the Municipal Separate Storm Sewer System;

b. a program to promote, publicize, and facilitate the proper management and disposal of used motor vehicle fluids and household hazardous wastes.

c. a program to promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by the public and commercial and private applicators and distributors.

11. *Monitoring Programs:* The following monitoring programs shall be implemented in addition to the monitoring required by Part V.:

a. The *Dry Weather Screening Program* shall continue ongoing efforts to detect the presence of illicit connections and improper discharges to the Municipal Separate Storm Sewer System. All areas of the Municipal Separate Storm Sewer System must be screened at least once during the permit term. Screening methodology may be modified based on experience gained during actual field screening activities and need not conform to the protocol at 40 CFR 122.26(d)(1)(iv)(D). Sample collection and analysis need not conform to the requirements of 40 CFR Part 136. However, samples taken to confirm (e.g. in support of possible legal action) a particular illicit connection or improper disposal practice should conform to the requirements of 40 CFR Part 136.



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b. *Wet Weather Screening Program:* The permittee(s) shall identify, investigate, and address areas within their jurisdiction that may be contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System. The wet weather screening program:

(1) shall screen the Municipal Separate Storm Sewer System, in accordance with the procedures specified in the Storm Water Management Program.

(2) shall specify the sampling and non-sampling techniques to be used for initial screening and follow-up purposes. Sample collection and analysis need not conform to the requirements of 40 CFR Part 136. However, samples taken to confirm (e.g. in support of possible legal action) a particular illicit connection or improper disposal practice should conform to the requirements of 40 CFR Part 136.

c. The *Industrial and High Risk Runoff Monitoring Program* shall include monitoring for pollutants in storm water discharges to the Municipal Separate Storm Sewer System from municipal landfills; other treatment, storage, or disposal facilities for municipal waste (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee(s) determines are contributing a substantial pollutant loading to the Municipal Separate Storm Sewer System.

(1) Except as provided in (2) below, the monitoring program shall including the collection of quantitative data on the following constituents:

(a) any pollutants limited in an existing NPDES permit for a subject facility;
(b) oil and grease;
(c) chemical oxygen demand (COD);
(d) pH;
(e) biochemical oxygen demand, five-day ($BOD_5$);
(f) total suspended solids (TSS);
(g) total phosphorous;
(h) total Kjeldahl nitrogen (TKN);
(i) nitrate plus nitrite nitrogen; and
(j) any information on discharges required under 40 CFR 122.21(g)(7)(iii) and (iv).

Data collected by the industrial facility to satisfy the monitoring requirements of an NPDES or State discharge permit may be used to satisfy this requirement. Permittee(s) may require the industrial facility to conduct self-monitoring to satisfy this requirement.

(2) Alternative Certification: In lieu of monitoring, the permittee(s) may accept a certification from a facility that raw and waste materials, final and intermediate products, by-products, material handling equipment or activities, industrial machinery or operations, or significant materials from past industrial activity are not presently exposed to storm water and are not expected to be exposed to storm



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water for the certification period. Where the permittee(s) accept a "no exposure" certification, the permittee(s) shall conduct at least one site inspection of the facility every five years to verify facility's "no exposure" exemption.

B. **Area-specific Storm Water Management Program Requirements.** Reserved.

C. **Deadlines for Program Implementation.** Except as provided in Part III., full implementation of the Storm Water Management Program shall begin within 90 days from the effective date of the permit.

D. **Roles and Responsibilities of Permittee(s).** The Storm Water Management Program, together with any attached interagency agreements, shall clearly identify the roles and responsibilities of each permittee.

E. **Legal Authority.** Each permittee shall ensure legal authority to control discharges to and from those portions the Municipal Separate Storm Sewer System over which it has jurisdiction. This legal authority may be a combination of statute, ordinance, permit, contract, order or inter-jurisdictional agreements with permittees with existing legal authority to:

1. Control the contribution of pollutants to the Municipal Separate Storm Sewer System by Storm Water Discharges Associated with Industrial Activity and the quality of storm water discharged from sites of industrial activity;

2. Prohibit illicit discharges to the Municipal Separate Storm Sewer System;

3. Control the discharge of spills and the dumping or disposal of materials other than storm water (e.g. industrial and commercial wastes, trash, used motor vehicle fluids, leaf litter, grass clippings, animal wastes, etc.) into the Municipal Separate Storm Sewer System;

4. Control through interagency or interjurisdictional agreements among permittees the contribution of pollutants from one portion of the Municipal Separate Storm Sewer System to another;

5. Require compliance with conditions in ordinances, permits, contracts or orders; and

6. Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with permit conditions.

F. **Storm Water Management Program Resources.** Each permittee shall provide adequate finances, staff, equipment, and support capabilities to implement their activities under the Storm Water Management Program.

G. **Storm Water Management Program Review and Update.**

1. *Storm Water Management Program Review:* Each permittee shall participate in an annual review of the current Storm Water Management Program in conjunction with preparation of the annual report required under Part V.C.

2. *Storm Water Management Program Update:* The permittee(s) may change the Storm Water Management Program during the life of the permit in accordance with the following procedures:



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a. The approved Storm Water Management Program shall not be changed by the permittee(s) without the approval of the Director, unless in accordance with Parts II.G.2.b., c., or d.

b. Changes adding (but not subtracting or replacing) components, controls, or requirements to the Storm Water Management Program may be made by the permittee(s) at any time upon written notification to the Director.

c. Changes replacing an ineffective or unfeasible BMP specifically identified in the Storm Water Management Program with an alternate BMP may be requested at any time. Unless denied by the Director, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented by the permittee(s) 60 days from submittal of the request. Such requests shall include the following:

(1) an analysis of why the BMP is ineffective or infeasible (including cost prohibitive),

(2) expectations on the effectiveness of the replacement BMP, and

(3) an analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

d. Changes resulting from schedules contained in Part III. may be requested following completion of an interim task or final deadline. Unless denied by the Director, proposed changes meeting the criteria contained in the applicable Part III schedule shall be deemed approved and may be implemented by the permittee(s) 60 days from submittal date.

e. Change requests or notifications shall be made in writing, signed in accordance with Part VI.H. by all directly effected permittees, and include a certification that all permittees were given an opportunity to comment on proposed changes prior to submittal to the Director.

3. *Storm Water Management Program Updates Required by the Director:* The Director may require changes to the Storm Water Management Program as needed to:

a. address impacts on receiving water quality caused, or contributed to, by discharges from the Municipal Separate Storm Sewer System;

b. include more stringent requirements necessary to comply with new State or Federal statutory or regulatory requirements; or

c. include such other conditions deemed necessary by the Director to comply with the goals and requirements of the Clean Water Act.

Changes requested by the Director shall be made in writing, set forth the time schedule for the permittee(s) to develop the changes, and offer the permittee(s) the opportunity to propose



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alternative program changes to meet the objective of the requested modification. All changes required by the Director shall be made in accordance with 40 CFR 124.5, 40 CFR 122.62, or as appropriate 40 CFR 122.63.

4. *Transfer of Ownership, Operational Authority, or Responsibility for Storm Water Management Program Implementation:* The permittee(s) shall implement the Storm Water Management Program on all new areas added to their portion of the municipal separate storm sewer system (or for which they become responsible for implementation of storm water quality controls) as expeditiously as practicable, but not later than three years from addition of the new areas. Implementation may be accomplished in a phased manner to allow additional time for controls that cannot be implemented immediately.

   Prior to land annexation, the permittee(s) shall include a schedule for extending the Storm Water Management Program to the annexed areas in the Storm Water Management Program. At least 30 days prior to transfer of operational authority or responsibility for Storm Water Management Program implementation, all parties shall prepare a schedule for transfer of responsibility for Storm Water Management Program implementation on the affected portions of the Municipal Separate Storm Sewer System.

H. <u>Retention of Storm Water Management Program Records.</u> The permittee shall retain the Storm Water Management Program developed in accordance with Parts II. and III. for at least 3 years after coverage under this permit terminates.



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**PART III. SCHEDULES FOR IMPLEMENTATION AND COMPLIANCE.**

The Permittee(s) shall comply with the following schedules for Storm Water Management Program implementation and augmentation, and permit compliance.

**A. Implementation and Augmentation of Storm Water Management Program(s).**

| STORM WATER MANAGEMENT PROGRAM COMPONENT | ACTIVITY | RESPONSIBLE PERMITTEE(S) | DATE DUE/FREQUENCY |
|---|---|---|---|
| 1. SWMP Document | a. Provide copy of each permittee's SWMP revised as necessary to reflect final permit conditions. | All[1] | June 1, 1995 |
| 2. New and Re-Development | a. Submit criteria and procedures for determining and enforcing requirements for structural and non-structural controls on new and significant re-development. | Oklahoma City | March 1, 1996 |
| | b. Complete any necessary revisions to ordinances or rules and update SWMP to include criteria and procedures for determining and enforcing requirements for structural and non-structural controls on new and significant re-development. | Oklahoma City | July 1, 1997 |
| | c. Submit criteria and procedures for determining requirements for structural and non-structural controls on new and significant re-construction of roads and highways. | All | Sept. 1, 1995 |
| | d. Update SWMP to include criteria and procedures for determining requirements for structural and non-structural controls on new and significant re-construction of roads and highways. | All | July 1, 1996 |
| | e. Prepare or adopt development criteria manual(s) for use by the permittee(s) and the regulated development/construction community. | All | July 1, 1997 |
| | f. Begin implementation of program(s) for new and significant re-development. | All | July 1, 1998 |
| 3. Flood Control Projects and Structural Controls | a. Submit schedule and criteria for evaluating placement of structural controls (or retrofitting existing structures) on developed areas. | All | June 1, 1995 |



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| STORM WATER MANAGEMENT PROGRAM COMPONENT | ACTIVITY | RESPONSIBLE PERMITTEE(S) | DATE DUE/FREQUENCY |
|---|---|---|---|
| | b. Complete any necessary revisions to ordinances or rules and update SWMP to include schedule and criteria for evaluating placement of structural controls (or retro-fitting existing structures) on developed areas and a schedule for inspection and maintenance of such structural controls. | All | July 1, 1996 |
| | c. Begin implementation of program to evaluate, prioritize, and install structural controls (or retro-fitting existing structures) on developed areas. | All | July 1, 1996 |
| 4. Construction Site Runoff | a. Submit updated construction site runoff pollution prevention program, while continuing ongoing education, control, and enforcement efforts. | All | March 1, 1996 |
| | Complete update to construction site runoff pollution prevention program (including necessary modificaitons to local ordinances) regulating runoff from construction sites. | All | July 1, 1997 |
| | Implement enhancements to construction site runoff program. | All | July 1, 1998 |
| 4. Roadway Operation and Maintenance | a. Submit program, including priorities and schedules, for operation and maintenance of roadways and associated separate storm sewers. | All | June 1, 1995 |
| | b. Update SWMP to include roadway operation and management program. | All | July 1, 1995 |
| | c. Begin implementation of roadway operation and management program. | All | July 1, 1995 |
| 5. Household Hazardous Wastes/Used Motor Vehicle Fluids | a. Provide summary of evaluation and assessment of results from various collection/recycling/safe disposal program options, including those currently underway, to determine the most applicable program for long term use which meets the criteria in b. below. | All | April 1, 1997 |
| | b. Develop collection/recycling/safe disposal program which includes periodic collection events and should ensure a publicly available drop off location(s) that provides for occasional long weekday hours, or weekend operations. | All | July 1, 1997 |
| | c. Implement collection/recycling/safe disposal program. | All | July 1, 1998 |



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| STORM WATER MANAGEMENT PROGRAM COMPONENT | ACTIVITY | RESPONSIBLE PERMITTEE(S) | DATE DUE/FREQUENCY |
|---|---|---|---|
| 6. Floatables | a. Implement public education program. | All | July 1, 1995 |
| | b. Install two floatables monitoring locations and commence monitoring (See Part V.B.). | All | July 1, 1995 |
| | d. Complete study for targeting of structural controls for floatables and develop schedule for implementation. | All | July 1, 1997 |
| 7. Illicit Discharges and Improper Disposal | a. Implement public education program. | All | July 1, 1995 |
| | b. Complete assessment of allowable non-storm water discharges to the Municipal Separate Storm Sewer System (see Part II.A.7.b). | All | July 1, 1995 |
| | c. Submit, with the Annual Report, the results of the allowable non-storm water discharge assessment for each of the non-storm water discharges listed at Part II.A.7.b.1-19. and any proposed modifications to the Storm Water Management Program to implement necessary prohibitions or conditions for acceptance of non-storm water discharges to the Municipal Separate Storm Sewer System. | All | Oct. 15, 1995 |
| | d. Complete field screening 20% of the Municipal Separate Storm Sewer System for illicit discharges and improper disposal. | All | March 1, 1996 |
| | e. Complete field screening 40% (cumulative) of the Municipal Separate Storm Sewer System for illicit discharges and improper disposal. | All | March 1, 1997 |
| | f. Complete field screening 60% (cumulative) of the Municipal Separate Storm Sewer System for illicit discharges and improper disposal. | All | March 1, 1998 |
| | g. Complete field screening 80% (cumulative) of the Municipal Separate Storm Sewer System for illicit discharges and improper disposal. | All | March 1, 1999 |
| | h. Complete field screening 100% of the Municipal Separate Storm Sewer System for illicit discharges and improper disposal. | All | Feb. 28, 2000 |
| | i. Update SWMP to include follow-up activities, with prioritiesw and schedules, for suspected illicit discharges, and expeditious elimination of identified sources of such discharges. | All | Oct. 15, 1995 |



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| STORM WATER MANAGEMENT PROGRAM COMPONENT | ACTIVITY | RESPONSIBLE PERMITTEE(S) | DATE DUE/FREQUENCY |
|---|---|---|---|
| | j. Update SWMP to include procedures for spill response and cleanup. | All | Oct. 15, 1995 |
| | k. Update SWMP to include program to limit seepage from sanitary sewers into separate storm sewers. | Oklahoma City | Oct. 15, 1995 |
| 8. Wet Weather Screening Program | a. Update SWMP to include wet weather screening program. | All | July 1, 1995 |
| | b. Complete wet weather screening of 50% of the MS4. | All | July 1, 1997 |
| | c. Complete wet weather screening of 100% (cumulative) of the MS4. | All | July 1, 1999 |
| 9. Industrial and High Risk Runoff | a. Develop program to identify, monitor, and control pollutants from targeted facilities. | All | July 1, 1995 |
| | b. Implement program. | All | July 1, 1996 |
| 10. Pesticide, Herbicide, and Fertilizer Application | a. Implement annual training/education on pesticide and fertilizer management techniques. | All | July 1, 1995 |
| 11. Supporting Permit Conditions, Monitoring Programs, and Documents | a. Submit completed interjurisdictional agreement(s) between permittees. | All | April 1, 1995 |
| | b. Submit revised summary of Event Mean Concentrations (EMCs) for outfalls 001 - 005 from results of representative monitoring to date. Submittal shall include description of storm events monitored. | Oklahoma City | April 1, 1995 |
| | c. Submit schedule for preparation and submittal of estimates of annual loadings and EMCs for all major outfalls by no later than the due date of the Annual Report for the fourth year of the permit. | All | April 1, 1995 |
| | d. Establish representative monitoring site (Outfall 006) for roadway runoff. | All | June 1, 1995 |
| | e. Commence representative monitoring of roadway runoff. | All | July 1, 1995 |
| | f. Adopt comprehensive Storm Water ordinance. | Oklahoma City | July 1, 1995 |

[1]All - Oklahoma City and any co-permittees.



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B. Compliance with effluent limitations. Reserved.

C. Reporting compliance with schedules. No later than 14 days following a date for a specific action (interim milestone or final deadline) identified in the above schedule(s), the permittee(s) shall submit a written notice of compliance or noncompliance to the Director in accordance with Parts V.E.

D. Updating Storm Water Management Program. The permittee(s) shall update the Storm Water Management Program(s), as appropriate, in response to changes required by Part III.A. Such updates shall be made in accordance with Part II.G.2.

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PART IV. DISCHARGE LIMITATIONS.

A. Discharge Limitations. Reserved.

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PART V. MONITORING AND REPORTING REQUIREMENTS.

A. Storm Event Discharges.

1. *Representative Monitoring:* Monitoring shall be conducted on representative outfalls, internal sampling stations, and/or instream monitoring locations to characterize the quality of storm water discharges from the Municipal Separate Storm Sewer System.

   a. Monitoring Requirements: Refer to Table(s) V.A.1.a(1) and (2).

   b. Outfall Descriptions: Refer to Table V.A.1.b.

   c. Alternate representative monitoring locations may be substituted for just cause during the term of the permit. Requests for approval of alternate monitoring locations shall be made to the Director in writing and include the rationale for the requested monitoring station relocation. Unless disapproved by the Director, use of an alternate monitoring location (except for outfalls with numeric effluent limitations) may commence 30 days from the date of the request. For outfalls where numeric effluent limitations have been established, the permit must be modified prior to substitution of alternate monitoring locations. Six samples shall be collected during the first year of monitoring at substitute outfalls.



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**Table V.A.1.a.(1) - Representative Monitoring Requirements: Outfalls 001 - 005**

| PARAMETERS | REPORT FOR EACH MONITORING PERIOD (each sample type) | | | SAMPLE TYPE(S) | | MONITORING FREQUENCY[1] |
|---|---|---|---|---|---|---|
| | Minimum | Average | Maximum | Grab | Composite | |
| Biochemical Oxygen Demand ($BOD_5$) (mg/l) | | Yes | Yes | | Yes | 1/season[2] |
| Chemical Oxygen Demand (COD) (mg/l) | | Yes | Yes | | Yes | 1/season |
| Oil and Grease (mg/l) | | Yes | Yes | Yes | | 1/season |
| Total Suspended Solids (TSS) (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Dissolved Solids (TDS) (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Nitrogen (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Kjeldahl Nitrogen (TKN) (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Phosphorus (mg/l) | | Yes | Yes | | Yes | 1/season |
| Dissolved Phosphorus (mg/l) | | Yes | Yes | | Yes | 1/season |
| Total Cadmium (ug/l) | | Yes | Yes | | Yes | 1/season |
| Total Copper (ug/l) | | Yes | Yes | | Yes | 1/season |
| Total Lead (ug/l) | | Yes | Yes | | Yes | 1/season |
| Total Zinc (ug/l) | | Yes | Yes | | Yes | 1/season |
| Fecal Coliform (colonies/100 ml) | | Yes | Yes | Yes | | 1/season |
| pH (S.U.) | Yes | | Yes | Yes | | 1/season |
| Hardness (as $CaCO_3$) (mg/l) | Yes | Yes | Yes | Yes | | 1/season |
| Temperature (°C) | Yes | Yes | Yes | Yes | | 1/season |



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| PARAMETERS | REPORT FOR EACH MONITORING PERIOD (each sample type) | | | SAMPLE TYPE(S) | | MONITORING FREQUENCY[1] |
|---|---|---|---|---|---|---|
| | Minimum | Average | Maximum | Grab | Composite | |
| Diazinon (ug/l) | | Yes | Yes | | Yes | 1/season |
| Total Mercury (ug/l) | | Yes | Yes | | Yes | 1/season |
| Total Thallium (ug/l) - Outfalls 001, 005 only | | Yes | Yes | | Yes | 1/season |
| Table II Priority Pollutants (40 CFR 122, Appendix D, Table II) - Outfalls 002, 004, 005 only | | Yes | Yes | | Yes | 1/season |

[1] Monitoring frequency for each year unless monitoring under Alternative Bioassessment Option (See Part V.A.2.)
[2] Seasonal monitoring periods are: July 1 - October 31, November 1 - February 28(29), and March 1 - June 30



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Table V.A.1.b - Representative Monitoring Outfall Descriptions

| OUTFALL | LOCATION | DESCRIPTION | RESPONSIBLE PERMITTEE |
|---|---|---|---|
| 001 | 6200 NE 122 Street. Bridge crossing Deep Fork Creek. | Mixed residential (wide range of income and age), commercial, and industrial land use basin draining approximately 55.5 square miles in northeast Oklahoma City (ref. site 183-A). | Oklahoma City |
| 002 | 5440 Northwestern Avenue. Bridge crossing Deep Fork Creek. | Primarily residential (mostly single family middle income) with some industrial land use basin draining approximately 14.4 square miles in north central Oklahoma City (ref. site 377-A). | Oklahoma City |
| 003 | 550 SW 12th Street. Headwall of 14 foot diameter storm water conduit. | Approximately 1.4 square mile basin draining the Oklahoma City downtown central business district and surrounding older residential (lower income) areas (ref. site 577-A). | Oklahoma City |



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| OUTFALL | LOCATION | DESCRIPTION | RESPONSIBLE PERMITTEE |
|---|---|---|---|
| 004 | 1530 E. Grand Avenue. Bridge crossing Crooked Oak Creek | Mixed residential (older lower middle income), older industrial, and transportation (I-35 and Shields Boulevard) land use basin draining approximately 8.6 square miles in east central Oklahoma City (ref. site 580-A). | Oklahoma City |
| 005 | 1633 SW 149th Street. Bridge crossing unnammed tributary to South Canadian River | Approximately 8.75 square mile basin in southern Oklahoma City currently undergoing residential (upper middle income) and commercial development (ref. site 936-A) | Oklahoma City |
| 006 | To be added July 1, 1995 (See Part III.A.11.d.) | | Oklahoma City |



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2. *Representative Monitoring - Rapid Bioassessment Option:* The permittee(s) has the option of developing and implementing a rapid bioassessment monitoring program.

   a. The permittee(s) shall obtain all necessary aquatic wildlife collection permits from appropriate State and/or Federal agencies (e.g. State Fish and Game Commission).

   b. Permittee(s) utilizing the rapid bioassessment monitoring option shall conduct monitoring of the separate storm sewer system as described in Part V.A.1., except the monitoring for years 2, 3, and 5 are no longer required. All other requirements of Part V.A.1., A.3., and A.4. (e.g.: samples types, parameters,...) remain unchanged.

   c. If the permittee(s) elects to develop and implement a rapid bioassessment monitoring program, the permittee(s) shall submit an approvable monitoring program to EPA no later than one year from the effective date of this permit. An approvable program must include:

      (1) monitoring of at least two waterbodies receiving storm water discharges from the municipal separate storm sewer system plus a reference site located within the same ecological region as the municipal separate storm sewer system;

      (2) monitoring of each station at least twice per year, with monitoring conducted at essentially the same time periods each year; and

      (3) concurrent (e.g. within a day or two) monitoring of the reference site each time a station located in the receiving waters of the municipal separate storm sewer system is monitored.

      Unless disapproved by the Director within 60 days, a proposed rapid bioassessment monitoring plan meeting the criteria herein shall be deemed approved and the permittee(s) may implement the alternate rapid bioassessment program.

   d. The permittee(s) shall notify the Director and State (addresses provided in Part V.E.), in writing, at least 14 days prior to commencing an alternate rapid bioassessment monitoring program.

3. *Storm Event Data:* For Part V.A.1. and any additional sampling conducted for Part V.A.6., quantitative data shall be collected to estimate pollutant loadings and event mean concentrations for each parameter sampled. Records shall be maintained of all analytical results, the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event which generated the sampled runoff; the duration (in hours) between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge sampled.



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4. *Sample Type, Collection, and Analysis:* The following requirements apply only to samples collected for Part V.A.1 and any additional sampling conducted for Part V.A.6.

   a. For discharges from holding ponds or other impoundments with a retention period greater than 24 hours, (estimated by dividing the volume of the detention pond by the estimated volume of water discharged during the 24 hours previous to the time that the sample is collected) a minimum of one grab sample may be taken.

   b. Grab samples taken within the first two hours of discharge shall be used for the analysis of pH, temperature, cyanide, oil & grease, fecal coliform, fecal streptococcus, total phenols, residual chlorine, and (at the permittee's option) volatile organics. Multiple grab samples, collected (and individually analyzed) at least once per hour for at least the first three hours of discharge, may be used to prepare a flow weighted average for the above parameters. For all other parameters, data shall be reported for flow weighted composite samples of the entire event or, at a minimum, the first three hours of discharge.

   c. Samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Composite samples may be taken with a continuous sampler or as a combination of a minimum of three sample aliquots taken in each hour of discharge for the entire discharge or for the first three hours of the discharge, with each aliquot being separated by a minimum period of fifteen minutes.

      The required 72 hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge. The required 72 hour storm event interval is also waived where the permittee(s) documents that less than a 72 hour interval is representative for local storm events during the season when sampling is being conducted.

   d. Analysis and collection of samples shall be done in accordance the methods specified at 40 CFR Part 136. Where an approved Part 136 method does not exist, any available method may be used unless a particular method or criteria for method selection (such as sensitivity) has been specified in the permit.

5. *Seasonal Loadings and Event Mean Concentrations.* All necessary sampling data shall be collected to provide estimates for each major outfall of seasonal pollutant loadings and event mean concentrations for a representative storm event for the parameters listed in Table V.A.1.a.(1) - **Representative Monitoring Requirements**. This information may be estimated from the representative monitoring locations and shall take into consideration land uses and drainage areas for the outfall. The estimates of seasonal loadings and event mean concentrations shall be included in the Annual Report for year four of the permit.



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B. Floatables Monitoring. The permittee(s) shall establish two monitoring locations for removal of floatable material in discharges to or from the Municipal Separate Storm Sewer System. Floatable material shall be collected at the frequency necessary for maintenance of the removal devices, but not less than twice per year. The amount of material collected shall be estimated in cubic yards and shall be reported in the Annual Report required by Part V.C.

C. Annual Report. Each permittee shall contribute to the preparation of an annual system-wide report to be submitted no later than October 15th. The report shall cover the previous year from July 1st to June 30th and include the following separate sections, with an overview for the entire Municipal Separate Storm Sewer System and subsections for each permittee:

1. The status of implementing the storm water management program(s) (status of compliance with any schedules established under this permit shall be included in this section);

2. Proposed changes to the storm water management program(s) ;

3. Revisions, if necessary, to the assessments of controls and the fiscal analysis reported in the permit application under 40 CFR 122.26(d)(2)(iv) and (d)(2)(v);

4. A summary of the data, including monitoring data, that is accumulated throughout the reporting year;

5. Annual expenditures for the reporting period, with a breakdown for the major elements of the storm water management program, and the budget for the year following each annual report;

6. A summary describing the number and nature of enforcement actions, inspections, and public education programs; and

7. Identification of water quality improvements or degradation.

Preparation and submittal of a system-wide annual report shall be coordinated by the city of Oklahoma City. The report shall indicate which, if any, permittee(s) have failed to provide required information on the portions of the Municipal Separate Storm Sewer System for which they are responsible to the core municipality by 45 days prior to the report due date. Joint responsibility for report submission shall be limited to participation in preparation of the overview for the entire system and inclusion of the identity of any permittee who failed to provide input to the annual report. Each individual permittee shall be individually responsible for content of the report relating to the portions of the Municipal Separate Storm Sewer System for which they are responsible and for failure to provide information for the system-wide annual report in a timely manner. Each permittee shall sign and certify the annual report in accordance with Part VI.H. and include a statement or resolution that the permittee's governing body or agency (or delegated representative) has reviewed or been appraised of the content of the Annual Report.

D. Certification and Signature of Reports. All reports required by the permit and other information requested by the Director shall be signed and certified in accordance with Part VI.H.



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E. **Reporting: Where and When to Submit.**

1. Representative monitoring results (Part V.A.1) obtained during the reporting period running from July 1st to June 30th shall be submitted on Discharge Monitoring Report Form(s) along with the annual report required by Part V.C. A separate Discharge Monitoring Report Form is required for each monitoring period (season) specified in Part V.A.1.

2. Signed copies of discharge monitoring reports required under Part V., the Annual Report required by Part V.C., and all other reports required herein, shall be submitted to:

U.S. EPA, Region 6
Water Management Division
Enforcement Branch (6W-EA)
1445 Ross Avenue
Dallas, Texas 75202-2733

3. Requests for Storm Water Management Program updates, changes in monitoring locations, or application for an individual permit shall be submitted to:

U.S. EPA, Region 6
Water Management Division
Municipal Permits Section (6W-PM)
1445 Ross Avenue
Dallas, Texas 75202-2733

4. Additional Notification. In addition, the permittee(s) shall provide copies of discharge monitoring reports, annual reports, requests for Storm Water Management Program updates, or changes in monitoring locations, and all other reports required herein, to:

Oklahoma Department of Environmental Quality
Program Manager
Water Quality Program
1000 N.E. 10th Street, WQS 0207
Oklahoma City, OK 73117-1212



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**PART VI. STANDARD PERMIT CONDITIONS.**

A. Duty to Comply. The permittee(s) must comply with all conditions of this permit insofar as those conditions are applicable to each permittee, either individually or jointly. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

B. Penalties for Violations of Permit Conditions.

1. *Criminal Penalties.*

a. Negligent Violations: The Act provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. Knowing Violations: The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Knowing Endangerment: The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both.

d. False Statement: The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309(c)(4) of the Act).

2. *Civil Penalties.* The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation.

3. *Administrative Penalties.* The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:



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a. Class I penalty: Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

b. Class II penalty: Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

C. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the permit expiration date, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days prior to expiration of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR 122.6 and any subsequent amendments.

D. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate. The permittee(s) shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information. The permittee(s) shall furnish to the Director, within a time specified by the Director, any information which the Director may request to determine compliance with this permit. The permittee(s) shall also furnish to the Director upon request copies of records required to be kept by this permit.

G. Other Information. When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in any report to the Director, he or she shall promptly submit such facts or information.

H. Signatory Requirements. All Discharge Monitoring Reports, storm water management programs, reports, certifications or information either submitted to the Director or that this permit requires be maintained by the permittee(s), shall be signed by:

1. for a municipality, State, or other public agency: by either a principal executive officer or ranking elected official; or

2. a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director.

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position.



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c. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new written authorization satisfying the requirements of this paragraph must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

3. Certification: Any person signing documents under this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. **Penalties for Falsification of Monitoring Systems.** The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the Act.

J. **Oil and Hazardous Substance Liability.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the Act or section 106 of CERCLA.

K. **Property Rights.** The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

L. **Severability.** The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

M. **Requiring an Separate Permit.**

1. The Director may require any co-permittee authorized by this permit to obtain a separate NPDES permit. Any interested person may petition the Director to take action under this paragraph. The Director may require any co-permittee authorized to discharge under this permit to apply for a separate NPDES permit only if the co-permittee has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form (as necessary), a statement setting a deadline for the co-permittee to file the application, and a statement that on the effective date of the separate NPDES permit, coverage under this permit shall automatically terminate. Separate permit applications shall be submitted to the address shown in Part V.E.



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The Director may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner a separate NPDES permit application as required by the Director, then the applicability of this permit to the co-permittee is automatically terminated at the end of the day specified for application submittal.

2. Any co-permittee authorized by this permit may request to be excluded from the coverage of this permit by applying for an separate permit. The co-permittee shall submit a separate application as specified by 40 CFR 122.26(d) with reasons supporting the request to the Director. Separate permit applications shall be submitted to the address shown in Part V.E. The request may be granted by the issuance of a separate permit if the reasons cited by the co-permittee are adequate to support the request.

N. **State/Environmental Laws.**

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Act.

2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

O. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water management programs. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

P. **Monitoring and Records.**

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. The permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

3. Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The initials or name(s) of the individual(s) who performed the sampling or measurements;



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c. The date(s) analyses were performed;

d. The time(s) analyses were initiated;

e. The initials or name(s) of the individual(s) who performed the analyses;

f. References and written procedures, when available, for the analytical techniques or methods used; and

g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

Q. Monitoring Methods. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

R. Inspection and Entry. The permittee shall allow the Director or an authorized representative of EPA, or the State, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Act, any substance or parameters at any location.

S. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reisauance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

T. Additional Monitoring by the Permittee. If the permittee monitor more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased monitoring frequency shall also be indicated on the DMR.

U. Archeological and Historical Sites.

1. Where municipal excavation and/or construction projects implementing requirements of this permit will result in the disturbance of previously undisturbed land, the permittee shall, thirty (30) days prior to commencing land disturbance, submit the following to the State Historic Preservation Officer (SHPO) for evaluation of possible effects on properties listed or eligible for listing on the National Register of Historic Places:



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a. a description of the construction or land disturbing activity and the potential impact that this activity may have upon the ground, and

b. a copy of a USGS topographic map outlining the location of the project and other ancillary impact areas.

The address of the SHPO is:

Historical Archeologist
Oklahoma State Historical Preservation Office
621 North Robinson, Suite 375
Oklahoma City, Oklahoma 73102

2. If the permittee receives a request for an archeological survey or notice of adverse effects from the SHPO, the permittee shall delay such activity until:

a. a determination of no adverse effect has been made, or

b. measures to minimize harm to historic properties have been agreed upon.

3. If the permittee does not receive notification of adverse effects or a request for an archeological survey from the SHPO within thirty (30) days, the permittee may proceed with the activity.



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## PART VII. PERMIT MODIFICATION.

A. Modification of the Permit. The permit may be reopened and modified during the life of the permit to address:

1. changes in the State's Water Quality Management Plan, including Water Quality Standards;
2. changes in State or Federal statutes or regulations;
3. add a new permittee who is the owner or operator of a portion of the Municipal Separate Storm Sewer System;
4. changes in portions of the Storm Water Management Program that are considered permit conditions; or
5. other modifications deemed necessary by the Director to meet the requirements of the Act.

All modification to the permit will be made in accordance with 40 CFR 122.62, 122.63, and 124.5.

B. Termination of Coverage for a Single Permittee. Permit coverage may be terminated, in accordance with the provisions of 40 CFR 122.64 and 124.5, for a single permittee without terminating coverage for other permittees.

C. Modification of Storm Water Management Program(s). Only those portions of the Storm Water Management Programs specifically required as permit conditions shall be subject to the modification requirements of 40 CFR 124.5. Addition of components, controls, or requirements by the permittee(s); replacement of an ineffective or infeasible BMP implementing a required component of the Storm Water Management Program with an alternate BMP expected to achieve the goals of the original BMP; and changes required as a result of schedules contained in Part III shall be considered minor changes to the Storm Water Management Program and not modifications to the permit. (See also Part II.G.)

D. Changes in Monitoring Outfalls. Changes in monitoring outfalls, other than those with specific numeric effluent limitations (as described in Part V.A.1.c.), shall be considered minor modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.63.



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**PART VIII. DEFINITIONS.**

All definition contained in Section 502 of the Act shall apply to this permit and are incorporated herein by reference. Unless otherwise specified, additional definitions of words or phrases used in this permit are as follows:

A. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

B. "CWA" or "The Act" means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.

C. "Co-permittee" is defined at 40 CFR 122.26(b)(1).

D. "Core Municipality" means, for the purpose of this permit, the municipality whose corporate boundary (unincorporated area for counties and parishes) defines the municipal separate storm sewer system. (ex. City of Dallas for the Dallas Municipal Separate Storm Sewer System, Harris County for unincorporated Harris County).

E. "Director" means the Regional Administrator or an authorized representative.

F. "Discharge" for the purpose of this permit, unless indicated otherwise, refers to discharges from the Municipal Separate Storm Sewer System (MS4).

G. "Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

H. "Illicit connection" means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

I. "Illicit discharge" is defined at 40 CFR 122.26(b)(2).

J. "Individual Residence" refers, for the purposes of this permit, to single or multi-family residences. (e.g. single family homes and duplexes, townhomes, apartments, etc.)

K. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

L. "Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

M. "Large or medium municipal separate storm sewer system" is defined at 40 CFR 122.26(b)(4) & (7).

N. "MEP" is an acronym for "Maximum Extent Practicable," the technology-based discharge standard for Municipal Separate Storm Sewer Systems established by CWA §402(p).



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O. "MS4" is an acronym for "Municipal Separate Storm Sewer System" and is used to refer to either a Large or Medium Municipal Separate Storm Sewer System (e.g. "the Dallas MS4").

P. "Municipal Separate Storm Sewer" is defined at 40 CFR 122.26(b)(8).

Q. "Part '#'" refers, unless otherwise indicated, to Part "#" of this permit (e.g. Part V.E.2.).

R. "Permittee" refers to any "person," as defined at 40 CFR 122.2, authorized by this NPDES permit to discharge to Waters of the United States.

S. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

T. "Storm sewer", unless otherwise indicated, refers to a municipal separate storm sewer.

U. "Storm Water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

V. "Storm Water Discharge Associated with Industrial Activity" is defined at 40 CFR 122.26(b)(14).

W. "Storm Water Management Program" refers to a comprehensive program to manage the quality of storm water discharged from the municipal separate storm sewer system. For the purposes of this permit, the Storm Water Management Program is considered a single document, but may actually consist of separate programs (e.g. "chapters") for each permittee.

X. "SWMP" is an acronym for "Storm Water Management Program."

Y. "Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Z. "Waters of the United States" is defined at 40 CFR 122.2.



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May 19, 1995

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**
**SAN DIEGO REGION**

**ORDER NO. 95-76**
**NPDES NO. CA0108758**

**WASTE DISCHARGE REQUIREMENTS**
**FOR**
**STORM WATER AND URBAN RUNOFF**
**FROM THE**
**COUNTY OF SAN DIEGO,**
**THE INCORPORATED CITIES OF SAN DIEGO COUNTY,**
**AND THE**
**SAN DIEGO UNIFIED PORT DISTRICT**

The California Regional Water Quality Control Board, San Diego Region (hereinafter SDRWQCB), finds that:

1. On July 16, 1990, the SDRWQCB issued Order No. 90-42, NPDES NO. CA0108758, **WASTE DISCHARGE REQUIREMENTS FOR STORM WATER AND URBAN RUNOFF FROM THE COUNTY OF SAN DIEGO THE INCORPORATED CITIES OF SAN DIEGO COUNTY AND THE SAN DIEGO UNIFIED PORT DISTRICT.** Order No. 90-42 established waste discharge requirements for the discharge of storm water[1] and urban runoff to waters of the United States from storm water conveyance systems[2] owned and operated by the County of San Diego, the San Diego Unified Port District and the incorporated cities of San Diego County. Order No. 90-42 expires on July 16, 1995.

2. On January 17, 1995 the SDRWQCB received a joint National Pollutant Discharge Elimination System (NPDES) permit renewal application from the following entities:

   a. the County of San Diego;

   b. the incorporated cities of San Diego County:

| | | |
|---|---|---|
| Carlsbad | Escondido | Poway |
| Chula Vista | Imperial Beach | San Diego |
| Coronado | La Mesa | San Marcos |
| Del Mar | Lemon Grove | Santee |
| El Cajon | National City | Solana Beach |
| Encinitas | Oceanside | Vista; and |

   c. the San Diego Unified Port District.

3. The above entities are hereinafter referred to in this Order as copermittees or dischargers. The City of San Diego is also referred to in this Order as principal copermittee. The terms and conditions of this Order are applicable to all lands within:

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a. the unincorporated urban areas of San Diego County within the boundaries of the San Diego Region;

b. the above incorporated cities of San Diego County; and

c. the jurisdiction of the San Diego Unified Port District.

4. Clean Water Act (CWA) Section 402(a)(l) provides that any person discharging, or proposing to discharge, pollutants from any point source to waters of the United States must apply for and obtain an NPDES Permit. Applicable United States Environmental Protection Agency (USEPA) regulations are contained in Title 40 Code of Federal Regulations (CFR) Part 122.

5. Storm water discharges are point source discharges of pollutants and as such they are also discharges of waste that could affect the quality of the waters of the state. California Water Code (CWC) Section 13376 provides that any person discharging or proposing to discharge pollutants to waters of the United States must apply for and obtain waste discharge requirements. (The term waste discharge requirements is equivalent to the term NPDES permits as used in the Clean Water Act). Furthermore, California Water Code Section 13260 provides that persons discharging waste that could affect the quality of waters of the state must file a report of waste discharge in application for waste discharge requirements. Applicable State of California regulations are contained in Title 23, Division 3, Chapter 9, Articles 3 and 9.

6. All storm water conveyance systems discharge into waters of the United States or tributaries thereto. Each copermittee owns and operates a storm water conveyance system which discharges into one or more surface water bodies in the San Diego Region including creeks, rivers, reservoirs, lakes, lagoons, estuaries, harbors, bays, the Pacific Ocean and tributaries thereto. These surface waters are waters of the United States as defined in 40 CFR 122.2.

7. Urban storm water runoff has two major components: (1) storm water (wet weather flows) and (2) non-storm water illicit discharges (dry weather flows).

8. Storm water (wet weather flows) consists of precipitation only and is defined in 40 CFR 122.26(b)(13) as storm water runoff, snow melt runoff, and surface runoff and drainage. During storm events in urban areas, rain water picks up and transports pollutants through storm water conveyance systems to waters of the United States.

9. Non-storm water (dry weather flows) is defined in 40 CFR 122.26(b)(2) as illicit discharges consisting of any discharge to a storm water conveyance system that is not composed entirely of storm water. The definition specifically excludes discharges pursuant to an NPDES permit and discharges resulting from fire fighting activities.

10. Pollutants occur in both storm water and non-storm water runoff. The sources of these pollutants occur primarily in commercial, industrial, and residential urban land use areas. The most important pollutant sources include motor vehicles; construction site runoff; industrial site runoff; sewage spills; illegal dumping; illicit connections or improper plumbing of sewage; commercial and industrial discharges; paved surfaces; animal waste; and home and garden care. The most important pollutant categories include metals (copper, lead and zinc), pathogens (bacteria and viruses), synthetic organics (petroleum products,

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pesticides, PCBs and PAHs), sediment; nutrients (nitrogen and phosphorus fertilizers), and oxygen demanding substances (decaying vegetation, animal waste, and other organic matter).

11. Clean Water Act Section 402(p) provides, in part, that the following categories of municipal storm water discharges are required to obtain an NPDES permit:

    a. A discharge from a municipal separate storm water conveyance system serving a population of 250,000 or more (large system);

    b. A discharge from a municipal separate storm water conveyance system serving a population of 100,000 or more but less than 250,000 (medium system); and

    c. A discharge from a municipal storm water conveyance system which contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

    Applicable USEPA regulations are contained in Title 40 Code of Federal Regulations Part 122.26.

12. The unincorporated areas of the County of San Diego, the Cities of Chula Vista, Escondido, Oceanside and San Diego each have a current population in excess of 100,000. These copermittees operate large or medium storm water conveyance systems as defined by 40 CFR 122.26(b)(4) and (7).

13. The Cities of Carlsbad, Coronado, Del Mar, El Cajon, Encinitas, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Marcos, Santee, Solana Beach and Vista have populations of less than 100,000 and operate small storm water conveyance systems.

14. All copermittees with populations less than 100,000 (small systems) are part of large or medium separate storm water conveyance systems. This is because discharges from the small systems are "interrelated" to discharges from the large or medium systems as provided in 40 CFR 122.26(b)(4)(iii). The determination of "interrelation" is based on the following factors:

    a. physical interconnections between the municipal storm water conveyance systems of some copermittees;

    b. the nature of the pollutants discharged to waters of the United States as described in previous findings;

    c. the nature of the receiving waters as described in findings 15 and 16 below; and

    d. the location of discharges from the smaller municipal systems relative to discharges from the large or medium systems. The following copermittees jointly and cumulatively discharge storm water pollutants into the same water body:

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i. The County of San Diego; the Cities of San Diego, Coronado, National City, Chula Vista, Imperial Beach, La Mesa, Lemon Grove; and the San Diego Unified Port District jointly and cumulatively discharge storm water pollutants into San Diego Bay;

ii. The County of San Diego and the Cities of Oceanside, Vista, and Carlsbad jointly and cumulatively discharge storm water pollutants into Buena Vista Lagoon;

iii. The Cities of Carlsbad and San Marcos jointly and cumulatively discharge storm water pollutants into Agua Hedionda Lagoon;

iv. The County of San Diego; the Cities of Carlsbad, Encinitas, and San Marcos jointly and cumulatively discharge storm water pollutants into Batiquitos Lagoon;

v. The County of San Diego; the Cities of Encinitas, Escondido, and Solana Beach jointly and cumulatively discharge storm water pollutants into San Elijo Lagoon;

vi. The County of San Diego, the Cities of San Diego, Del Mar, Solana Beach, and Escondido jointly and cumulatively discharge storm water pollutants into Los Penasquitos Lagoon;

vii. The Cities of San Diego and Imperial Beach jointly and cumulatively discharge storm water pollutants into the Tijuana River Estuary;

viii. The County of San Diego; the Cities of San Diego, La Mesa, El Cajon, and Santee jointly and cumulatively discharge storm water pollutants into the San Diego River;

ix. The Cities of El Cajon and Santee jointly and cumulatively discharge storm water pollutants into Forester Creek; and

x. The Cities of San Diego, Escondido, and Poway jointly and cumulatively discharge storm water pollutants into Lake Hodges;

15. Certain water bodies receiving storm water discharges are designated by the State Water Resources Control Board (SWRCB) and USEPA as Clean Water Act Section 303(d) water bodies. A "Section 303(d) water body" is an impaired water body in which water quality does not meet applicable water quality standards and/or is not expected to meet water quality standards, even after the application of technology based pollution controls required by the Clean Water Act. The discharge of storm water pollutants by the copermittees are significant because these discharges contribute to violations of applicable water quality standards as summarized in Table 1 below:

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**TABLE 1**
**COPERMITTEES DISCHARGING TO CWA SECTION 303(D) WATER BODIES**

| Clean Water Act Section 303(d) Impaired Water Body | Pollutants Causing Impairment | Copermittee Discharging Storm Water |
|---|---|---|
| San Diego Bay | Synthetic organics, metals | County of San Diego; Cities of San Diego, Coronado, National City, Chula Vista, Imperial Beach, La Mesa, Lemon Grove; and San Diego Unified Port District |
| Mission Bay | Metals, pathogens, nutrients | City of San Diego |
| Santa Margarita Lagoon | Nutrients | County of San Diego |
| Agua Hedionda Lagoon | Pathogens | Cities of Carlsbad and San Marcos |
| Batiquitos Lagoon | Nutrients, sediment | County of San Diego; Cities of Carlsbad, Encinitas, and San Marcos |
| San Elijo Lagoon | Nutrients | County of San Diego, Cities of Encinitas, Escondido, and Solana Beach |
| Los Penasquitos Lagoon | Nutrients, sediment | County of San Diego; Cities of San Diego, Del Mar and Poway |
| Tijuana River Estuary | Pathogens, synthetic organics, metals | Cities of San Diego and Imperial Beach |
| Tijuana River | Pathogens, nutrients, synthetic organics, metals | City of San Diego |
| Oceanside Harbor | Metals | City of Oceanside |

16. Each of the copermittees are significant contributors of pollutants to waters of the United States in the San Diego Region based on the following considerations:

a. Limited wet weather monitoring data collected by the San Diego copermittees indicate that storm water discharges in San Diego County contain metals, pathogens, sediment, and nutrients in concentrations that could adversely affect receiving waters.

b. Because the semiarid San Diego Region has an extended dry season, pollutant loads during the first several storms of the wet season may be significantly higher than pollutant loads from storms later in the season.

c. In the semiarid San Diego Region, most receiving water streams are essentially ephemeral in nature. Non-storm water flows containing pollutants discharge into these streams during dry weather conditions. During the dry weather season these streams have no reliable dilution waters available to aid in protection of the public health and wildlife and to provide sufficient assimilative capacity to ensure that

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discharges do not contribute to violations of receiving water quality objectives. Accordingly, non-storm water flows to these streams during dry weather periods can cause pollution and nuisance conditions.

d. All watercourses in the San Diego Region terminate in bays, estuaries, or lagoons, most of which have poor flushing characteristics and little assimilative capacity.

17. Based on the foregoing findings, as summarized below, each copermittee is required to obtain an NPDES Permit for the discharge of storm water runoff to waters of the United States.

a. Each copermittee owns and operates a storm water conveyance system which conveys storm water and non-storm water flows containing pollutants to waters of the United States.

b. Five copermittees (the County of San Diego; the Cities of Chula Vista, Escondido, Oceanside, and San Diego) have a current population exceeding 100,000.

c. Each small copermittee (having a population of less than 100,000), owns and operates a storm water conveyance system whose discharges are "interrelated" to discharges from large or medium size storm water conveyance systems within the meaning of 40 CFR 122.26(b)(iii). Accordingly, small storm water conveyance systems are part of large or medium size conveyance systems.

d. Each copermittee, except the Cities of El Cajon, Santee, and Vista, discharge storm water and non-storm water flows to a Clean Water Act Section 303(d) impaired water body and thus are contributing to a violation of a water quality standard.

e. Each copermittee is a significant contributor of pollutants to waters of the United States within the meaning of 40 CFR 122.26(a)(1)(v).

18. The copermittees have requested that the SDRWQCB regulate them under a single NPDES permit. The SDRWQCB believes that issuance of a single NPDES permit to the copermittees will:

a. provide for a unified regional approach to storm water management in contiguous urban areas and shared watersheds;

b. reduce copermittee costs and administrative burden associated with storm water NPDES permit fees, applications, monitoring and reporting, implementation of required best management practices plans, and other activities; and

c. reduce the Regional Board's administrative burden of issuing individual NPDES permits to each copermittee.

Therefore, each copermittee is named as a discharger in this Order.

19. The copermittees have entered into a memorandum of understanding (MOU) in order to establish the joint and separate responsibilities of the copermittees with respect to compliance with this Order. The MOU provides that certain programs (e.g., wet weather

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monitoring and reporting, public education) required under this Order be conducted jointly by the copermittees. The conduct of a joint wet weather monitoring program will facilitate the collection and analysis of storm water samples in a uniform and cost effective manner.

20. USEPA regulations contained in 40 CFR 122.26(d)(2)(i)(A)-(F) provide that the copermittees must demonstrate adequate legal authority, through ordinance or other means, to control discharges of pollutants to their storm water conveyance system.

21. Order No. 90-42 required the copermittees to demonstrate adequate legal authority to control discharges of pollutants to their storm water conveyance system in conformance with 40 CFR 122.26(d)(2)(i)(A)-(F). As of August 10, 1995, all copermittees, except the Cities of Carlsbad, Oceanside, and Santee have adopted storm water ordinances.

22. Clean Water Act Section 402(p)(3)(B)(iii) requires that NPDES permits for discharges from municipal storm water conveyance systems ".....shall include a requirement to effectively prohibit non-storm water discharges into storm water conveyance systems." USEPA regulations implementing Section 402 recognize that certain classes of non-storm water discharges, on a case by case basis, may not be sources of pollutants to waters of the United States. These special classes of non-storm water discharges are listed in 40 CFR 122.26(d)(2)(iv)(B)(1).

23. Clean Water Act Section 402(p)(3)(B)(ii) requires that NPDES permits for discharges from municipal storm water conveyance systems ".....shall require controls to reduce the discharge of pollutants to the maximum extent practicable[3] (MEP) including management practices, control techniques and system, design and engineering methods....." Copermittees can reduce pollutants to the maximum extent practicable through the effective implementation of Best Management Practices[4] (BMPs).

24. Pursuant to 40 CFR 122.26(d)(2)(vi), the SDRWQCB may require each copermittee to prepare and submit a fiscal analysis demonstrating sufficient financial resources have been appropriated to implement the conditions of this Order.

25. Pollution prevention is defined as practices and processes which reduce or eliminate the generation of pollutants at their source. Under Section 6602(B) of the federal Pollution Prevention Act of 1990, Congress established a national policy that: ".....pollution should be prevented or reduced at the source, whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner, whenever feasible; and disposal or other releases into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner...." The SDRWQCB fully supports pollution prevention as a fundamental principle of the SDRWQCB's mission to protect the quality of the Region's ground and surface waters and encourages its maximum use by the copermittees.

26. The "Water Quality Control Plan, San Diego Basin (9)" (hereinafter Basin Plan) was adopted by the SDRWQCB on September 8, 1994 and subsequently approved by the SWRCB on December 13, 1994. Subsequent revisions to the Basin Plan have also been adopted by the SDRWQCB and approved by the SWRCB. The Basin Plan designates beneficial uses, narrative and numeric water quality objectives, and includes prohibitions which are applicable to the storm water and urban runoff discharges regulated under this

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Order. The Basin Plan also incorporates by reference all SWRCB water quality control plans and policies including the 1990 Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and the 1974 Water Quality Control Policy for Enclosed Bays and Estuaries of California (Enclosed Bays and Estuaries Policy). The discharges regulated by this Order must be in compliance with the prohibitions and water quality standards of the Basin Plan and all referenced SWRCB water quality control plans and policies.

27. The beneficial uses of inland surface waters in San Diego County designated in the Basin Plan are: Municipal and Domestic supply; Agricultural supply; Industrial process supply; Industrial service supply; Freshwater Replenishment; Hydropower generation; Contact water recreation; Non-contact water recreation; Warm freshwater habitat; Cold freshwater habitat; Wildlife habitat; Preservation of biological habitats of special significance; and Rare, threatened, or endangered species. Beneficial uses of inland surface waters vary. The beneficial uses for specific inland surface waters are described in the Basin Plan. Inland surface waters consist of all waters exclusive of the waters of the Pacific Ocean, enclosed bays and estuaries, coastal lagoons, and ground waters.

28. The beneficial uses of coastal waters in San Diego County designated in the Basin Plan are: Industrial service supply; Navigation; Contact water recreation; Non-contact water recreation; Commercial and sport fishing; Estuarine habitat; Wildlife habitat; Preservation of biological habitats of special significance; Rare, threatened, or endangered species; Marine habitat; Aquaculture; Migration of aquatic organisms; Spawning, reproduction, and/or early development; Warm freshwater habitat; and Shellfish harvesting. Beneficial uses of coastal waters vary. The beneficial uses for specific coastal waters are described in the Basin Plan. Coastal waters are defined as waters subject to tidal action and include ocean waters and enclosed bays and estuaries.

29. The Basin Plan contains the following general antidegradation water quality objective which applies to all waters of the State within the San Diego Region:

"Wherever the existing quality of water is better than the quality of water established herein as objectives, such existing quality shall be maintained unless otherwise provided by the provisions of the State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining of Waters in California", including any revisions thereto, or the federal antidegradation policy, 40 CFR 131.12 (for surface waters only)."

Discharges of storm water in compliance with the terms and conditions of this Order will not degrade surface water quality. Furthermore, the purpose of this Order is to reduce pollutants in storm water discharges to the maximum extent practicable in conformance with Clean Water Act Section 402(p)(3)(B)(ii). Therefore, the Regional Board finds that this Order is in conformance with SWRCB Resolution No. 68-16 and the federal antidegradation policy described in 40 CFR 131.12.

30. The SDRWQCB, in establishing the requirements contained in this Order, considered factors including, but not limited to, the following:

a. Beneficial uses to be protected and the water quality objectives reasonably required for that purpose;
b. Other waste discharges;
c. The need to prevent nuisance;

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d. Past, present, and probable future beneficial uses of the waters under consideration;
e. Environmental characteristics of the waters under consideration, including the quality of water available thereto;
f. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
g Economic considerations;
h The need for developing housing within the region; and
i. The need to develop and use recycled water.

31. This Order shall serve as an NPDES permit pursuant to Clean Water Act Section 402, and waste discharge requirements pursuant to California Water Code Section 13260 for the discharge of storm water and urban runoff to surface waters of San Diego County.

32. The issuance of this Order for the discharge of storm water and urban runoff is exempt from the requirement for preparation of environmental documents under the California Environmental Quality Act (Public Resources Code, Division. 13, Chapter 3, Section 21000 et seq.) in accordance with the California Water Code Section 13389.

33. The SDRWQCB has notified the copermittees and all known interested parties of its intent to renew an NPDES permit for the existing discharge of storm water and urban runoff.

34. The SDRWQCB has, at a public meeting on August 10, 1995, held, or provided an opportunity for, a public hearing, and heard and considered all comments pertaining to the terms and conditions of this Order.

**IT IS HEREBY ORDERED** that the copermittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations adopted thereunder, shall each comply with the following:

## A. PROHIBITIONS

1. Any discharge to a storm water conveyance system that is not composed entirely of "storm water" is prohibited unless authorized by the SDRWQCB. The federal regulations, 40 CFR 122.26(b)(13), define storm water as runoff, snow melt runoff, and surface runoff and drainage. An illicit discharge is defined in 40 CFR 122.26 (b)(2) as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to an NPDES permit and discharges resulting from fire fighting activities. [Section 122.26 amended at FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

2. The discharge of storm water to waters of the United States containing pollutants which have not been reduced to the maximum extent practicable is prohibited.

3. The unauthorized discharge of treated or untreated sewage to waters of the state or to a storm water conveyance system is prohibited.

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4. The discharge of pollutants, or dredged or fill material, to waters of the United States, except as authorized by an NPDES permit or a dredged or fill material permit (subject to the exemption described in California Water Code §13376), is prohibited.

5. The discharge of waste to waters of the state in a manner causing, or threatening to cause, a condition of pollution, contamination, or nuisance as defined in California Water Code Section 13050, is prohibited.

6. The dumping, deposition, or discharge of waste (e.g., oil, rubbish, refuse) directly into waters of the state, or adjacent to such waters in any manner which may permit its being transported into the waters, is prohibited unless authorized by the SDRWQCB.

7. The discharge of treated or untreated waste to lakes or reservoirs used for municipal water supply, or to inland surface waters tributary thereto, is prohibited.

8. The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited.

9. The discharge of any radiological, chemical, or biological warfare agent into waters of the state is prohibited.

10. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in waters of the state or which unreasonably affect, or threaten to affect, beneficial uses of such waters, is prohibited.

B. **DISCHARGE SPECIFICATIONS – NON-STORM WATER**

1. Each copermittee shall forthwith effectively prohibit non-storm water discharges into its storm water conveyance systems unless such discharges are authorized by a separate NPDES permit.

2. Copermittees may, but need not, prohibit a non-storm water discharge that is currently authorized under a separate NPDES permit.

3. Copermittees may, but need not, prohibit the following classes of non-storm water discharges. If the copermitee proposes not to prohibit any of the following classes of non-storm water discharges, the copermitee must first comply with the requirements of section B.4. below to the satisfaction of the SDRWQCB Executive Officer.

   a. water line flushing;
   b. landscape irrigation;
   c. diverted stream flows;
   d. rising ground waters;

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e. uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to storm water conveyance systems;
f. uncontaminated pumped ground water;
g. discharges from potable water sources;
h. foundation drains;
i. air conditioning condensation;
j. irrigation water springs;
k. water from crawl space pumps;
l. footing drains;
m. lawn watering;
n. individual residential car washing;
o. flows from riparian habitats and wetlands;
p. dechlorinated swimming pool discharges; and
q. street wash water.

4. Each copermittee shall submit the following information to the SDRWQCB for each non-storm water discharge class in section B.3. above which the copermittee proposes not to prohibit:

a. identification of the non-storm water discharge class listed in section B.3. above which the copermitee proposes not to prohibit;

b. identification of the BMPs which the copermitee will require to prevent or reduce pollutant discharges from the proposed non-prohibited class of non-storm water discharges;

c. a monitoring program to access the volume, concentration and types of pollutants discharged as a result of the proposed non-prohibited class of non-storm water discharge; and

d. a program to document and track compliance with the BMPs required for the non-prohibited class of non-storm water discharges.

5. Each copermittee shall prohibit, on a case by case basis, any individual non-storm water discharge listed in section B.3. above (or any class of non-storm water discharges listed above) that is determined by the copermittee to be a source of pollutants to waters of the United States.

6. Discharges or flows from emergency fire fighting activities shall be prohibited only when such flows are determined by the copermittee to be significant sources of pollutants to waters of the United States.

C. DISCHARGE SPECIFICATIONS -- STORM WATER

1. Each copermittee shall forthwith reduce the discharge of pollutants to its storm water conveyance systems to the maximum extent practicable.

2. Copermittees shall reduce pollutants to the maximum extent practicable through implementation of the Comprehensive Storm Water and Urban Runoff Management Program described in section E.

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D. **RECEIVING WATER LIMITATIONS**

The discharge of storm water and non storm water (subject to the limitations described in section B. above) shall not cause or contribute to a violation of any applicable receiving water quality objective contained in the Basin Plan or any SWRCB water quality control plan or policy.

E. **COMPREHENSIVE STORM WATER AND URBAN RUNOFF MANAGEMENT PROGRAM**

1. Each copermittee shall effectively implement a Comprehensive Storm Water and Urban Runoff Management Program to achieve compliance with the Prohibitions (section A.), Discharge Specifications (sections B. and C.), and Receiving Water Limitations (section D.) of this Order.

2. The Comprehensive Storm Water and Urban Runoff Management Program shall contain the components listed below and described in sections F. through K. of this Order.

   a. Legal authority (section F.);
   b. Illicit Connection / Illegal Discharge Detection Program (section G.);
   c. Best Management Practices Program (section H.)
      (1) Existing Minimum Best Management Practices Program
      (2) Municipal Best Management Practices Program
      (3) Construction Best Management Practices Program
      (4) Commercial Best Management Practices Program
      (5) Industrial Best Management Practices Program;
   d. Wet Weather Monitoring and Reporting Program (section I.);
   e. Assessment of Management Program Effectiveness (section J.); and
   f. Fiscal Analysis (section K.).

3. Each copermittee shall fully implement each component of the Comprehensive Storm Water and Urban Runoff Management Program as expeditiously as possible, but in no event later than the deadline dates specified in sections F. through K. of this Order.

F. **LEGAL AUTHORITY**

1. Pursuant to 40 CFR 122.26(d)(2)(i)(A-F), each copermittee shall establish and maintain adequate legal authority through ordinance, statute, permit, contract or other means to control discharges to and from those portions of the storm water conveyance system over which it has jurisdiction. This authority must, at a minimum, authorize the copermittee to:

   a. Control the discharge of storm water from industrial (including construction) sites to the copermittee's storm water conveyance system;

   b. Prohibit illicit discharges into the copermittees storm water conveyance system in accordance with sections A., B., C., D., and E. of this Order;

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c. Control spills, dumping, and disposal of materials other than storm water into the copermittees storm water conveyance system;

d. Control through interagency agreements among copermittees the contribution of pollutants from one portion of the municipal system to another portion of the municipal system;

e. Require compliance with conditions in ordinances, permits, contracts or orders; and

f. Carry out all inspection, surveillance and monitoring necessary to determine compliance and noncompliance with the applicable conditions of this Order, including the prohibition on illicit discharges in Discharge Specifications - Non-Storm Water (section B.) of this Order.

2. The Cities of Carlsbad, Oceanside, and Santee shall, by **September 10, 1995**, submit a report to the SDRWQCB indicating that legal authority has been obtained to implement and enforce each of the key regulatory requirements contained in 40 CFR 122.26(d)(2)(i)(A-F) and summarized in F.1. above.

3. Each copermittee shall, by **December 15, 1995**, provide to the SDRWQCB a statement certified by its chief legal counsel that the copermittee has adequate legal authority to implement and enforce each of the key regulatory requirements contained in 40 CFR 122.26(d)(2)(i)(A-F) and summarized in F.1. above. The copermittee shall develop and submit a matrix that compares, in a side by side format, the regulatory requirements in 40 CFR 122.26(d)(2)(i)(A-F) to the copermittee's legal authority. Furthermore, the matrix shall also illustrate where the authority to mandate compliance is vested. In order to support the assertion of adequate legal authority, the copermittee shall include the complete text of the applicable storm water, grading, or other ordinances. The copermittee shall also provide a specific explanation of why and how the language of the storm water and grading ordinance or other authority meets the requirements of 40 CFR 122.26(d)(2)(i)(A-F). The copermittee shall indicate to whom the ordinance applies and how it will operate to control, prevent or stop discharges that violate the terms and conditions of this Order.

## G. ILLICIT CONNECTION AND ILLEGAL DISCHARGE DETECTION PROGRAM

The purpose of the Illicit Connection and Illegal Discharge (IC/ID) Detection Program is to detect and eliminate illicit connections and illegal discharges (IC/ID) to the storm water conveyance system. The IC/ID Detection Program consists of the following three major components/activities:

a. Detection of IC/IDs;
b. Followup investigation of each IC/ID; and
c. Elimination of each IC/ID.

1. Each copermittee shall forthwith, in conjunction with its local ordinance, implement the IC/ID Detection Program described below to comply with sections A., B., C., D., and E. of this Order.

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2. Each copermittee shall implement each component of the IC/ID Detection Program in accordance with sections G.3 - G.6. below.

3. **Detection of IC/IDS**

Each copermittee shall, at a minimum, detect illicit connections and illegal discharges by way of (1) dry weather field screening; and the (2) public complaint and information hotline as described in Attachment A.

4. **Followup Investigation of IC/IDs**

Each copermittee shall conduct followup investigations of every IC/ID detected (regardless of means of detection) as follows:

a. Each copermittee shall, by **December 15, 1995**, submit to the SDRWQCB written followup procedures to investigate and confirm the source of each IC/ID. Followup procedures may include, but are not limited to, further field screening (observations and field analyses), collection and laboratory analysis of samples (upstream and downstream), smoke or dye tests, and video taping with a remote control camera.

b. Each copermittee shall, as expeditiously as possible, conduct followup investigations to identify the source of each IC/ID detected by any means.

c. Each copermittee shall, by **December 15, 1995**, submit to the SDRWQCB written procedures for documenting the findings of each investigation, for making recommendations, and setting projected time schedules to eliminate each IC/ID. The procedures should include notification to the complainant of the findings and subsequent planned actions.

5. **Elimination of IC/IDs**

Each copermittee shall eliminate each IC/ID using its legal authority as follows:

a. Each copermittee shall establish and submit to the SDRWQCB, by **December 15, 1995**, written procedures to eliminate IC/IDs by means of a gradually escalating level of enforcement (e.g., flyers, letters, notices of violation, monetary penalties, referral to County/City District Attorney). The failure of a responsible party to achieve compliance with an initial enforcement action should result in the prompt escalation to a higher level of enforcement; and

b. Each copermittee shall eliminate all IC/ID's as expeditiously as possible but in no event later than **August 10, 1998.**

H. BEST MANAGEMENT PRACTICES PROGRAMS

The purpose of each of the following five BMP Programs is to reduce pollutants in storm water discharges to the maximum extent practicable in compliance with the Prohibitions

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(section A.), Discharge Specifications (sections B. and C.), and Receiving Water Limitations (section D.) of this Order.

1. **Existing Minimum Best Management Practices Program**

   a. Each copermittee shall continue to effectively implement its existing BMP programs for municipal, construction, commercial, and industrial runoff sources. These existing programs must include, at a minimum, the BMPs described in Attachment B of this Order.

   b. Each copermittee shall, by **December 15, 1995**, submit a report to the SDRWQCB describing the implementation status of its current BMP programs for municipal, construction, commercial and industrial sources.

2. **Municipal Best Management Practices Program**

   The purpose of the Municipal Best Management Practices Program is to reduce pollutants in storm water runoff from municipal activities, facilities and land uses.

   The Municipal Best Management Practices Program shall consist of the following components and activities:

   (1) Land Use Planning, Management and Zoning;
   (2) Targeted Municipal Pollutant Sources;
   (3) BMPs Required For Municipal Land Uses;
   (4) Education of Municipal Departments and Employees;
   (5) Education of the Public;
   (6) Copermittee Implementation of Municipal Facility Storm Water Pollution Prevention Plan (SWPPPs);
   (7) Copermittee Inspections of Municipal Facilities; and
   (8) Copermittee Enforcement at Municipal Facilities.

   a. Each copermittee shall submit to the SDRWQCB by **August 10, 1996**, a Municipal Best Management Practices Program in accordance with sections H.2.c. - H.2.j. to achieve compliance with sections A., B., C., D., and E. of this Order.

   b. Each copermittee shall implement the Municipal Best Management Practices Program in accordance with sections H.2.c. - H.2.j. no later than **November 10, 1996**, unless otherwise directed by the SDRWQCB Executive Officer.

   c. <u>Land Use Planning, Management And Zoning</u>

      Land use planning, management, and zoning presents an important opportunity to reduce pollutants in storm water runoff by integrating water quality concerns into the development and redevelopment planning process. It is applicable to all types of land use. The objective is to guide decisions regarding existing and future uses of land to protect water quality. This component shall include measures to:

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(1) Direct heavy development away from environmentally sensitive areas where possible;
(2) Establish design criteria and performance standards for new development and redevelopment such as buffer zones, open space preservation, limits on impervious surfaces and erosion and sediment control;
(3) Adopt local codes and ordinances to protect storm water quality; and
(4) Approve storm water management plans for new development.

d. Targeted Municipal Pollutant Sources

Each copermittee shall, at a minimum, target the following municipal sources:

(1) New development and redevelopment areas;
(2) Commercial and residential land use areas;
(3) Public streets, roads and highways under its jurisdiction;
(4) Flood control management projects;
(5) Landfills and sewage treatment plants;
(6) Municipal Corporate Yards; and
(7) Pesticides, herbicides and fertilizers at public parks, golf courses, landscaping around public schools, cemeteries and other public right-of-ways.

e. Municipal BMPs Required For Land Uses

Each copermittee shall describe the BMPs that it will implement to reduce pollutants in runoff from the targeted municipal sources described in H.2.d. above. Each copermittee shall include pollution prevention, source control, and treatment control BMPs as appropriate. Pollution prevention shall always be emphasized. Examples of each BMP category are described below:

(1) Pollution Prevention (non-structural) measures reduce or eliminate the generation of pollutants, or waste. The most important municipal pollution prevention measure is land use planning.

(2) Source control BMPs (non-structural) control pollutants once they are generated. Examples include:

a. public education;
b. household hazardous waste collection;
c. used oil recycling;
d. vehicle use reduction (congestion management); material storage controls;
f. catch basin cleaning;
g. safer alternative products;
h. leaking sanitary sewer control;
i. prevention of sewage spills into storm drains

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j. roadway/bridge maintenance;
k. illicit connection detection and elimination;
l. illegal dumping detection and elimination;
m. storm channel maintenance;
n. detention/infiltration device maintenance;
o. leak and spill control;
p. street cleaning;
q. vegetation controls;
r. pesticide, herbicide and fertilizer use controls; and
s. good housekeeping practices.

(3) Treatment control measures (structural) remove pollutants from storm water runoff. Examples include constructed wetlands, detention basins, biofilters, infiltration, oil water separators and media filtration devices.

f. Education Of Municipal Departments And Employees

Each copermittee shall develop and implement an educational program for all municipal departments and employees. The objective of the education program is to inform municipal departments and employees about pollution prevention, pollution sources, pollution controls, and water quality impacts. This program shall describe and schedule educational products and activities such as brochures and workshops. Education outreach shall target high priority municipal sources such as sewage spills entering storm drains, disposal of street sweeping or other waste, and municipal corporate yards.

g. Education Of The Public

Each copermittee shall implement a public education program. The objective of the education program is to inform the public about pollution prevention, sources, controls, and water quality impacts from storm water and urban runoff. This program shall describe and schedule educational products and activities such as brochures and workshops. Education outreach shall target political leaders, the general public, commercial and industrial businesses, trade associations, developers, contractors and the media.

(1) The copermittees shall establish a Public Education Subcommittee which reports to the copermittee management committee (as described in the MOU) made up of at least five copermittees and a representative from each of the following eight groups: other municipal departments, construction, media, community, schools, commercial business, industrial business, and decision makers/elected officials.

(2) The Public Education Subcommittee shall establish a public education program addressing municipal, residential, commercial, industrial and construction sources of storm water pollutants.

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(Residential includes all residents, both owners and renters, as well as managers of multifamily dwellings and permanent and temporary residents of boats in marinas.) The goal of the subcommittee is to develop cooperative watershed based public education programs emphasizing pollution prevention. Public education programs should be communicated in both English and Spanish.

h. Copermittee Implementation Of Municipal Facility SWPPPs.

Each copermittee shall implement a site specific Storm Water Pollution Prevention Plans (SWPPPs) at each industrial facility owned by the municipality, including all corporate yards.

i. Copermittee Inspections Of Municipal Facilities

Each copermittee shall inspect each industrial facility owned by the municipality, including all corporate yards. Each facility should be inspected for compliance with its SWPPP and the storm water ordinance. This component shall describe inspection priorities, frequency, procedures and documentation.

j. Copermittee Enforcement At Municipal Facilities

Each copermittee shall enforce its local storm water ordinance at all municipal facilities and activities. This component shall describe enforcement priorities, penalties and other remedies to deter infractions and correct violations.

3. CONSTRUCTION BEST MANAGEMENT PRACTICES PROGRAM

The purpose of the Construction Best Management Practices Program is to (1) reduce pollutants in storm water runoff from construction sites and activities, and (2) maintain pre-construction hydrologic conditions. The Construction Best Management Practices Program shall consist of the following major components and activities:

(1) Site Planning;
(2) BMPs Required For Construction Sites;
(3) Education for Construction Site Owners and Operators;
(4) Copermittee Review of Construction Site SWPPPs;
(5) Copermittee Inspections of Construction Sites; and
(6) Copermittee Enforcement at Construction Sites.

a. Each copermittee shall submit to the SDRWQCB by **August 10, 1996**, a Construction Best Management Practices Program in accordance with sections H.3.c. - H.3.j. to achieve compliance with sections A., B., C., D, and E. of this Order.

b. Each copermittee shall implement the Construction Best Management Practices Program in accordance with sections G.3.c. - G.3.j. no later than

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November 10, 1996, unless otherwise directed by the SDRWQCB Executive Officer.

c. Site Planning

The objective of site planning is for the copermittee and the construction site owner to address potential water quality problems early in the site design process. Each copermittee shall require the following:

(1) Phased grading and development to minimize exposure and to coincide with seasonal dry periods;
(2) Site stabilization and revegetation as early as possible; and
(3) Review and approval of engineering plans and issuance of local permits.

d. BMPS Required For Construction Sites

Each copermittee shall describe the BMPs that it will require construction site owner/operator to implement to reduce pollutants in runoff. Each copermittee shall include pollution prevention, source control, and treatment control best management practices as appropriate. Pollution prevention shall always be emphasized. Examples of each BMP category are described below:

(1) Pollution Prevention (non-structural) measures reduce or eliminate the generation of pollutants or waste. At construction sites, pollution prevention primarily means erosion prevention. Examples include revegetation, matting, mulching, or other soil stabilization processes.

(2) Source control BMPs (non-structural) control pollutants once they are generated. At construction sites, source controls are primarily sediment controls. Examples include sand bags, hay bales, check dams, riprap, storm drain inlet protection, and silt fences.

(3) Treatment control BMPs (structural) remove pollutants, such as sediment, from storm water runoff. Examples include retention ponds, sediment basins, and filtration devices.

e. Each copermittee shall require maintenance and replacement of all source and treatment control BMPs.

f. Each copermittee shall require appropriate post construction BMPs. Each copermittee shall require maintenance and replacement of all post construction BMPs.

g. Each copermittee is responsible for storm water runoff from all construction sites within its jurisdiction, including those which are currently regulated under the statewide NPDES General Construction Storm Water Permit and those which are not subject to the general permit at this time. This includes all construction sites, regardless of size (i.e., sites less than five acres).

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h. Education for Construction Site Owners and Operators

Each copermittee shall implement an educational program for construction site owners and operators. The objective of the education program is to inform construction site owners and operators about pollution prevention ( i.e., erosion prevention), pollution sources, pollution controls, and water quality impacts. This program shall describe and schedule educational products and activities such as brochures and workshops. Education outreach shall target high priority construction sites.

i. Copermittee Review of Construction Site SWPPPS.

Each copermittee shall review construction site Storm Water Pollution Prevention Plans (SWPPPs) for compliance with its local grading and storm water ordinances.

j. Copermittee Inspections of Construction Sites

Each copermittee shall inspect construction sites for compliance with its grading ordinance and permits. This component should describe inspection priorities, frequency, procedures, and documentation. Each copermittee shall inspect all construction sites for proper maintenance and replacement of all source and treatment controls.

k. Copermittee Enforcement at Construction Sites

Each copermittee shall enforce its local storm water ordinance, grading ordinance and permits at construction sites. This component shall describe enforcement priorities, penalties and other remedies to deter infractions and correct violations.

4. **COMMERCIAL BEST MANAGEMENT PRACTICES PROGRAM**

The purpose of the Commercial Best Management Practices Program is to reduce pollutants in storm water runoff from commercial sites. The Commercial Best Management Practices Program shall consist of the following major components and activities:

(1) Prioritization of Commercial Categories;
(2) BMPs Required For Commercial Sites;
(3) Education for Commercial Site Owners and Operators;
(4) Copermittee Inspections of Commercial Sites; and
(5) Copermittee Enforcement at Commercial Sites.

a. Each copermittee shall submit to the SDRWQCB by **August 10, 1997**, a Commercial Best Management Practices Program in accordance with sections H.4.c. - H.4.g., to achieve compliance with sections A., B., C., D., and E. of this Order.

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b. Each copermittee shall implement the Commercial Best Management Practices Program in accordance with sections H.4.c. - H.4.g., no later than **November 10, 1997**, unless otherwise directed by the SDRWQCB Executive Officer.

c. Prioritization of Commercial Categories

Each copermittee shall identify all commercial categories and prioritize the categories based on their threat to water quality.

(1) In evaluating threat to water quality each copermittee shall consider (1) type of commercial activity; (2) materials used in the commercial activity and the likelihood that storm water discharges will be contaminated; (3) non-storm water discharges; (4) proximity to water bodies; and (5) sensitivity of water bodies.

(2) At a minimum the priority categories shall include gas stations, vehicle repair and maintenance shops, car dealerships, commercial car washes, dry cleaners, cement mixing businesses, concrete cutting businesses, and restaurants.

d. BMPs Required for Commercial Sites

Each copermittee shall describe the BMPs that it will require commercial sites to implement to reduce pollutants in runoff. Each copermittee shall include pollution prevention, source control, and treatment control BMPs as appropriate. Pollution prevention shall always be emphasized. Examples of each BMP category are described below:

(1) Pollution Prevention measures (non-structural) reduce or eliminate the generation of pollutants or waste. Examples include: substitution of nontoxic materials for toxic; improvements in operation and maintenance efficiency; recycling within production process; and replacement or upgrade of production equipment and technologies;

(2) Source control BMPs (non-structural) control pollutants once they are generated by preventing the contact of pollutants with storm water or preventing the discharge of pollutants. Examples include berms, covers, and good housekeeping practices such as prompt cleanup of spills; and

(3) Treatment control BMPs (structural) remove pollutants from storm runoff and include on-site pretreatment, filtration, and oil water separators.

e. Education for Commercial Site Owners and Operators

Each copermittee shall implement an educational program for commercial site owners and operators. The objective of the education component is to

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inform commercial site owners and operators, particularly those in high priority commercial categories, about pollution prevention, pollution sources, controls, and water quality impacts. This component shall describe and schedule educational products and activities such as brochures and workshops. Education outreach shall target high priority commercial sites and activities.

f. Copermittee Inspections of Commercial Sites

Each copermittee shall develop a program to inspect high priority categories of commercial sites for compliance with its storm water ordinance. This component shall describe inspection priorities, frequency, procedures, and documentation.

g. Copermittee Enforcement of Commercial Sites

Each copermittee shall enforce its storm water ordinance at commercial sites. This component shall describe enforcement priorities, penalties and other remedies to deter infractions and correct violations.

5. **INDUSTRIAL BEST MANAGEMENT PRACTICES PROGRAM**

The purpose of the Industrial Best Management Practices Program is to reduce pollutants in storm water runoff from industrial sites. The Industrial Best Management Practices Program shall consist of the following major components and activities:

(1) Prioritization of Industrial Categories;
(2) BMPs Required for Industrial Sites;
(3) Education for Industrial Site Owners and Operators;
(4) Copermittee Inspections of Industrial Sites; and
(5) Copermittee Enforcement at Industrial Sites.

a. Each copermittee shall submit to the SDRWQCB by **February 10, 1998**, a Industrial Best Management Practices Program in accordance with sections H.5.c. - H.5.h. to achieve compliance with sections A., B., C., D., and E. of this Order.

b. Each copermittee shall implement the Industrial Best Management Practices Program in accordance with sections H.5.c. - H.5.h. no later than **May 10, 1998**, unless otherwise directed by the SDRWQCB Executive Officer.

c. Prioritization of Industrial Categories

Each copermittee shall identify all industrial categories and prioritize the categories based on their threat to water quality.

(1) In evaluating threat to water quality each copermittee shall consider (1) type of industrial activity including SIC Code; (2) materials used in industrial processes and the potential for storm water

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contamination; (3) non-storm water discharges; (4) proximity to water bodies; and (5) sensitivity of water bodies.

(2) At a minimum, the priority categories shall include hazardous waste treatment, disposal or recovery facilities; industries subject to effluent limitations under 40 CFR Subchapter N; industries subject to SARA Title III; shipyards; heavy manufacturing facilities (e.g. aircraft); oil and gas/mining facilities; landfills; recycling facilities; electric power generating facilities; transportation facilities; light manufacturing facilities; industrial sewage treatment plants; and military bases.

(3) Each copermittee is responsible for storm water runoff from all industrial sites within its jurisdiction, including those which are currently regulated under the statewide NPDES General Industrial Storm Water Permit and those which are not subject to the general permit at this time.

d. BMPS Required for Industrial Sites

Each copermittee shall describe the BMPs that it will require industrial sites to implement to reduce pollutants in runoff. Each copermittee shall include pollution prevention, source control, and treatment control BMPs as appropriate. Pollution prevention shall be emphasized. Examples of each BMP category are described below:

(1) Pollution Prevention measures (non-structural) reduce or eliminate the generation of pollutants or waste. Examples include: substitution of nontoxic materials for toxic; improvements in operation and maintenance efficiency; recycling within production process; and replacement or upgrade of production equipment and technologies;

(2) Source control BMPs (non-structural) control pollutants once they are generated by preventing the contact of pollutants with storm water or preventing discharge of pollutants. Examples include: . berms, covers, and good housekeeping practices such as prompt cleanup of spills; and

(3) Treatment control BMPs (structural) remove pollutants from storm water runoff and include on-site pretreatment, filtration and oil-water separators.

e. Education for Industrial Site Owners and Operators

Each copermittee shall implement an educational program for industrial site owners and operators. The objective of the education component is to inform industrial site owners and operators about pollution prevention, pollution sources, pollution controls, and water quality impacts. This component shall describe and schedule educational products and activities

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such as brochures and workshops. Education outreach shall target high priority industrial sites and activities.

f. Copermittee Review of Industrial SWPPPs

Each copermittee shall review industrial Storm Water Pollution Prevention Plans (SWPPPs) for compliance with its local storm water ordinance.

g. Copermittee Inspection of Industrial Sites

Each copermittee shall develop a program to inspect high priority categories of industrial sites for compliance with its local storm water ordinance. This component shall describe inspection priorities, frequency, procedures, and documentation.

h. Copermittee Enforcement at Industrial Sites

Each copermittee shall enforce its storm water ordinance at industrial sites. This component shall describe enforcement priorities, penalties and other remedies to deter infractions and correct violations.

## I. WET WEATHER MONITORING AND REPORTING PROGRAM

The purpose of the Wet Weather Monitoring Program is to characterize storm water pollutant loading and concentrations, including long term trends, during the wet weather season. Each copermittee shall, beginning with the 1995-96 wet weather season, conduct wet weather monitoring and reporting in accordance with Attachment C of this Order.

## J. ASSESSMENT OF MANAGEMENT PROGRAM EFFECTIVENESS

Each copermitee shall, by **January 31, 1996**, submit a report to the SDRWQCB describing estimated reductions in storm water pollutant loads expected as a result of the implementation of the Comprehensive Storm Water and Urban Runoff Management Program. Estimates of storm water pollutant load reductions shall be based on direct and indirect measurements of the effectiveness of the Comprehensive Storm Water and Urban Runoff Management Program. The report shall identify the direct and indirect measurements which will be used to track the long term effectiveness of the Comprehensive Storm Water and Urban Runoff Management Program.

1. Direct measurements of program effectiveness may include:

   a. Removal efficiencies of BMPs that control storm water quality;
   b. Reductions in the volume of storm water discharged;
   c. Reductions in the event mean concentrations; or
   d. Reductions in seasonal pollutant loadings.

2. Indirect measurements of program effectiveness may include changes in:

   a. Level of enforcement activity;
   b. Public awareness;

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c. Number of reports of illicit discharges or illegal dumping;
d. Gallons of used oil recycled;
e. Amount of household hazardous waste collected;
f. Number of spill cleanups;
g. Number of storm drains stenciled;
h. Acres of open space; and
i. Number of construction and erosion and sediment control plans submitted and approved.

## K. FISCAL ANALYSIS

Each copermittee shall develop and submit to the SDRWQCB by **January 31, 1996** a fiscal analysis demonstrating that sufficient financial resources have been appropriated to implement the conditions of this Order. This Order will be effective on August 10, 1995 and expires on August 10, 2000. For each of the five fiscal years to be covered by this Order, the fiscal analysis must describe the necessary capital and operation and maintenance expenditures necessary to accomplish the activities required under this Order. The analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures including legal restrictions on the use of such funds. The fiscal analysis shall contain the following information:

1. Identification of the major tasks for each component required under this Order;
2. Development of a schedule outlining when each of the tasks for each component will be undertaken;
3. An estimate of the personnel and capital expenses necessary to accomplish each task for each component;
4. An estimate of other non-capital costs to implement the tasks for each component;
5. Identification of funding sources to cover total expenditures (e.g. general revenues, storm water utilities, plan review fees, permit fees, industrial/commercial user fees, special assessment district funds, special assessments on property tax bills and revenue bonds);
6. A comparison of the funding sources with the funding needs; and
7. Identification of alternative funding sources if adequate funding is not available.

## L. PROVISIONS

1. Duty To Comply [40 CFR 122.26(a)(3)(vi)

   Each copermitees need only comply with conditions of this Order relating to (1) discharges from storm water conveyance systems for which they are operators; and (2) the Wet Weather Monitoring and Reporting Program described in Attachment C of this Order to be conducted jointly by all copermittees pursuant to the copermittees Memorandum of Understanding.

2. Duty To Comply [40 CFR 122.41(a)]

   The discharger must comply with all conditions of this Order. Any permit noncompliance constitutes a violation of the Clean Water Act and the California Water Code and is grounds for enforcement action; for permit termination,

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revocation and reissuance, or modification; or denial of a report of waste discharge submitted in application for permit modification or reissuance.

3. Duty To Comply [40 CFR 122.41(a)(1)]

The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Ac for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this Order has not yet been modified to incorporate the requirement.

4. Need to Halt or Reduce Activity Not a Defense [40 CFR 122.41(c)]

It shall not be a defense for the discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. Upon reduction, loss, or failure of a treatment facility, the discharger shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of a treatment facility fails, is reduced, or is lost.

5. Duty to Mitigate [40 CFR 122.41(d)]

The discharger shall take all reasonable steps to minimize or prevent any discharge or prevent any discharge or sludge use or disposal in violation of this Order which has a reasonable likelihood of adversely affecting human health or the environment.

6. Proper Operation and Maintenance [40 CFR 122.41(e)]

The discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the discharger only when the operation is necessary to achieve compliance with the conditions of this Order.

7. Permit Actions [40 CFR 122.41(f)] [California Water Code § 13381]

This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this Order;

b. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts;

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c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; or

d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

The filing of a request by the discharger for modification, revocation and reissuance, or termination of this Order, or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

8. Property Rights [40 CFR 122.41(g)] [California Water Code §13263(g)]

This Order does not convey any property rights of any sort or any exclusive privilege. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the discharger from liabilities under federal, state, or local laws, nor create a vested right for the discharger to continue the waste discharge.

9. Inspection and Entry [40 CFR 122.41(i)] [California Water Code § 13267(c)]

The discharger shall allow the SDRWQCB, or an authorized SDRWQCB representative, or an authorized representative of the USEPA (including an authorized contractor acting as a representative of the SDRWQCB or USEPA), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and

d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the Clean Water Act or California Water Code, any substances or parameters at any location.

10. Bypass of Treatment Facilities [40 CFR 122.41(m)]

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

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(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not Exceeding Limitations

The discharger may allow any bypass to occur which does not cause effluent limitations of this Order or the concentrations of pollutants set forth in Ocean Plan Table A or Table B to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs c. and d. of this provision.

c. Notice

(1) Anticipated bypass. If the discharger knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass.

(2) Unanticipated bypass. The discharger shall submit notice of an unanticipated bypass as required in Reporting Requirement N.9.

d. Prohibition of Bypass

(1) Bypass is prohibited, and the SDRWQCB may take enforcement action against the discharger for bypass, unless:Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The discharger submitted notices as required under paragraph c. of this section.The SDRWQCB Executive Officer may approve an anticipated bypass, after considering its adverse effects, if the SDRWQCB Executive Officer determines that it will meet the three conditions listed above in paragraph d.(1) of this section.

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11. Upset [40 CFR 122.41(n)]

a. Definition

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based effluent limitations because of factors beyond the reasonable control of the discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an Upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph c. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions Necessary for a Demonstration of Upset

A discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the discharger can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The discharger submitted notice of the upset as required in Reporting Requirement N.9.(24 hour notice) of this Order; and

(4) The discharger complied with any remedial measures required under Provision L.5. of this Order.

d. Burden of Proof

In any enforcement proceeding the discharger seeking to establish the occurrence of an upset has the burden of proof.

12. Other Effluent Limitations and Standards [40 CFR 122.44(b)(1)]

If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Clean water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this Order, the SDRWQCB Executive Officer may institute proceedings under these regulations to modify or revoke and reissue the Order to conform to the toxic effluent standard or prohibition.

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13. The discharger shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncomplying discharge.

14. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.

15. The discharger shall comply with any interim effluent limitations as established by addendum, enforcement action, or revised waste discharge requirements which have been, or may be, adopted by this SDRWQCB.

## M. MONITORING REQUIREMENTS

1. Wet Weather Monitoring Annual Report

Pursuant to the Memorandum of Understanding, the copermitees shall jointly conduct the wet weather monitoring program described in Attachment C. of this Order. A single wet weather monitoring report shall be submitted by August 10 of each year.

2. Monitoring and Records [40 CFR 122.41(j)(1)]

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

3. Monitoring and Records [40 CFR 122.41(j)(2)] [California Water Code § 13383(a)]

The discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the SDRWQCB Executive Officer at any time.

4. Monitoring and Records [40 CFR 122.21(j)(3)]

Records of monitoring information shall include the information requested in Attachments A. and C. and the following:

a. The date, exact place, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

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5. Monitoring and Records [40 CFR 122.21(j)(4)]

Monitoring results must be conducted according to test procedures approved under 40 CFR part 136 unless other test procedures have been specified in the permit.

6. Monitoring and Records [40 CFR 122.21(j)(5)]

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

7. Monitoring and Records [40 CFR 122.41(k)(2)]

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

8. Monitoring Reports [40 CFR 122.41(l)(4)

Monitoring results shall be reported at the intervals specified elsewhere in this Order.

9. Monitoring Reports [40 CFR 122.41(l)(4)(ii)]

If the discharger monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR part 136, unless otherwise specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the reports requested by the SDRWQCB Executive Officer.

10. Monitoring Reports [40 CFR 122.41(l)(4)(iii)]

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the SDRWQCB Executive Officer in the permit.

N REPORTING REQUIREMENTS

1. **Memorandum of Understanding**

Each copermittee shall submit a signed and executed copy of the Memorandum of Understanding (MOU) to the SDRWQCB no later than **August 10, 1995.**

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2. **Annual Report** [40 CFR 122.42(c)]

Each copermittee must submit an annual report to the SDRWQCB Executive Officer by **August 10** of each year. The report shall include a detailed discussion on the status of implementing the Comprehensive Storm Water and Urban Runoff Management Program described in section E. through K. of this Order. The discussion shall address the following:

a. Non-Prohibited Non-Storm Water Discharges (section B.)

Provide a status report on each non-prohibited class of non-storm water discharges described in section B.3. containing the following information:

(1) identification of the non-storm water discharge class(es) ;

(2) identification of the BMPs which have been implemented to prevent or reduce pollutant discharges from the non-prohibited class of non-storm water discharges;

(3) the data results of the monitoring program to access the volume, concentration and types of pollutants discharged as a result of the proposed non-prohibited class of non-storm water discharge; and

(4) A summary describing the number and nature of enforcement actions, inspections, and public education related to these non-storm water discharge classes.

b. Legal Authority (section F.)

Provide confirmation of continuing adequate legal authority as required in Section F. of this Order.

c. Illicit Connection / Illegal Discharge Detection Program (section G.);

(1) Provide a status report on all IC/ID detection activities including:

(a) number of IC/IDs detected by field screening;summary of field screening data including a frequency distribution of data to identify stations at which elevated levels of pollutants are consistently found. (Field screening data report is due every January 31).; and
(b) number of IC/IDs reported by public hotline .

(2) Provide a status report on all IC/ID elimination activities

(a) including:number of IC/IDs eliminated;
(b) number of enforcement actions taken

d. Best Management Practices Program (section H.)

Provide a status report on the implementation of each of the following five BMP programs:

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(1) Existing Minimum Best Management Practices Program;
(2) Municipal Best Management Practices Program;
(3) Construction Best Management Practices Program;
(4) Commercial Best Management Practices Program; and
(5) Industrial Best Management Practices Program.

e. Assessment of Management Program Effectiveness (section J.);

Using direct and indirect measures selected as long term indicators of management program effectiveness, provide an assessment of overall reductions in storm water pollutant loads, occurring during the past year, attributable to implementation of the Comprehensive Storm Water and Urban Runoff Management Program. Provide a summary describing the number and nature of enforcement actions, inspections, public education programs, and identification of water quality improvements or degradation.

f. Fiscal Analysis (section K.).

Update the projected five year fiscal analysis required in section K. of this Order, if necessary. At a minimum documentation should be submitted demonstrating that sufficient financial resources have been appropriated for the upcoming fiscal year to implement the conditions of this Order. Also include a description of the annual expenditures for the previous fiscal year.

3. Duty to Reapply [40 CFR 122.41(b)]

This Order expires on August 10, 2000. If the discharger wishes to continue any activity regulated by this Order after the expiration date of this Order, the discharger must apply for and obtain new waste discharge requirements. The discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations not later than 180 days in advance of the expiration date of this Order as application for issuance of new waste discharge requirements.

4. Duty to Provide Information [40 CFR 122.41(h)]

The discharger shall furnish to the Executive Officer, SWRCB Executive Director, or USEPA, within a reasonable time, any information which the Executive Officer, SWRCB Executive Director, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order, or to determine compliance with this Order. The discharger shall also furnish to the SDRWQCB Executive Officer, SWRCB Executive Director, or USEPA, upon request, copies of records required to be kept by this Order.

5. Planned Changes [40 CFR 122.41(l)(1)]

The discharger shall give notice to the SDRWQCB Executive Officer as soon as possible of any planned physical alterations or additions to the permitted facility.

Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b);

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b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order, nor to notification requirements under 40 CFR 122.42(a)(l); or

c. The alteration or addition results in a significant change in the discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of conditions in this Order that are different from or absent in the existing Order, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

6. Anticipated Non-Compliance [40 CFR 122.41(l)(2)]

The discharger shall give advance notice to the Executive Officer of any planned changes in the permitted facility or activity which may result in noncompliance with the requirements of this Order.

7. Transfers [40 CFR 122.41(l)(3)]

This Order is not transferable to any person except after notice to the SDRWQCB Executive Officer. The SDRWQCB Executive Officer may require modification or revocation and reissuance of this Order to change the name of the discharger and

incorporate such other requirements as may be necessary under the Clean Water Act or the California Water Code in accordance with the following:

a. Transfers by Modification [40 CFR 122.61(a)]

Except as provided in paragraph b. of this reporting requirement, this Order may be transferred by the discharger to a new owner or operator only if this Order has been modified or revoked and reissued, or a minor modification made to identify the new discharger and incorporate such other requirements as may be necessary under the Clean Water Act or California Water Code.

b. Automatic Transfers [40 CFR 122.61(b)]

As an alternative to transfers under paragraph a. of this reporting requirement, any NPDES permit may be automatically transferred to a new discharger if:

(1) The current discharger notifies the SDRWQCB Executive Officer at least 30 days in advance of the proposed transfer date in paragraph b.(2) of this reporting requirement;

(2) The notice includes a written agreement between the existing and new dischargers containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

(3) The SDRWQCB Executive Officer does not notify the existing discharger and the proposed new discharger of his or her intent to modify or revoke and reissue the Order. A modification under this

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subparagraph may also be a minor modification under 40 CFR Part 122.63. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph b.(2) of this reporting requirement.

8. Compliance Schedules [40 CFR 122.41(l)(5)]

Written reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order shall be submitted to the SDRWQCB no later than 14 days following each schedule date.

9. Twenty-four Hour Reporting [40 CFR 122.41(l)(6)]

The discharger shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally to the SDRWQCB Executive Officer within 24 hours from the time the discharger becomes aware of the circumstances. A written description of any noncompliance shall be submitted to the SDRWQCB Executive Officer within five days of such an occurrence and contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The following shall be included as information which must be reported within 24 hours under this reporting requirement:

a. Any unanticipated bypass which exceeds any effluent limitation in this Order;

b. Any discharge of treated or untreated wastewater resulting from pipeline breaks, obstruction, surcharge or any other circumstance;

c. Any upset which exceeds any effluent limitation in this Order; and

d. Any violation of the prohibitions of this Order.

10. Other Non-Compliance [40 CFR 122.41(l)(7)]

The discharger shall report all instances of noncompliance not reported under Monitoring Requirements M.7., M.8., and M.9., and Reporting Requirements N.8. and N.9. of this Order, at the time monitoring reports are submitted. The reports shall contain the information listed in Reporting Requirement N.9. of this Order.

11. Other Information [40 CFR 122.41(l)(8)]

Where the discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge, or submitted incorrect information in a Report of Waste Discharge, or in any report to the SDRWQCB, it shall promptly submit such facts or information.

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12. Signatory Requirements [40 CFR 122.41(k)(1) and 40 CFR 122.22]

All applications, reports, or information submitted to the SDRWQCB Executive Officer shall be signed and certified.

a. All Reports of Waste Discharge shall be signed as follows:

(1) **For a corporation**: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or (b) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) **For a partnership or sole proprietorship**: by a general partner or the proprietor, respectively; or

(3) **For a municipality, State, Federal or other public agency:** by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (a) the chief executive officer of the agency; or (b) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA).

b. All reports required by this Order, and other information requested by the SDRWQCB Executive Officer shall be signed by a person described in paragraph a. of this reporting requirement, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph a. of this reporting requirement;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and,

(3) The written authorization is submitted to the SDRWQCB Executive Officer.

c. If an authorization under paragraph b. of this reporting requirement is no longer accurate because a different individual or position has responsibility

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for the overall operation of the facility, a new authorization satisfying the requirements of paragraph b. of this reporting requirement must be submitted to the SDRWQCB Executive Officer prior to or together with any reports, information, or applications to be signed by an authorized representative.

d. Any person signing a document under paragraph a. or b. of this reporting requirement shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

13. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this Order shall be available for public inspection at the offices of the California Regional Water Quality Control Board, San Diego Region. As required by the Clean Water Act, Reports of Waste Discharge, this Order, and effluent data shall not be considered confidential.

14. The discharger shall submit reports and provide notifications as required by this Order to the following:

a. Storm Water Unit
California Regional Water Quality Control Board
San Diego Region
9771 Clairemont Mesa Blvd, Suite B
San Diego, California 92124-1331

Phone - (619) 467-2952 or
Fax - (619) 571-6972

b. U.S. Environmental Protection Agency
Region IX
Permits Issuance Section (W-5-1)
75 Hawthorne Street
San Francisco, California 94105

15. Unless otherwise directed, the discharger shall submit three copies of each report required under this Order to the SDRWQCB and one copy to USEPA.

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O. NOTIFICATION

1. California Water Code Section 13263(g) states:

No discharge of waste into the waters of the state, whether or not such discharge is made pursuant to waste discharge requirements, shall create a vested right to continue such discharge. All discharges of waste into waters of the state are privileges, not rights.

2. Enforcement Provisions [40 CFR 122.41(a)(2)] [California Water Code Sections 13385 and 13387]

The Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any condition or limitation of this Order, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation of this Order, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any condition or limitation of this Order, and who knows at that time that he or she thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Clean Water Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

3. Except as provided in Provisions L.10. and L.11. nothing in this Order shall be construed to relieve the discharger from civil or criminal penalties for noncompliance.

4. Nothing in this Order shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the Clean Water Act.

5. Nothing in this Order shall be construed to preclude institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

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6. This Order shall become effective on August 10, 1995, provided the USEPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, this Order shall not become effective until such objection is withdrawn.

7. This Order supersedes Order No. 90-42 upon the effective date of this Order.

I, Arthur L. Coe, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on August 10, 1995.

ARTHUR L. COE
Executive Officer

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## END NOTES

1 **Storm water (wet weather flows)** consists of precipitation only and is defined in 40 CFR 122.26(b)(13) as storm water runoff, snow melt runoff, and surface runoff and drainage.

2 **Storm Water Conveyance System** - A discernable, confined, and discrete conveyance or system of conveyances, including but not limited to, natural channels, storm drains, gutters, ditches, pipes, tunnel, conduit, highways, and roads under the jurisdiction of a city, town, borough, county, parish, or other public body.

3 **Maximum extent practicable** - Maximum extent practicable is a performance standard for municipalities to reduce the discharge of pollutants from storm water conveyance systems as much as practicable. Under the MEP standard municipalities are required to employ the Best Management Practices that are technically and economically feasible. The selection of specific BMPs to achieve the MEP standard must be based upon the following factors:

a. The effectiveness of the BMP in reducing pollutants;
b. The degree of regulatory compliance with this Order and other federal, state and local laws and regulations;
c. The degree of public acceptance;
d. The cost of implementing the BMP in relationship to the pollution control benefit; and
e. The technical feasibility of the BMP.

4 **Best Management Practices** - Best Management Practices ( BMPs) are defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
NPDES NO. CAS 618033
AND
WASTE DISCHARGE REQUIREMENTS
ORDER NO. 95-47
FOR
THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On January 3, 1995, the Riverside County Flood Control and Water Conservation District (RCFC&WCD), in cooperation with the County of Riverside, and the incorporated cities of Beaumont, Corona, Calimesa, Canyon Lake, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as "permittees"), have jointly submitted a National Pollutant Discharge Elimination System (NPDES) Application No. CAS 618033 to renew their areawide NPDES permit for urban storm water run-off.

2. The 1987 amendments to the Clean Water Act required the United States Environmental Protection Agency (EPA) to develop permitting regulations for storm water discharges from municipal separate storm sewer systems serving a population of 100,000 or more and for storm water discharges associated with industrial activities, including construction sites. The EPA published proposed storm water regulations on December 7, 1988 and promulgated the final regulations on November 16, 1990. Prior to the EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Regional Board requested areawide NPDES permits for urban storm water run-off.

3. On July 13, 1990, the Regional Board adopted Order No. 90-104 for urban storm water run-off from urban areas in Riverside County within the Santa Ana Region. Order No. 90-104 expired on July 1, 1995. The Riverside County Flood Control and Water Conservation District was named as the principal permittee and Riverside County and the incorporated cities were named as the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the RCFC&WCD will continue as principal permittee and Riverside County and the incorporated cities will continue as co-permittees. However, the Regional Board, in exercising its enforcement discretion, will take action only against the individual permittee responsible for specific violations of this order, whenever possible.





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4. Order No. 90-104 required the permittees to develop and implement a drainage area management plan (DAMP); develop and implement storm water and receiving water monitoring plans; to eliminate illegal and illicit discharges to the storm drain systems; and, to enact the necessary legal authority to effectively prohibit illegal and illicit discharges. The overall goal of these requirements was to reduce pollutant loadings to surface waters from urban run-off to the maximum extent practicable.

5. The Report of Waste Discharge (the permit renewal application) included the following major components:

   a. A map of the drainage area and maps of existing storm drain facilities
   b. A summary of the storm water management program
   c. A Consolidated Program for Water Quality Monitoring
   d. A copy of a Proposed Storm Water/Urban Run-off Management and Discharge Control Ordinance
   e. A copy of the current Implementation Agreement
   f. A copy of each of the Interagency Agreements
   g. The Drainage Area Management Plan (DAMP)
   h. A copy of Proposed Riverside County Grading and Erosion Control Ordinance

   ~~These and other documents submitted as part of the Report of Waste Discharge are hereby made a part of this order.~~

6. Within the Santa Ana Region, the permittees serve a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The permitted area is shown on Appendix 1. This order regulates storm water run-off from areas under the jurisdiction of the permittees. The term storm water as used in this order includes storm water run-off, snow melt run-off, and surface run-off and drainage. The average annual rainfall in the urbanized area of Riverside County ranges from 10 to 12 inches. The permittees have jurisdiction over and/or maintenance responsibility for storm water conveyance systems within Riverside County. The storm drain system includes an estimated 200 miles of open and closed storm drains owned and operated by RCFC&WCD and an estimated 57 miles of open and closed storm drains owned and operated by the remaining permittees. The permittees have identified major outfalls( with a pipe diameter of 36 inches or greater or drainage areas draining 50 acres or more) and have submitted maps of existing storm drain facilities.

7. Approximately one quarter (1/4) of the entire Riverside County area drains into water bodies within the Santa Ana Region. Most of the urbanized areas of Riverside County lie within this Regional Board's jurisdiction. Storm water run-off from other portions of Riverside County is regulated by the San Diego and Colorado River Basin Regional Boards. The discharges consist of run-off from rainfall, snow melt, and surfacing ground water from various land use areas which either discharge directly to the Santa Ana River or to watercourses tributary to the Santa Ana River. Other major rivers in the area



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include the San Jacinto River and Temescal Creek. The San Jacinto Mountain areas drain into the San Jacinto River, which discharges into Lake Elsinore. Any overflow from Lake Elsinore is tributary to Temescal Creek, which flows into Reach 3 of the Santa Ana River in the Prado Flood Control Basin.

8. The Santa Ana River Basin is the major watershed within this Region. This watershed is divided into the upper and lower Santa Ana watersheds. The lower Santa Ana River Basin (downstream from Prado Dam) includes the Orange County drainage areas and the Upper Santa Ana River Basin includes the San Bernardino County and the Riverside County drainage areas. The San Bernardino County drainage areas are generally upstream of the Riverside County drainage areas.

9. The three county areas within this Region are regulated under three areawide permits for urban storm water run-off. These areawide NPDES permits are:

   a. Orange County, NPDES No. CA 8000180, Order No. 90-71 (upon renewal Order No. 95-52)

   b. Riverside County, NPDES No. CA 8000192, Order No. 90-104 (upon renewal Order No. 95-47)

   c. San Bernardino County, NPDES No. CA 8000200, Order No. 90-136 (upon renewal Order No. 95-53)

10. Run-off from the San Bernardino County drainage areas is generally conveyed to the Riverside County drainage areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Dam (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

11. In addition to the Regional Board, a number of other stakeholders are involved in the management of the water resources of the Region. These include, but are not limited to, the incorporated cities in the Region, publicly owned treatment works, the three counties, and the Santa Ana Watershed Project Authority and its member agencies. The entities listed in Appendix 2 are considered as potential dischargers of storm water to the Riverside County drainage areas. It is expected that these entities will also work cooperatively with the permittees to manage urban run-off. The Regional Board has the discretion and authority to require non-cooperating entities to participate in this areawide permit or to issue individual storm water permits, pursuant to 40 CFR 122.26(a). Cooperation and coordination among all the stakeholders are critical to optimize the use of limited resources and insure economical management of the watershed. Recognizing this fact, this order focusses on watershed management and seeks to integrate the



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programs of all the stakeholders, especially the three municipal storm water permit holders, within this watershed.

12. The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies are threatened or impaired in part due to urban storm water run-off and non-storm water flows from urbanized areas. Preliminary results from urban storm water monitoring programs within the Region indicate that major pollutants of concern in urban run-off are certain heavy metals, sediment, coliform bacteria, pesticides, and nutrients. Municipal storm water run-off is a source of pollutants to waters of the Region that may be causing or contributing to water quality impairment. It is recognized that instream or end-of-channel treatment of storm water is difficult and expensive. Therefore, it is critical to identify the pollutant sources and to develop management practices necessary to reduce pollutant loading to storm water. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events and point source discharges permitted by the Regional Board under individual permits.

13. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources of urban storm water pollution nationwide:

    a. Industrial sites where appropriate pollution control and best management practices (BMPs) are not implemented,

    b. Construction sites where erosion and siltation controls and BMPs are not implemented, and

    c. Urban run-off where the drainage area is not properly managed.

14. To address the industrial and construction sites, the State Water Resources Control Board (State Board) issued two statewide general NPDES permits: one for storm water run-off from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water run-off from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). Most industrial activities (some light industrial activities are exempt) and construction activities on five acres or more are required to get individual NPDES permits for storm water discharges, or get coverage under these statewide general permits by completing and filing a Notice of Intent (NOI) with the State Board.

15. In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water run-off from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order No. 94-7, NPDES NO. CA 8000336, for concentrated animal feeding operations, including dairies (General Dairy Permit). The Regional Board



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has issued and continues to issue individual storm water permits for certain industrial facilities within the Region.

16. One of the major components of these statewide permits, the Caltrans permit, and the General Dairy Permit is the requirement for the development and implementation of a storm water pollution prevention plan (SWPPP) for each facility.

17. The Regional Board is the enforcing authority for the two statewide general permits. However, in most cases, the industrial and construction sites discharge directly into storm drains and/or flood control facilities owned and operated by the permittees. These industrial and construction sites are also regulated under local laws and regulations. Therefore, a coordinated effort between the permittees and the Regional Board is critical to avoid duplicative storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

18. The permittees generally conduct inspections of industrial and commercial facilities and construction sites within their jurisdiction to determine compliance with local storm water ordinances and regulations as well as for other regulatory purposes. The permittees have established a subcommittee to develop an enforcement/compliance strategy for industrial and commercial facilities and construction sites. The permittees have agreed to notify Regional Board staff ~~of industrial and construction facilities which are not in compliance with the storm water regulations.~~ when conditions are observed during such inspections which result in a threat or potential threat to water quality. This also includes failure to obtain coverage under the general storm water permits.

19. The permittees have agreed not to issue grading and/or building permits without proof of compliance for projects subject to the General Permit for Storm Water Discharges Associated with Construction Activity.

20. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm drain system maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees will assess public agency activities and facilities for potential impact to storm water quality and develop and implement best management



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practices to reduce pollutant discharges from those activities/facilities found to be sources of pollutants. Non-storm water discharges from these facilities and/or activities also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III., Discharge Limitations, 3 of this order or are permitted by the Regional Board under an individual NPDES permit.

21. The major focus of storm water pollution prevention is the development and implementation of an appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to attain water quality consistent with the water quality objectives for the receiving waters in order to protect beneficial uses. The permittees developed and submitted a DAMP, which was approved on January 18, 1994.

22. The DAMP is a dynamic document and the permittees have implemented, or are in the process of implementing its various elements. The Regional Board also recognizes other drainage area management plans such as the Drainage Water Quality Plan for Lake Mathews (DWQPLM), which includes structural BMPs for pollution control. The RCFC & WCD and Riverside County are involved in the DWQPLM.

23. There is some contribution of pollutants in urban run-off from privately owned and operated facilities such as residences, businesses and commercial establishments and public and private institutions. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, and institutions. Therefore, the DAMP has a strong emphasis on public education.

24. The DAMP included 34 BMPs and a time schedule for implementation. These BMPs are organized into two components: BMPs for existing facilities and BMPs for new development. Both components include regulatory activities, public education programs and operations and maintenance activities.

25. In order to characterize storm water discharges, to identify problem areas, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. From 1990 through 1995, the principal permittee administered the monitoring program for the permittees which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The Report of Waste Discharge included a Consolidated Program for Water Quality Monitoring.

26. In order to make the best use of limited resources of all the permittees (including other municipal permittees in San Bernardino and Orange Counties), and to derive maximum benefit from the storm water management programs, future programs should consider and explore approaches and program elements common to all three counties. An integrated



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management program may be developed with the cooperation of all the stakeholders, including the permittees in the three counties, and the Regional Board. The Regional Board will coordinate the activities within the watershed and seek participation of the permittees

27. The permittees have agreed to revise the implementation agreement that was developed in 1990 as required under Order No. 90-104 to coordinate the activities of the principal and co-permittees.

28. Illegal dumping and illicit/illegal connections and discharges to the storm drains are contributors to storm water and other surface water contamination. Except for the City of Riverside, all the permittees have completed a reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains). The permittees are required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are required to develop a program to prohibit illegal/illicit connections to their storm drains and flood control facilities.

29. This order requires the permittees to continue to implement the BMPs listed in the DAMP and to effectively prohibit illegal and illicit discharges to the storm drain system. One of the major elements of the DAMP, the Storm Water/Urban Run-off Management and Discharge Controls Ordinance, was adopted by Riverside County on May 9, 1995. The purpose of this ordinance is to reduce pollutant discharges in storm water, and to regulate illicit connections and non-storm water discharges to the storm drain system.

30. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in planning procedures, in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc.

31. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Riverside County having programs/activities that have an impact on storm water quality (e.g., Fire Department, Department of Environmental Health, Planning Department, Building and Safety, Code Enforcement, etc.). As such, these organizations are expected to actively participate in implementing this areawide storm water program.

32. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, agricultural land, utilities and special districts, and Native American tribal lands. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.



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33. The permittees may petition the Regional Board to issue a NPDES permit to any discharger of non-storm water into storm drain systems that the permittees own or operate.

34. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region.

35. The requirements contained in this order are necessary to implement the Basin Plan.

36. In accordance with the Clean Water Act and its implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants to waters of the United States to the maximum extent practicable.

37. The legislative history and the preamble to the federal storm water regulations indicate that Congress and the U.S. EPA were aware of the difficulties in regulating urban storm water run-off solely through traditional end-of-pipe treatment. However, the U.S. EPA and the State Water Resources Control Board have determined that the NPDES permits for urban storm water run-off must contain effluent limitations based on water quality standards (beneficial uses and water quality objectives) The development and implementation of best management practices (BMPs), which will achieve compliance with applicable standards, are generally considered to be acceptable as effluent limitations. In accordance with Section 402 (p) of the Clean Water Act, this order requires the permittees to develop controls to reduce the discharge of pollutants to the maximum extent practicable. If urban storm water discharges cause an exceedance of the water quality standards in the receiving waters, the BMPs must be reevaluated, revised and implemented as appropriate to eliminate any exceedances of receiving water quality standards. Numeric and narrative water quality objectives are contained in the Basin Plan for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. Due to the high cost associated with monitoring, and due to the variability that exists in the current storm water monitoring efforts being conducted by the permittees and other municipal permittees in Orange and San Bernardino Counties under their municipal storm water permits, a tri-county monitoring program to develop and implement effective monitoring procedures and strategies will be considered.

38. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments



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to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Regional Board.

39. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

40. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

41. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

42. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

**IT IS HEREBY ORDERED** that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and the regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF THE PRINCIPAL PERMITTEE:

The principal permittee shall be responsible for managing the overall storm water program and shall:

1. Conduct water quality and hydrographic monitoring of the municipal separate drain system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop ~~uniform~~ criteria for inspections of the municipal separate storm drain systems.

3. Conduct inspections of the storm drain systems owned and operated by the RCFC&WCD.



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4. Implement management programs, monitoring programs, and related plans as required by this order.

5. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority within the scope of the Riverside County Flood Control and Water Conservation District Act, as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i).

6. Respond and/or arrange for responding to emergency situations such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or reduce the discharge of pollutants to the municipal separate storm drain systems and to waters of the United States.

7. Prepare and submit to the Executive Officer of the Regional Board, unified reports, plans, and programs necessary to comply with this order.

The activities of the principal permittee should include, but not limited to, the following:

8. Coordinate permit activities and participate in any committees/subcommittees formed to coordinate permit compliance activities.

9. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

10. Coordinate the implementation of areawide storm water quality management activities such as monitoring programs, public education, other pollution prevention measures, household hazardous waste collection, etc.

11. Gather and disseminate information on the progress of statewide municipal storm water programs and evaluate the information for potential use in the execution of this order.

12. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in reducing pollutant loadings to surface waters to the maximum extent practicable.

13. Coordinate activities pertaining to implementation of this order with the Regional Board.

14. Solicit and coordinate public input for any major proposed storm water management programs and implementation plans.



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15. Develop and implement mechanisms, performance standards, etc., to promote consistent implementation of BMPs among the permittees.

16. In conjunction with the co-permittees, implement the BMPs listed in the approved DAMP.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

Each co-permittee shall be responsible for managing the storm water program within its jurisdiction and shall:

1. Adopt the Grading and Erosion Control Ordinance or its equivalent, within 120 days of adoption of this order.

2. Conduct storm drain system inspections in accordance with the uniform criteria developed by the principal permittee.

3. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i).

4. Implement management programs, monitoring programs, and related plans as required by this order.

The co-permittees' activities should include, but not limited to, the following:

5. Administer the storm water and erosion control ordinances adopted pursuant to Item 1., above.

6. Conduct and coordinate with the principal permittee any surveys, monitoring and characterizations needed to identify the pollutant sources and drainage areas.

7. Review and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

8. Co-operate in committees and/or subcommittees formed by the principal permittee to address compliance with this order.

9. In conjunction with the principal permittee, implement the BMPs listed in the approved DAMP.



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10. Submit to the principal permittee any information necessary to develop unified report submittals to the Executive Officer of the Regional Board.

11. Prepare and submit any specific reports/information related to the permittees' storm water program as deemed necessary by the Executive Officer of the Regional Board.

12. The City of Riverside shall complete the reconnaissance survey of the City's storm drain systems and eliminate all illegal and/or illicit connections and submit a report of the findings by January 30, 1996.

## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.

2. This order authorizes storm water discharges to waters of the State from the permittees' existing municipal separate storm drain systems provided that the permittees implement the BMPs (structural and/or non-structural control measures) necessary to reduce the pollutants in the discharge to the maximum extent practicable. All other discharges are prohibited except those listed under Item 3., below, those for which the Regional Board has issued individual permits, and those discharges which are in accordance with Item 5., below.

3. The following discharges or flows shall be addressed by the permittees where such discharges are identified by the permittees as sources of pollutants to the waters of the United States.

   a. Discharges not covered by an NPDES permit, or for which a written clearance has been issued by the Regional Board office;

   b. Discharges from potable water line flushing and other potable water sources;

   c. Discharges from fire fighting and fire hydrant testing and flushing;

   d. Discharges from landscape irrigation, lawn watering and other irrigation activities;



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e. Diverted stream flows;

f. Rising ground waters and natural springs;

g. Uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)) and uncontaminated pumped groundwater;

h. Passive foundation drains;

i. Air conditioning condensate;

j. Water from crawl space pumps;

k. Passive footing drains;

l. Discharges from individual residential vehicle washing (not including discharges from mobile sources such as automobile/equipment detailing or washing);

m. Flows from riparian habitats and wetlands;

n. Dechlorinated swimming pool discharges;

o. Waters not otherwise containing wastes as defined in California Water Code Section 13050 (d); and

p. Other types of discharges identified and recommended by the permittees and approved by the Regional Board.

For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.

4. The permittees shall take necessary steps as required under Item 1., above, to ensure that non-storm water discharges to the municipal storm drain system do not cause or contribute to violations of water quality objectives or discharge pollutants to waters of the United States.

5. Non-storm water discharges from public agency activities into waters of the state are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3., above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in



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the storm water pollution prevention strategy, required under Section V., Provision 13., of this order, a proposed plan to eliminate the non-storm water discharges.

6. The discharge shall not cause or contribute to degradation of groundwaters.

7. Pollutants in storm water discharges from the municipal separate storm sewer system shall be reduced to the maximum extent practicable.

## IV. RECEIVING WATER LIMITATIONS

1. The discharge shall not cause or contribute to a violation of any applicable water quality standards for receiving waters adopted by the Regional Board or the State Water Resources Control Board. However, a receiving water condition not in conformance with this limitation is not necessarily a violation of this order. The permittees shall investigate the cause of such conditions and shall reevaluate their BMPs/DAMP. The BMPs/DAMP shall be revised and implemented, if necessary, in accordance with a time schedule approved by the Executive Officer. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this order in accordance with such more stringent standards.

## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order and specifically with Section III., Discharge Limitations, and Section IV., Receiving Water Limitations, through timely implementation of their approved Drainage Area Management Plan and any approved modifications, revisions, or amendments thereto, which are developed pursuant to this order. The Drainage Area Management Plan and any amendments thereto are hereby made an enforceable part of this order.

2. Permittees shall implement all elements of the approved DAMP. Any proposed revisions to the DAMP shall be submitted to the Executive Officer of the Regional Board for review and approval. All revisions to the DAMP approved by the Executive Officer shall be implemented in a timely manner.

3. The permittees shall comply with Monitoring and Reporting Program No. 95-47, which is hereby made a part of this order, and any revisions thereto. The



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Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national, or other monitoring programs in lieu of Monitoring and Reporting Program No. 95-47.

4. Upon approval by the Executive Officer of the Regional Board, all plans and reports required by this order, including any subsequent amendments, shall be implemented and shall become an enforceable part of this order.

5. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any enforcement actions and known discharges of storm or wastewaters to facilities owned or operated by the permittees which may impair domestic water supply sources (e.g., discharges due to a levee break, illegal discharges to the street, etc.) or which may have an impact on human health or the environment; if the discharge is to Canyon Lake or any tributary to Canyon Lake, Elsinore Valley Municipal Water District shall also be notified immediately;

   b. Any industrial and/or construction facilities found not to be in compliance with the State's General Storm Water Permits or where the activities may be contributing pollutants to the waters of the U.S.; and

   c. Any suspected or reported activities on federal, state, or other entity's land or facilities, where the permittees do not have any jurisdiction, and where the suspected or reported activities may be contributing pollutants to waters of the United States.

6. The permittees shall not issue occupancy permits unless the applicant is informed of his obligation under the State's NPDES industrial general permit. The permittees shall not issue grading or building permits to developments on five acres or more unless the applicant shows proof of compliance with the State's General Permit for Storm Water Discharges Associated with Construction Activities. The proof of compliance may include a letter from the Regional Board office, a copy of the Notice of Intent, etc. The permittees shall coordinate the activities of the various departments/sections within each permittee's jurisdiction to insure consistent implementation of storm water regulations.

**IMPLEMENTATION AGREEMENT**

7. No later than June 4, 1996, the permittees shall submit to the Executive Officer of the Regional Board an updated copy of an implementation agreement with authorized signatures of each of the permittees. Any subsequent revisions to the



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implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees. At a minimum, the implementation agreement should include all the essential elements of the existing agreement, developed in accordance with Order No. 90-104.

## LEGAL AUTHORITY

8. The permittees shall adopt the proposed Storm Water/Urban Run-off Management and Discharge Control Ordinance, or its equivalent. No later than April 26, 1996, each permittee shall certify to the Regional Board that it has adequate legal authority to control the discharges of pollutants into the municipal storm drain system and that it has satisfied the requirements of 40 CFR Section 122.26(d)(2)(i). At a minimum, each permittee's certification shall include a statement attesting that the ordinance adopted provides the permittee the legal authority to enforce storm water regulations within its jurisdiction.

## ENFORCEMENT/COMPLIANCE STRATEGY

9. Permittees shall develop and implement an enforcement strategy to enforce storm water and erosion control ordinances. This enforcement strategy should include a mechanism to determine compliance of industrial facilities and construction sites, and notification to the Executive Officer of any finding of non-compliance and any proposed local enforcement action. The enforcement/compliance strategy shall be submitted to the Executive Officer of the Regional Board by August 27, 1996.

## PUBLIC EDUCATION AND OUTREACH

10. The permittees shall continue to implement the public education efforts already underway and shall implement all of the proposed efforts identified in the Report of Waste Discharge.

11. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

12. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.

## MUNICIPAL FACILITIES



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13. The permittees shall develop a pollution prevention strategy to address public agency facilities and activities which are determined by the permittees ( with the approval of the Executive Officer of the Regional Board) to be activities of concern regarding storm water pollution. The pollution prevention strategy shall be developed to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the United States. The pollution prevention strategy shall be submitted to the Executive Officer of the Regional Board by October 9, 1996. In developing the pollution prevention strategy, the permittees shall consider the following:

a. Identification of public agency facilities and activities that are potential contributors of pollutants to waters of the United States.

b. Potential pollutants of concern that are associated with the facilities and/or activities;

c. Proposed BMPs and a schedule for their implementation to ensure that these facilities are not sources of pollutants into the waters of the United States;

d. A monitoring program to measure the effectiveness of the BMPs;

e. A schedule for training of public agency staff to ensure proper implementation of the BMPs; and

f. Identification of any non-storm water discharges from the public agency facilities/activities, frequency of the discharge, characterization of the discharge, volume, flow and duration of the discharge, short term source control BMPs to mitigate the impacts from the discharge, and a schedule for elimination or permitting of the discharge.

## MUNICIPAL CONSTRUCTION PROJECTS/ACTIVITIES

14. This Order authorizes the discharge of storm water run-off from construction projects that may result in land disturbance of 5 acres or more or that are part of a common plan of development or sale and that are under ownership and/or direct responsibility of any of the permittees.



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15. Thirty (30) days prior to commencement of construction activities, the permittees shall notify the Executive Officer of the Regional Board of the proposed construction project. Upon completion of the project, the Executive Officer shall be notified of the completion of the project.

16. The permittees shall develop and implement a storm water pollution prevention plan and a monitoring program that is specific for the construction project prior to the commencement of any of the construction activities. The SWPPP and monitoring program shall be implemented throughout the duration of the construction project. The SWPPP shall be kept at the construction site and released to the public and/or Regional Board staff upon request.

17. The SWPPP and the monitoring program for the construction projects shall be consistent with the requirements of the most recent version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

18. The permittees shall give advance notice to the Executive Officer of the Regional Board of any planned changes in the construction activity which may result in non-compliance with the current version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

## NEW DEVELOPMENT (INCLUDING RE-DEVELOPMENT)

19. Within 90 days of the issuance of this order, the permittees shall begin implementation of the new development BMPs (DAMP Supplement A) that were developed pursuant to Order No. 90-104.

20. Within 120 days of the issuance of this order, the permittees shall review their General Plan update and CEQA document preparation processes to insure that storm water-related issues are properly considered. If necessary, these processes shall be revised to include requirements for evaluation of storm water-related impacts and identification of appropriate mitigation measures.

21. The permittees shall establish a mechanism to insure proper maintenance and operation of all permanent flood control structures.. For new developments, the parties responsible for the maintenance of the flood control structures and funding sources for maintenance and operation of the facilities shall be identified prior to issuance of grading permits.

## FISCAL RESOURCES



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22. The permittees shall prepare and submit a unified fiscal analysis report to the Executive Officer of the Regional Board. The fiscal analysis report shall be submitted no later than November 15, of each year and shall at a minimum include the following:

a. Each permittee's expenditures for the previous fiscal year;
b. Each permittee's budget for the current fiscal year;
c. A description of the source of funds;
~~d. A description of contract services (relating to the NPDES program), including the service provided and the amount charged for the service;~~
~~e. A list of staff, type of work, estimated time dedicated to the storm water program and estimated cost; and~~
d.f. Each permittee's estimated budget for the next fiscal year.

## PERMIT EXPIRATION AND RENEWAL

23. This order expires on December 1, 2000 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

a. Any revisions to the Drainage Area Management Plan including, but not limited to, all the activities the permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;

b. Changes in land use and/or population including map updates; and

c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls, including map updates of the storm drain systems.

24. This Order may be modified, revoked or reissued prior to its expiration date for the following reasons:

a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order;

b. To incorporate applicable requirements of statewide water quality control plans and policies adopted by the State Water Resources Control Board or



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any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

25. This order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

26. Order No. 90-104 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on December 1, 1995.

Gerard J. Thibeault
Executive Officer



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# ORDER NO. 95-47
# APPENDIX 1
# PERMITTED AREA

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# ORDER NO. 95-47
# APPENDIX 2

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*DRAFT: October 31, 1995*

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California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 95-47

NPDES NO. CAS 618033
for
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

TENTATIVE

## I. GENERAL

1. Revisions of the monitoring and reporting program may be necessary to ensure that the discharger is in compliance with requirements and provisions contained in this order. Revisions may be made by the Executive Officer at any time during the term of this order, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

2. All sample collection, handling, storage, and analyses shall be in accordance with 40 CFR Part 136 or other methods approved by the Executive Officer.

3. The permittees are authorized to complement their monitoring data with data from other sources provided those sources are similar ~~identical~~ to sources in the Santa Ana Watershed.

4. The permittees shall implement the Consolidated Program for Water Quality Monitoring (submitted ~~as part of the~~ Report of Waste Discharge) until development and implementation of an other acceptable ~~watershed~~ monitoring programs.

## II. OBJECTIVES

The overall goal of this monitoring program is to provide feedback in direction for and in support of an effective watershed management program. The following are the major objectives:

1. To define water quality status, trends, and pollutants of concern.

2. To characterize pollutants and to assess the influence of land use on water quality.

3. To identify significant water quality problems related to storm water discharges within the watershed.





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4. To identify other sources of pollutants in storm water run-off to the extent possible (e.g., atmospheric deposition, contaminated sediments, other non-point sources, etc.).

5. To verify and to control illicit discharges.

6. To identify those waters which without additional action to control pollution from storm water discharges cannot reasonably be expected to attain or maintain applicable water quality objectives or the goals and requirements of the Basin Plan.

7. To evaluate the effectiveness of existing management programs, including an estimate of pollutant reductions achieved by the structural and nonstructural BMPs.

8. To evaluate costs and benefits to the stakeholders including the public.

The Regional Board recognizes that these objectives may not be attainable during this permit period and authorizes the Executive Officer to evaluate and to determine adequate progress toward meeting each objective.

## III. MONITORING PROGRAM REQUIREMENTS

The lead permittee shall develop and submit for the approval of the Executive Officer an integrated monitoring program to achieve the above stated objectives. In developing this program, the lead permittee is encouraged to seek cooperation with the permittees from San Bernardino and Orange counties. The Executive Officer or his/her designated representative(s) shall facilitate the coordination meetings or subcommittees formed to achieve this goal. The development and implementation of the monitoring program shall be in accordance with the time schedule prescribed by the Executive Officer. At a minimum, the program shall consider the following:

1. Uniform guidelines for quality control, quality assurance, data collection and data analyses.

2. A mechanism for the collection, analysis and interpretation of existing data from Orange, Riverside, and San Bernardino County monitoring programs. These and other data from local, regional or national sources should be utilized to characterize different storm water sources; to determine pollutant generation, transport and fate; to develop a relationship between land use, development size, storm size and the event mean concentration of pollutants; to determine spatial and temporal variances in storm water quality and seasonal and other bias in the collected data; and to identify any unique features of the Santa Ana Watershed. The permittees are encouraged to use data from similar studies, if available.



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3. A description of the monitoring program including:

   a. The number of monitoring stations;
   b. Environmental indicators (e g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;
   c. Parameters selected for field screening and for laboratory work; and
   d. Total number of samples to be collected from each station, receiving water and major outfall monitoring, frequency of sampling during dry weather and short or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.

4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including cost sharing.

## *IV.* REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of U. S. EPA, Region 9, no later than November 15, of each year. This progress report may be submitted in a mutually agreed upon electronic format. At a minimum, the annual progress report shall include the following:

   a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order.

   b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the Drainage Area Management Plan. The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and in reducing pollutant loads in storm water discharges.

   c. An analysis of the feasibility and usefulness of using structural BMPs based on data collected from the Drainage Water Quality Plan for Lake Mathews and/or other similar programs..

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d. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable.

3. Co-permittees shall be responsible for the submittal of all required information/materials needed to comply with this Monitoring and Reporting Program in a timely manner to the principal permittee. All such submittals shall be signed by a duly authorized representative of the co-permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| *ITEM* | *DUE DATE* |
|---|---|
| Report on Illicit/Illegal Discharges (City of Riverside) | January 30, 1996 |
| Legal Authority Certification | April 26, 1996 |
| Revised Implementation Agreement | June 4, 1996 |
| Enforcement Strategy | August 27, 1996 |
| Municipal Activities Pollution Prevention Strategy | October 9, 1996 |
| Annual Report including the Fiscal Analyses Report | November 15 of each year (next report due in 1996) |

Ordered by_____

Gerard J. Thibeault
Executive Officer

December 1, 1995



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CALIFORNIA—CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

NIA REGIONAL WATER QUALITY CONTROL BOARD
ANA REGION
2010 IOWA AVENUE, SUITE 100
RIVERSIDE, CA 92507-2409
E. (909) 782-4130
FAX (909) 781-6288

95 NOV -1 PM 2:01
QUALITY CONTROL BOARD
LOS ANGELES REGION

October 27, 1995

Mr. Ken A. Miller, Flood Control Engineer
San Bernardino County Transportation/Flood
Control Department
825 East Third Street
San Bernardino, CA 92415-0835

**REVISED DRAFT OF WASTE DISCHARGE REQUIREMENTS FOR THE SAN BERNARDINO COUNTY TRANSPORTATION/FLOOD CONTROL DEPARTMENT, THE COUNTY OF SAN BERNARDINO AND INCORPORATED CITIES, ORDER NO. 95-53, NPDES NO. CAS008036, URBAN STORM WATER RUN-OFF, SAN BERNARDINO COUNTY**

Dear Mr. Miller:

Enclosed is a revised copy of tentative Order No. 95-53. A draft copy of this order was mailed to you on July 21, 1995. This revised draft incorporates changes based on the comments we received from you and the co-permittees, and the changes agreed upon during our September 12, 1995 meeting with representatives of the permittees. For your convenience, all major changes are indicated by highlighting or strikeouts. This tentative order is now scheduled for the Regional Board's consideration at the December 1, 1995 Board meeting.

If you have any concerns about the terms and conditions in the tentative order, we would like to meet with you during the second week of November '95.

If you have any other questions, please contact me at (909) 782-3238 or Ray Akhtarshad at (909) 320-2024.

Sincerely,

Michael J. Adackapara, Chief
Storm Water Program

enclosure: Revised (October 27, 1995) tentative Order 95-53

cc: with enclosures



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U. S. Environmental Protection Agency - Terry Oda/Eugene Bromley, Permits Issuance Section
State Water Resources Control Board - Archie Matthews / Bruce Fujimoto, Division of Water Quality
State Water Resources Control Board - Ted Cobb/Elizabeth Jennings, Office of the Chief Counsel
California Regional Water Quality Control Board, North Coast Region (1) - Nathan Quarles
California Regional Water Quality Control Board, San Francisco Bay Region (2) - Tom Mumley
California Regional Water Quality Control Board, Central Coast Region (3) - Adam White
California Regional Water Quality Control Board, Los Angeles Region (4) - Mark Pumford
California Regional Water Quality Control Board, Central Valley Region (5) - Wayne Pierson
California Regional Water Quality Control Board, Central Valley Region (5R), Redding - Carole Crowe
California Regional Water Quality Control Board, Central Valley Region (5F), Fresno - Darrel Everson
California Regional Water Quality Control Board, Lahonton Region (6SLT), Salt Lake Tahoe - John Short
California Regional Water Quality Control Board, Lahonton Region (6V), Victorville - Tom Rheiner
California Regional Water Quality Control Board, Colorado River Basin Region (7) - Orlando Gonzales
California Regional Water Quality Control Board, San Diego Region (9) - Deborah Jayne
City of Big Bear Lake - Mike Stewart
City of Chino - Brett Hulstrum
City of Chino Hills - Zora Lee
City of Colton - Robert A. Lavin
City of Fontana - Curtis Aaron
City of Grand Terrace - Joe Kicak
City of Highland - Ernest Wong
City of Loma Linda - Brian Gengler
City of Montclair - Don Gdula
City of Ontario - Mohamed El-Amamy
City of Rancho Cucamonga - Bob Zetterberg
City of Redlands - Pete Laaninen
City of Rialto - Jim Kinley
City of San Bernardino - Gene Klatt
City of Upland - Steve Gapuzan
City of Yucaipa - John McCarthy
San Bernardino County Transportation/Flood Control Department - Naresh Varma
San Bernardino County - Jim Squire

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

# NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND WASTE DISCHARGE REQUIREMENTS NPDES NO. CAS008036 ~~CA 8000200~~ ORDER NO. 95-53 FOR THE SAN BERNARDINO COUNTY TRANSPORTATION/FLOOD CONTROL DEPARTMENT, THE COUNTY OF SAN BERNARDINO, AND THE INCORPORATED CITIES OF SAN BERNARDINO COUNTY WITHIN THE SANTA ANA REGION AREAWIDE URBAN STORM WATER RUN-OFF

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On April 4, 1995, the San Bernardino County Transportation/Flood Control Department (SBCFCD), in cooperation with the County of San Bernardino, and the incorporated cities of Big Bear Lake, Chino, Chino Hills, Colton, Fontana, Grand Terrace, Highland, Loma Linda, Montclair, Ontario, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Upland, and Yucaipa (hereinafter collectively referred to as "permittees") jointly submitted National Pollutant Discharge Elimination System (NPDES) Application No. CAS008036 ~~CA 8000200~~ to renew their areawide NPDES permit for urban storm water run-off ~~runoff~~.

2. The 1987 amendments to the Clean Water Act required the United States Environmental Protection Agency (EPA) to develop permitting regulations for storm water discharges from municipal separate storm sewer systems serving a population of 100,000 or more and for storm water discharges associated with industrial activities including construction sites. The EPA published proposed storm water regulations on December 7, 1988 and promulgated the final regulations on November 16, 1990. Prior to the EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Regional Board requested early areawide NPDES permits for urban storm water run-off.

3. On October 19, 1990, the Regional Board adopted Order No. 90-136 for urban storm water run-off from urban areas in San Bernardino County within the Santa Ana Region. Order No. 90-136 expires on October 1, 1995. The San Bernardino County Transportation/Flood Control Department was named as the principal permittee and San Bernardino County and the incorporated cities were named as the co-permittees. In



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order to more effectively carry out the requirements of this order, the permittees have agreed that the SBCFCD will continue as principal permittee and San Bernardino County and the incorporated cities will continue as co-permittees. However, the Regional Board, in exercising its enforcement discretion, will take action only against the individual permittee responsible for specific violations of this order, whenever possible.

4. San Bernardino County Municipal Permit required the permittees to develop and implement a Drainage Area Management Plan (DAMP), a receiving and storm water monitoring program, reconnaissance survey program, a plan for prosecution of illegal dischargers, and to establish legal authority to effectively prohibit illegal/illicit discharges. The overall goal of these requirements was to effectively reduce the pollutant loadings to surface waters from urban run-off to the maximum extent practicable (MEP).

5. The Report of Waste Discharge (the permit renewal application) included the following components:

~~a. A map of the drainage area and maps of existing storm drain facilities~~
~~b. A summary of the storm water management program~~
~~c. A Consolidated Program for Water Quality Monitoring~~
~~d. A copy of the Proposed Storm Water/Urban Runoff Management and Discharge Control Ordinance~~
~~e. A copy of the current Implementation Agreement~~
~~f. A copy of each of the Interagency Agreements~~
~~g. The Drainage Area Management Plan (DAMP)~~
~~h. A copy of Proposed San Bernardino County Grading and Erosion Control Ordinance~~

a. A Municipal Storm Water Management Program which is an extension of the October, 1993 Drainage Area Management Plan.
b. Letters of intent for compliance with San Bernardino County Municipal Storm Water Permit by all the co-permittees.

6. Within the Santa Ana Region, the permittees serve a population of approximately 1.11 million, occupying an area of approximately 985 square miles. The latest figures obtained from the Reconnaissance Progress Report estimated 384 miles of above-ground and 334 miles of below-ground storm drain channels in the project area. Approximately seven percent (7%) of the San Bernardino County area drains into water bodies within this Regional Board's jurisdiction. The project area is shown on Attachment 1. This order regulates storm water run-off from areas under the jurisdiction of the permittees. The term storm water as used in this order includes



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storm water run-off, snow melt run-off, and surface run-off and drainage. The permittees have jurisdiction over and/or maintenance responsibility for storm water conveyance systems within San Bernardino County. Approximately 50% of the remaining San Bernardino County drainage areas is within the jurisdiction of the Lahonton Regional Board and the other 43% is within the jurisdiction of the Colorado River Basin Regional Board. However, urbanization in these areas is minimal compared to areas within the Santa Ana Regional Board's jurisdiction.

7. The Santa Ana River Basin is the major watershed within this Region. This watershed is divided into the upper and lower Santa Ana watersheds. The lower Santa Ana River Basin (downstream from Prado Dam) includes the Orange County drainage areas and the Upper Santa Ana River Basin includes the San Bernardino County and the Riverside County drainage areas. The San Bernardino County drainage areas are generally upstream of the Riverside County drainage areas.

8. The three county areas within this Region are regulated under three areawide permits for urban storm water run-off. These areawide NPDES permits are:

   a. Orange County, NPDES No. CA 8000180, Order No. 90-71 (upon renewal Order No. 95-52)

   b. Riverside County, NPDES No. CA 8000192, Order No. 90-104 (upon renewal Order No. 95-47)

   c. San Bernardino County, NPDES No. CA 8000200, Order No. 90-136 (upon renewal Order No. 95-53)

9. Storm water discharges in San Bernardino County within the jurisdiction of Santa Ana Region are tributary to various water bodies. These water bodies are listed in Attachment 2.

10. Run-off from the San Bernardino County drainage areas is generally conveyed to the Riverside County drainage areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Basin (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

11. The entities listed in Attachment 3 are considered as potential dischargers of storm water to the San Bernardino County drainage areas. It is expected that these entities will also work cooperatively with the permittees to manage urban run-off. The



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Regional Board has the discretion and authority to require non-cooperating entities to participate in this areawide permit or obtain individual storm water permits, pursuant to 40 CFR 122.26(a).

12. The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies are threatened or impaired in part due to urban storm water run-off and non-storm water flows from urbanized areas. Preliminary results from urban storm water monitoring programs within the Region indicate that major pollutants of concern in urban run-off are certain heavy metals, sediment, coliform bacteria, pesticides, and nutrients. Municipal storm water run-off is a source of pollutants to waters of the U.S. ~~Region~~ that may be causing or contributing to water quality impairment. It is recognized that instream or end-of-channel treatment of storm water is difficult and expensive. Therefore, it is critical to identify the sources and to develop management practices necessary to reduce pollutant loading to storm water. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events and point source discharges permitted by the Regional Board under individual permits.

13. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources for urban storm water pollution:

    a. Industrial sites where appropriate pollution control and best management practices (BMPs) are not implemented,

    b. Construction sites where erosion and siltation controls and BMPs are not implemented, and

    c. Urban run-off where the drainage area is not properly managed.

14. To address the industrial and construction sites, the State Board issued two statewide general NPDES permits: one for storm water run-off from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water run-off from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water run-off from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order No. 94-7, NPDES No. CA 8000336, for concentrated animal feeding operations, including dairies (General Dairy permit). The Regional Board has and continues to issue individual storm water permits for industrial facilities within the Region.



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15. One of the major components of these statewide permits, the Caltrans permit, and the General Dairy Permit is the development and implementation of a storm water pollution prevention plan (SWPPP) for each facility.

16. Most industrial activities (some light industrial activities are exempt) and construction activities on five acres or more are required to get individual NPDES permits for storm water discharges or get coverage under these statewide general permits.

17. The Regional Board is the enforcing authority for the two statewide general permits. However, in most cases, the industrial and construction sites discharge directly into storm drains and/or flood control facilities owned and operated by the permittees. These industrial and construction sites are also regulated under local laws and regulations. Therefore, a coordinated effort between the permittees and the Regional Board staff is critical to avoid duplicative storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

18. The permittees or other agencies generally conduct inspections of most industrial and commercial facilities and construction sites within their jurisdiction to determine compliance with local storm water ordinances and regulations, as well as for other regulatory purposes. The permittees have agreed to notify Regional Board staff ~~of industrial and construction facilities which are not in compliance with the storm water regulations, including their coverage under the general storm water permits.~~ when conditions are observed during such inspections which result in threat or potential threat to water quality. This also includes failure to obtain coverage under the general storm water permits.

19. The permittees have agreed not to issue grading and/or building permits without proof of ~~intent to comply with the~~ filing for a Notice of Intent (NOI) for sites subject to State's General Construction Activity Storm Water Permit.

20. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out municipal related activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm drain system maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees ~~are required to~~ will assess ~~all of~~



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~~the~~ public agency ~~related~~ activities and facilities for potential impact to storm water quality and develop and implement best management practices to reduce pollutant discharges from those ~~these~~ activities that are found to be pollutant sources. Non-storm water discharges from these facilities and/or activities also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III., Discharge Limitations, 5., of this order or are permitted by the Regional Board under an individual NPDES permit.

21. The major focus of storm water pollution prevention is the development and implementation of an appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to attain water quality consistent with the water quality objectives for the receiving waters in order to protect beneficial uses. The permittees developed and submitted a DAMP, which was approved on May 2, 1994. The Municipal Storm Water Management Program (MSWMP) is an extension of the DAMP.

22. The MSWMP provides a framework for continuing the implementation of DAMP elements for the term of the renewed permit. ~~DAMP is a dynamic document and the permittees have implemented, or are in the process of implementing, the various elements of the DAMP.~~

23. There is some contribution of pollutants in urban run-off from privately owned and operated facilities such as residences, businesses and commercial establishments and public and private institutions. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, the permittees and the regulators. Therefore, the DAMP has a strong emphasis on public education.

24. The ~~DAMP~~ MSWMP included ~~20~~ numerous BMPs under nine major program elements ~~BMPs~~ and a time schedule for implementation. These BMPs are organized into various ~~three~~ components such as BMPs for existing residential, commercial and industrial areas; BMPs for construction sites; ~~and~~ BMPs for new developments, etc. These components include regulatory activities, public education programs and operations and maintenance activities.

25. In order to characterize storm water discharges, to identify problem areas, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. San Bernardino County monitoring program commenced in January of 1994 which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The Report of Waste Discharge included a Consolidated Program for Water Quality Monitoring.



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26. In addition to the Regional Board, a number of other stakeholders are involved in the management of these water resources which includes, but is not limited to, the incorporated cities in the Region, publicly owned treatment works, the three counties, Santa Ana Watershed Project Authority and its member agencies. The cooperation and coordination between all the stakeholder are critical for an efficient and most economical management of the watershed. The Regional Board will coordinate the activities within the watershed and seek participation of the permittees. ~~This order focusses on watershed management and seeks to integrate the programs of all the stakeholders, especially the three municipal storm water permit holders within this watershed. In order to make the best use of limited resources of all the permittees (including other municipal permittees in Riverside and Orange Counties), and to derive maximum benefit from the storm water management programs, future programs should focus on a watershed approach. An integrated management program will be developed with the cooperation of all the stakeholders, including the permittees in the three counties, and the Regional Board.~~

27. The permittees have agreed to revise the implementation agreement that was developed in 1990 as required under Order No. 90-136.

28. Illegal dumping and illicit/illegal connections and discharges to the storm drains are ~~major~~ contributors to storm water and other surface water contamination. Most of the cities have completed their reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains) and the remaining cities have scheduled the completion prior to expiration of their municipal permit (October 1, 1995). The permittees were required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are also required to develop a program to prohibit ~~prevent~~ any future illegal/illicit connections to their storm drains and flood control facilities.

29. As part of Order No. 90-136, the permittees were required to develop and implement a plan to eliminate the illicit connections and to prosecute the illegal dischargers. This order requires the permittees to continue the implementation and enforcement required under this plan.

30. This order requires the permittees to continue to implement the BMPs listed in the ROWD ~~DAMP~~ and to effectively prohibit illegal and illicit discharges to the storm drain system. One of the major elements of the DAMP was the establishment of legal authority. The permittees within San Bernardino County have already adopted ordinances to establish their legal authority. This task was completed as of April 1995.

31. Successful implementation of the provisions and limitations in this order will require the cooperation of all the involved agencies and organizations within San Bernardino



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County (e.g. Fire Department, Department of Environmental Health, Planning Department, Building and Safety, Code Enforcement, etc.). As such, these agencies and organizations are expected to actively participate in implementing this areawide storm water program. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in the ~~development~~ planning procedures, ~~of General Plans,~~ in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc.

32. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, agricultural land, utilities and special districts, and Native American tribal lands. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.

33. The permittees may petition the Regional Board to issue a separate NPDES permit to any discharger of non-storm water into storm drain systems that they own or operate.

34. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region.

35. The requirements contained in this order are necessary to implement the Basin Plan.

36. In accordance with the Clean Water Act and it's implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants to waters of the U.S. ~~nation~~ to the maximum extent practicable.

37. The legislative history and the preamble to the federal storm water regulations indicate that the Congress and the U.S. EPA were aware of the difficulties in regulating urban storm water run-off solely through traditional end-of-pipe treatment. However, the U.S. EPA and State Water Resources Control Board have determined that the NPDES permits for urban storm water run-off must contain effluent limitations based on water quality standards (beneficial uses and water quality objectives). The development and implementation of best management practices (BMPs), which will achieve compliance with applicable standards, are generally considered to be acceptable as effluent limitations. In accordance with Section [illegible] (p) of the Clean Water Act, this order requires the permittees to develop controls to reduce the discharge of pollutants to the maximum extent practicable. If urban storm water discharges cause an exceedance of the water quality standards in the receiving waters, the BMPs will be reevaluated, revised, and implemented, as appropriate, to eliminate any exceedance of receiving



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water quality standards. Numeric and narrative water quality objectives are contained in the Basin Plan for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. Due to the high cost associated with monitoring, and due to the variability that exists in the current storm water monitoring efforts being conducted by the permittees and other municipal permittees in Orange and Riverside Counties under their municipal storm water permits, a tri-county monitoring program will be considered to develop and implement effective monitoring procedures and strategies.

38. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Regional Board.

39. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

40. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

41. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

44. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

**IT IS HEREBY ORDERED** that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and the regulations and guidelines adopted thereunder, shall comply with the following:



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## I. RESPONSIBILITIES OF THE PRINCIPAL PERMITTEE:

The principal permittee shall be responsible for managing the overall storm water program and shall:

1. Conduct water quality and hydrographic monitoring of the municipal separate storm sewer system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop uniform criteria to inspect the municipal separate storm sewer systems.

3. Develop ~~uniform~~ minimum criteria for inspections at industrial facilities and construction sites, and reporting ~~non-compliance with the storm water regulations~~ to the Regional Board of observed non-compliance discharges, as well as non-compliance with local ordinances at sites which fall under the general construction or industrial storm water permits.

4. Conduct inspections of the storm drain systems owned and operated by the SBCFCD.

5. Implement management programs, monitoring programs, and related plans as required by this order.

6. Prepare and submit to the Executive Officer of the Regional Board, unified reports, plans, and programs necessary to comply with this order.

7. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority within the scope of the San Bernardino County Transportation/Flood Control Department Act, as required by the Federal Storm Water Regulations.

8. Respond and/or arrange for responding to emergency situations such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or to reduce the discharge of pollutants to the municipal separate storm sewer systems and to waters of the U.S. ~~nation~~.

In addition, the activities of the principal permittee should, ~~include, but not limited to,~~ at a minimum, include the following:

9. Coordinate permit activities and participate in any subcommittees formed as necessary, to coordinate compliance activities with this order.



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10. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

11. Coordinate the implementation of areawide storm water quality management activities such as monitoring program, public education, pollution prevention, household hazardous waste collection, etc.

12. Gather and disseminate information on the progress of statewide municipal storm water programs and evaluate the information for potential use in the execution of this order.

13. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in attaining water quality standards ~~objectives~~.

14. Coordinate activities pertaining to implementation of this order with the Regional Board.

15. Solicit and coordinate public input for any major proposed storm water management programs and implementation plans.

16. Develop and implement mechanisms, performance standards, etc., to promote ~~uniform and~~ consistent implementation of BMPs among the permittees.

17. In conjunction with the other permittees, implement the BMPs listed in the approved DAMP, as amended by the Report of Waste Discharge (ROWD).

18. ~~Coordinate~~ Participate with other counties (Orange and Riverside counties) in the development and implementation of a tri-county monitoring program coordinated by the Regional Board.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

The co-permittees shall be responsible for managing the storm water program within their jurisdiction and shall:

1. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority as stated in Section V(10) of this order and required by the Federal Storm Water Regulations.

2. Conduct storm drain system inspections in accordance with the uniform criteria



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developed by the principal permittee.

3. Submit to the principal permittee any information necessary to develop unified report submittal to the Exccutive Officer of the Regional Board.

4. In conjunction with the principal permittee, implement the BMPs listed in the approved DAMP, as amended by the ROWD.

Co-permittees activities should at a minimum include~~, but not limited to,~~ the following:

5. Administer the storm water and erosion control ordinances.

6. Conduct and coordinate with the principal permittee any surveys and characterizations needed to identify the pollutant sources and drainage areas.

7. Review and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

8. Participate in ~~any~~ committees or subcommittees formed to address storm water related issues to comply with this order.

~~9. Share all pertinent information regarding the progress of statewide municipal storm water programs and evaluate any information obtained for potential use in the execution of this order.~~

9. ~~10.~~ Participate in the tri-county (Orange, Riverside and San Bernardino) efforts for watershed ~~management~~ monitoring program coordinated by the Regional Board.

## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.

2. This order authorizes storm water discharges to waters of the U.S. ~~State~~ from the permittees' existing municipal separate storm drain systems provided that the permittees implement the BMPs (structural and/or non-structural control measures) necessary to reduce the pollutants in the discharge to the maximum extent practicable. Discharges other than those listed under Item 5., below, and those for which the Regional Board has issued individual permits are prohibited.



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~~3. The DAMP is hereby made an enforceable component of this order.~~

3. ~~4.~~ The following discharges need not be prohibited by the permittees unless identified by the permittees as a source of pollutants to the receiving waters. ~~provided that such discharges are identified and appropriate control measures to minimize the adverse impacts of such discharges are developed and implemented.~~

~~a. Discharges composed entirely of storm water,~~

a. ~~b.~~ Discharges ~~covered by an NPDES permit, or~~ for which a written clearance has been issued by the Regional Board office,

b. ~~c.~~ Discharges from potable water line flushing and other potable water sources,

c. ~~d.~~ Discharges from fire fighting and fire hydrant testing and flushing,

d. ~~e.~~ Discharges from landscape irrigation, lawn watering and other irrigation activities,

e. ~~f.~~ Diverted stream flows,

f. ~~g.~~ Rising ground waters and natural springs,

g. ~~h.~~ Uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)) and uncontaminated pumped groundwater,

h. ~~i.~~ Passive foundation drains,

i. ~~j.~~ Air conditioning condensate,

j. ~~k.~~ Water from crawl space pumps,

k. ~~l.~~ Passive footing drains,

l. ~~m.~~ Discharges from individual residential vehicle washing (not including discharges from mobile sources such as automobile/equipment detailing or washing),

m. ~~n.~~ Flows from riparian habitats and wetlands,



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n. ~~e.~~ Dechlorinated swimming pool discharges,

o. ~~p.~~ Waters not otherwise containing wastes as defined in California Water Code Section 13050 (d) and,

p. ~~q.~~ Other types of discharges identified and recommended by the permittees and approved by the Regional Board.

For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.

4. The permittees shall take necessary steps to ensure that non-storm water discharges to the municipal storm water system do not cause or contribute to violations of water quality standards or degrade the waters of the U.S. ~~Region (including groundwater).~~

5. Non-storm water discharges from public agency activities into waters of the U.S. ~~state~~ are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3. ~~5.~~, above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in the storm water pollution prevention strategy, required under Section V. Provision 18., of this order, a proposed plan to eliminate the non-storm water discharges.

~~7. Pollutants in storm water discharges from the municipal separate storm sewer system shall be reduced to the maximum extent practicable.~~

6. The MSWMP, as outlined in the ROWD, is hereby made an enforceable component of this order.

## IV. RECEIVING WATER LIMITATIONS

The discharge shall not cause or contribute to a violation of any applicable water quality standards ~~objectives~~ for receiving waters adopted by the Regional ~~Water Quality Control~~ Board or the State Water Resources Control Board. However, a receiving water condition not in conformance with this limitation is not necessarily a violation of this order. The permittee shall investigate the cause of such conditions and shall reevaluate their BMPs/DAMP (MSWMP). The BMPs/DAMP shall be revised and implemented, if necessary, in accordance with a time schedule approved by the Executive Officer. If more stringent applicable water quality standards ~~objectives~~ are promulgated or approved pursuant to Section 303 of the Clean Water Act and amendments thereto, the Regional Board will revise and modify this order in



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accordance with such more stringent standards ~~objectives~~.

## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order.

2. The Report of Waste Discharge, including the MSWMP, submitted as application for renewal of the NPDES permit is hereby made a part of this order.

3. Permittees shall implement all elements of the approved DAMP, as amended by the ROWD (MSWMP). Any proposed revisions to the ~~DAMP~~ MSWMP shall be submitted to the Executive Officer of the Regional Board or included in the Annual Report for review and approval. All revisions to the ~~DAMP~~ MSWMP, approved by the Executive Officer, shall be implemented in a timely manner.

4. The permittees shall comply with Monitoring and Reporting Program No. 95-53, which is hereby made a part of this order and any revisions thereto. The Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national, or other monitoring programs in lieu of Monitoring and Reporting program for Order No. 95-53.

5. Upon approval by the Executive Officer of the Regional Board, all plans and reports required by this order, including any subsequent amendments, shall be implemented and shall become an enforceable part of this order.

6. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any enforcement actions and discharges of storm or wastewaters, known to the permittees, which may have an impact on human health or the environment; ~~Any unusual discharge of storm or wastewaters to facilities owned or operated by the permittees or to any waters of the Region (e.g., discharges due to a levee break, illegal discharges to the street, etc.).~~

   b. Any industrial or construction facilities observed to potentially be not in compliance with the storm water regulations or where the activities may be contributing pollutants to the waters of the U.S.; and



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c. Any observed activities on federal, state, or other lands or facilities, where the permittees do not have any jurisdiction, and where the observed activities may be contributing pollutants to waters of the U.S. ~~Region~~.

7. The permittees shall not issue occupancy permits unless the applicant is informed of his obligation under the State's NPDES industrial general permits. The permittees shall not issue grading or building permits to developments on 5 acres or more unless the applicant shows proof of filing a Notice of Intent in accordance with the State's General Construction Activities Storm Water Permit. ~~any permits for new businesses and/or construction activities until compliance with the State's General Storm Water Permits is verified.~~ The proof of ~~compliance~~ filing may include a letter from the Regional Board office, a copy of the Notice of Intent ~~, etc.~~ or other acceptable proof of coverage under the general permit. The permittees shall coordinate the activities of the various departments/sections within each permittee's jurisdiction to ensure consistent implementation of storm water ~~regulations~~ program.

## IMPLEMENTATION AGREEMENT

8. No later than March 1, 1996, the permittees shall submit to the Executive Officer of the Regional Board an updated copy of an implementation agreement with authorized signatures of each of the permittees. Any subsequent revisions to the implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees. At a minimum, the implementation agreement should include all the essential elements of the existing agreement and a mechanism for active participation of all permittees in the committees and subcommittees to ensure uniform co-operation and involvement of the permittees in the decision making process.

## LEGAL AUTHORITY

9. The permittees ~~shall adopt the proposed Storm Water/Urban Runoff Management Ordinance, or its equivalent. No later than November 30, 1995, each permittee shall certify to the Regional Board that it has adequate legal authority to control discharges of pollutants into the municipal storm drain system and that satisfied~~ adopted the Storm Water Run-off Management Ordinance. This task was completed as of April, 1995. The permittees shall establish a mechanism for periodic review and update of their ordinances to ensure compliance with the requirements of 40 CFR Section 122.26(d)(2)(i). ~~At a minimum, it should include a statement attesting that the ordinances adopted~~



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~~provides the permittee the legal authority to enforce storm water regulations within its jurisdiction.~~

## ENFORCEMENT STRATEGY

10. Permittees ~~shall develop and implement~~ have developed an enforcement strategy as outlined in the ROWD (submitted on April 4, 1995) to enforce storm water and erosion control ordinances. ~~This~~ The permittees shall implement the enforcement strategy ~~should include~~ which includes a mechanism for the inspection of industrial facilities and construction sites, notification to the Executive Officer of any finding of non-compliance with the storm water regulations and any proposed local enforcement action. ~~The enforcement strategy shall be submitted for approval to the Executive Officer of the Regional Board by March 30, 1996.~~

11. The enforcement strategy shall include enforcement and control of discharges from facilities not ~~included in the Phase I of the EPA's NPDES storm water regulations~~ covered under the State's existing General Storm Water Permits.

12. Permittees have completed ~~shall complete~~ the reconnaissance survey of their storm drain conveyance systems as of ~~by~~ October 1, 1995 and will eliminate all illegal and/or illicit connections by December 1, ~~1995 and~~ 1996. Permittees shall submit a report of the findings by ~~January 30, 1996~~ April 30, 1997 and each year thereafter (including the detection, elimination and prosecution of illegal dischargers).

## PUBLIC EDUCATION AND OUTREACH

13. The permittees shall continue to implement the public education efforts already underway and shall implement all of the proposed efforts contained in the Report of Waste Discharge. Any proposed changes shall be submitted to the Executive Officer of the Regional Board for approval.

14. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

15. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.



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16. The permittees shall develop a public education program geared toward the industrial facilities and construction sites through active participation of the county and city departments.

17. Permittees shall develop an educational program targeted toward educating the staff at the county and city departments/agencies under their jurisdiction about storm water program and utilize their assistance in enforcing the requirements of this order. Example of these departments/agencies include Fire Department, Department of Health and Safety, Pre-treatment Programs, Hazardous Waste Collection, Building and Safety, etc.

## MUNICIPAL FACILITIES

18. The permittees ~~shall~~ have developed a pollution prevention strategy to address public agency facilities and activities not currently required to obtain coverage under the State's general storm water permits. The pollution prevention strategy ~~shall be developed~~ is to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the U.S. ~~state~~. The pollution prevention strategy shall be implemented in accordance with the time schedule proposed in the ROWD. ~~submitted for approval to the Executive Officer of the Regional Board by September 1, 1996 and shall at a minimum include the following:~~

~~a. Identification of all public agency facilities and activities that are potential contributors of pollutants to waters of the state;~~

~~b. Potential pollutants of concern that are associated with the facilities and/or activities;~~

~~c. Proposed BMPs and a schedule for implementation to ensure that these facilities are not sources of pollutants into the waters of the state;~~

~~d. A monitoring program to measure the effectiveness of the BMPs;~~

~~e. A schedule for training of public agency staff to ensure proper implementation of the BMPs and;~~

~~f. Identification of any non-storm water discharges from the public agency facilities/activities, frequency of the discharge;~~



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~~characterization of the discharge, volume, flow and duration of the discharge, short-term source control BMPs to mitigate the impacts from the discharge, and a schedule for elimination or permitting of the discharge.~~

## MUNICIPAL CONSTRUCTION PROJECTS/ACTIVITIES

19. This Order authorizes the discharge of storm water run-off from construction projects that may result in land disturbances of 5 acres or more or that are part of a common plan of development and sale and that are under ownership and/or direct responsibility of any of the permittees.

20. Thirty (30) days prior to commencement of construction activities, the permittees shall notify the Executive Officer of the Regional Board of the proposed construction project. Upon completion of the construction activities, the Executive Officer shall be notified of the completion of the construction project.

21. The permittees shall develop and implement a storm water pollution prevention plan and a monitoring program that is specific for the construction project prior to the commencement of any of the construction activities. The SWPPP and the monitoring program shall be implemented throughout the duration of the construction activities on site. The SWPPP shall be kept at the construction site and released to the public and/or Regional Board Staff upon request.

22. The SWPPP and the monitoring program for the construction projects shall be consistent with the requirements of the most recent version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

23. The permittees shall give advance notice to the Executive Officer of the Regional Board of any planned changes in the construction activities which may result in non-compliance with the current version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

## NEW DEVELOPMENTS (INCLUDING RE-DEVELOPMENT)

24. ~~19 Within 90 days of the issuance of this order, t~~ The permittees shall begin implementation of the new development BMPs as described ~~program outlined~~ in Section 4 of the ROWD in accordance with the schedule provided in the ROWD. ~~which was developed under Order No. 90-136.~~



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25. ~~20 Within 120 days of the issuance of this order,~~ By April 30, 1997, the permittees shall update their General Plan and CEQA document preparation processes to ensure that storm water-related issues are properly considered. If necessary, these processes shall be revised to include requirements for evaluation of storm water-related impacts and identification of appropriate mitigation measures.

26. ~~21~~ The permittees shall establish a mechanism to ensure proper maintenance and operation of all permanent flood control structures. For new developments, the parties responsible for the maintenance of the flood control structures and funding sources for maintenance and operation of the facilities shall be identified prior to issuance of grading permits.

## FISCAL RESOURCES

27. ~~22~~ The permittees shall prepare and submit a unified fiscal analyses report to the Executive Officer of the Regional Board. The fiscal analysis report shall be submitted no later than ~~September 1,~~ August 31, of each year and shall, at a minimum, include the following:

a. Each permittee's expenditures for the previous fiscal year;
b. Each permittee's budget for the current fiscal year;
c. A description of the source of funds.
~~d. Contract services (relating to the NPDES program) describing the service provided and the amount charged for the service;~~
~~e. A list of staff, type of work, estimated time dedicated to the storm water program and estimated cost and;~~
~~f. Each permittee's estimated budget for next fiscal year.~~

## PERMIT EXPIRATION AND RENEWAL

28. ~~23~~ This order expires on ~~September 1,~~ December 1, 2000 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

a. Any revisions to the ~~Drainage Area~~ Municipal Storm Water Management Program ~~Plan~~ including, but not limited to, all the activities the permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;



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b. Changes in land use and/or population including map updates; and

c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls including map updates of the storm drain systems.

29. ~~24~~ This Order may be modified, revoked or reissued prior to its expiration date for the following reasons:

a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order,

b. To incorporate applicable requirements of statewide water quality control plans and policies adopted by the State Water Resources Control Board or any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

30. ~~25~~ This order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

31. ~~27~~ Order No. 90-136 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on ~~September 1, 1995~~ December 1, 1995.

Gerard J. Thibeault
Executive Officer



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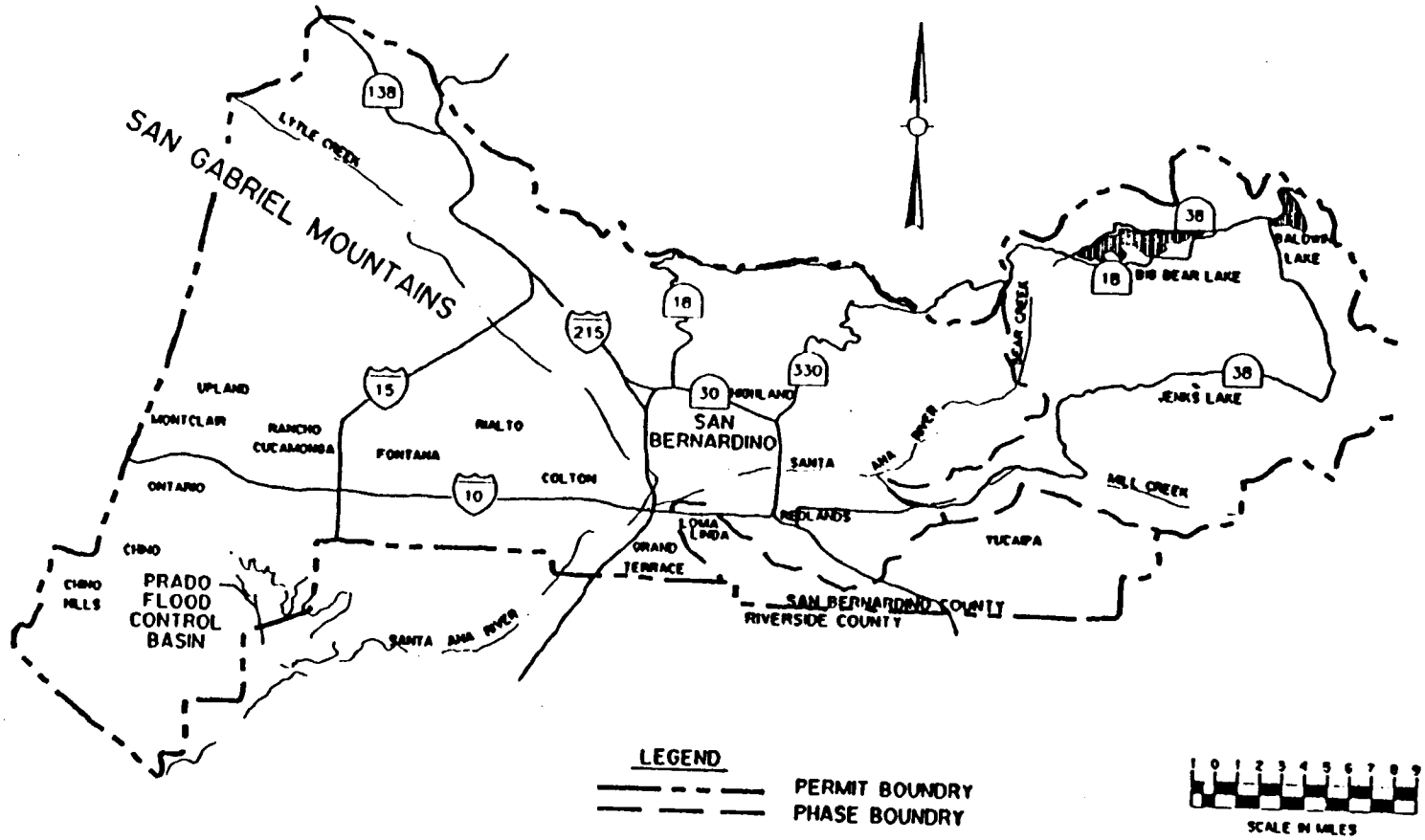
**Attachment 1**

# PROJECT AREA




*REVISED DRAFT OCTOBER 27, 1995*

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## Attachment 2

Inland Surface Streams

A. Santa Ana River
Santa Ana River, Reaches 4, 5, and 6

B. San Bernardino Mountain Streams

Mill Creek Drainage

Mill Creek, Reaches 1 and 2
Mountain Home Creek
Mountain Home Creek, East Fork
Monkey Face Creek
Alger Creek
Falls Creek
Vivian Creek
High Creek
Other Tributaries: Lost, Oak Cove, Green, Skinner, Momyer and Glen Martin Creeks, and other Tributaries to these Creeks

Bear Creek Drainage
Bear Creek
Siberia Creek
Slide Creek
All Other Tributaries to these Creeks

Big Bear Lake Tributaries
North Creek
Metcalf Creek
Grout Creek
Rathbone (Rathbun) Creek
Other Tributaries to Big Bear Lake: Johnson, Minnelusa, Polique, and Red Ant Creeks, and other Tributaries to these Creeks

Baldwin Lake Drainage
Shay Creek
Other Tributaries to Baldwin Lake: Sawmill, Green, and Caribou Canyons and other Tributaries to these Creeks.

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C. Other Streams Draining to Santa Ana River (Mountain Reaches)

Cajon Creek
City Creek
Devil Canyon Creek
East Twin and Strawberry Creeks
Waterman Canyon Creek
Fish Creek
Forsee Creek
Plunge Creek
Barton Creek
Bailey Canyon Creek
Kimbark Canyon, East Fork Kimbark Canyon, Ames Canyon and West Fork Cable Canyon Creeks
Valley Reaches of Above Streams
Other Tributaries (Mountain Reach): Alder, Badger Canyon, Bledsoe Gulch, Borea Canyon, Breakneck, Cable Canyon, Cienega Seca, Cold, Converse, Coon, Crystal, Deer, Elder, Fredalba, Frog, Government, Hamilton, Heart Bar, Hemlock, Keller, Kilpecker, Little Mill, Little Sand Canyon, Lost, Meyer Canyon, Mile, Monroe Canyon, Oak, Rattlesnake, Round Cienega, Sand, Schneider, Staircase, Warm Springs Canyon and Wild Horse Creeks, and other tributary to these Creeks.

D. San Gabriel Mountain Streams (Mountain Reaches)
San Antonio Creek
Lytle Creek (South, Middle, and North Forks) and Coldwater Canyon Creek
Day and East Etiwanda Creeks
Valley Reaches of Above Streams
Cucamonga Creek (Mountain Reach)
Cucamonga Creek (Valley Reach)
Other Tributaries (Mountain Reaches): San Sevaine, Deer, Duncan Canyon, Henderson Canyon, Stoddard Canyon, Icehouse Canyon, Cascade Canyon, Cedar, Falling Rock, Kerkhoff and Cherry Creeks, and other Tributaries to these Creeks.

E. San Timoteo Area Streams
San Timoteo Creek, Reaches 1 and 2
Oak Glen, Potato Canyon and Birch Creeks
Yucaipa Creek

F. Prado Area Streams
Chino Creek



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G. Lake and Reservoirs
Baldwin Lake
Big Bear Lake
Jenks Lake



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## Attachment 3

LIST OF OTHER ENTITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS TO THE SAN BERNARDINO COUNTY STORM WATER CONVEYANCE SYSTEM

Government Agencies

- U.S. Army Corps of Engineers
- Department of Air Force - Norton Air Force Base
- U.S. Forest Services - San Bernardino County National Forest
- California Department of Transportation (Cal Trans)
- California Parks Department - Chino Hills State Park

Hospitals

- Bear Valley Community Hospital
- Chino Community Hospital
- Doctors Hospital
- Kaiser Foundation Hospital
- Loma Linda Community Hospital
- Loma Linda University Medical Center
- Mountains Community Hospital
- Ontario Community Hospital
- Patton State Hospital
- Pettis Memorial V.A Hospital
- Redlands Community Hospital
- Saint Bernardine's Hospital
- San Antonio Community Hospital
- San Bernardino Community Hospital
- San Bernardino County Hospital

Railroads

- AT&SF Railway Company
- Southern Pacific Railroad Company

School Districts

- Alta Loma Elementary School District
- Bear Valley Unified School District
- Central Elementary School District
- Chaffey Joint Union High School District
- Chino Unified School District
- Colton Joint Unified School District
- Cucamonga Elementary School District



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Etiwanda Elementary School District
Fontana Unified School District
Mountain View Elementary School District
Mt. Baldy joint Elementary School District
Ontario-Montclair Elementary School District
Rialto Unified School District
Rim of the World Unified School District
Redlands Unified School District
San Bernardino City Unified School District
Upland Unified School District
Yucaipa Joint Unified School District

Universities and Colleges

California State University San Bernardino
Chaffey College
Crafton Hilla College
San Bernardino Valley College

Water Districts

Big Bear Municipal Water District
Chino Basin Municipal Water District
Cucamonga County Water District
East Valley Water District
Monte Vista Water District
San Bernardino County Waterworks District No. 8
San Bernardino Valley Municipal Water District
South San Bernardino Water district
West San Bernardino County Water District
Yucaipa Valley Water District



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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

MONITORING AND REPORTING PROGRAM NO. 95-53
NPDES NO. CAS008036 ~~CA 8000300~~
FOR
THE SAN BERNARDINO COUNTY TRANSPORTATION/FLOOD CONTROL DEPARTMENT, THE COUNTY OF SAN BERNARDINO, AND THE INCORPORATED CITIES OF SAN BERNARDINO COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

TENTATIVE

## I. GENERAL

1. Revisions of the monitoring and reporting program may be necessary to ensure that the discharger is in compliance with requirements and provisions contained in this order. Revisions may be made by the Executive Officer at any time during the term of this order, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

2. All sample collection, handling, storage, and analyses shall be in accordance with 40 CFR Part 136.

3. The permittees are authorized to complement monitoring data from other sources provided those sources are identical to sources in the Santa Ana Watershed.

4. The permittees shall implement the Consolidated Program for Water Quality Monitoring (submitted as part of the Report of Waste Discharge) until development and implementation of an acceptable watershed monitoring program.

## II. OBJECTIVES

The overall goal of this monitoring program is to develop and support an effective watershed management program. The following are the major objectives:

1. To define water quality status, trends, and pollutants of concern.

2. To characterize pollutants and to assess the influence of land use on water quality.

3. To identify significant water quality problems related to storm water discharges within the watershed.

4. To identify other sources of pollutants in storm water run-off to the extent possible (e.g., atmospheric deposition, contaminated sediments, other nonpoint sources, etc.).

5. To verify and to control illicit discharges.

6. To identify those waters which without additional action to control pollution from storm water discharges cannot reasonably be expected to attain or maintain applicable water



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water quality standards ~~objectives~~ or the goals and requirements of the Basin Plan.

7. To evaluate the effectiveness of existing management programs, including an estimate of pollutant reductions achieved by the structural and nonstructural BMPs.

8. To evaluate costs and benefits to the stakeholder including the public.

The Regional Board recognizes that these objectives may not be attainable during this permit period and authorizes the Executive Officer to evaluate and determine adequate progress toward meeting each objective.

## III. MONITORING PROGRAM REQUIREMENTS

The permittees shall develop and submit for approval of the Executive Officer an integrated ~~watershed~~ monitoring program geared towards achieving the above stated objectives ~~goals~~. In developing this program, the principal permittee is encouraged to seek ~~This program shall be developed in~~ cooperation with the permittees from the Riverside and Orange counties. The Executive Officer or his/her designated representative(s) shall facilitate the coordination meetings or subcommittees formed to achieve this goal. The development and implementation of the monitoring program shall be in accordance with the time schedules prescribed by the Executive Officer. At a minimum, the program shall include the following:

1. Uniform guidelines for quality control, quality assurance, data collection and data analyses.

2. A mechanism for the collection, analyses and interpretation of existing data from Orange, Riverside, and San Bernardino County monitoring programs. These and other data from local, regional or national sources should be utilized to characterize different storm water sources; to determine pollutant generation, transport and fate; to develop a relationship between land use, development size, storm size and the event mean concentration of pollutants; to determine spatial and temporal variances in storm water quality and seasonal and other bias in the collected data; and to identify any unique features of the Santa Ana Watershed. The permittees are encouraged to use data from similar studies, if available.

3. A description of the monitoring program including:

   a. The number of monitoring stations;
   b. Environmental indicators (e. g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;
   c. Parameters selected for field screening and for laboratory work; and

   d. Total number of samples to be collected from each station, receiving water and major outfall monitoring, frequency of sampling during wet and dry weather, short duration or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.



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4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including cost sharing.

## IV. REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of U.S. EPA, Region 9, no later than ~~September 1,~~ November 30, of each year. This progress report may be submitted in a mutually agreed upon electronic format. At a minimum, the annual progress report shall include the following:

   a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order.

   b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the MSWMP. ~~Drainage Area Management Plan~~ The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and in reducing pollutant loads in storm water discharges.

   c. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable.

   d. An analysis and discussion on the monitoring results and any impacts on the receiving waters. Also, recommendations for corrective actions during the upcoming year of MSWMP ~~DAMP~~ implementation and monitoring.

   e. An analysis and the effectiveness of the overall storm water management program. The permittees identification of proposed programs which will result in the attainment of the water quality standards ~~objectives~~, and a time schedule to implement the new programs.

   f. An assessment of the public education program (including industrial facilities and construction sites) and educational activities proposed for the upcoming year.

   g. A progress report on the prosecution of illegal dischargers and reduction



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or elimination of illegal discharges.

3. ~~Co-p~~Permittees shall be responsible for the submittal of all required information/materials needed to comply with this order in a timely manner to the principal permittee. All such submittal shall be signed by a duly authorized representative of the ~~co~~-permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| ITEM | DUE DATE |
|---|---|
| Revised Implementation Agreement | March 1, 1996 |
| Municipal Activities Pollution Prevention Strategy | ~~June 6,~~ September 1, 1996 |
| ~~Legal Authority Certification~~ | ~~November 30, 1995~~ |
| Report on illegal/illicit connections | ~~January 30, 1996~~ April 30, 1997 |
| ~~Enforcement Strategy~~ | ~~March 30, 1996~~ |
| Fiscal Analyses Report | ~~September 1~~ August 31 of each year |
| Report on Illicit/Illegal Discharges | ~~January~~ April 30 of each year |
| Annual Report | ~~September 1~~ November 30 of each year |

Ordered by_____

Gerard J. Thibeault
Executive Officer

~~September 1, 1995~~
December 1, 1995



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STATE OF CALIFORNIA—CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
2010 IOWA AVENUE, SUITE 100
RIVERSIDE, CA 92507-2409
Phone: (909) 782-4130
FAX: (909) 781-6288

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QUALITY CONTROL BOARD
LOS ANGELES REGION

July 21, 1995

**RENEWAL OF WASTE DISCHARGE REQUIREMENTS FOR THE ORANGE, RIVERSIDE, AND SAN BERNARDINO COUNTY AREAS, URBAN STORM WATER RUNOFF**

(To the attached mailing list)

Ladies and Gentlemen:

The following NPDES permits for areawide storm water runoff are scheduled for consideration by the Regional Board at the September 1, 1995 Board meeting;

1. Orange County, Order No. 95-71, NPDES No. CA 8000180
2. Riverside County, Order No. 95-47, NPDES No. CA 8000192
3. San Bernardino County, Order No. 95-53, NPDES No. CA 8000200

The requirements specified in these tentative orders are substantially the same. Therefore, a copy of one of these tentative orders is enclosed for your review. If you need copies of any of the other tentative orders, please contact Liz Vera at 909-320-2067.

If you have any questions regarding the tentative order for Orange County, please contact Laurie Nevils at 909-320-2067, for Riverside County, please contact Pavlova Vitale at 909-782-4920, and for San Bernardino County, please contact Reza Akhtarshad at 909-320-2024.

Sincerely,

Joanne E. Schneider

for Michael J. Adackapara, Chief
Storm Water Program

Enclosure: Tentative Order No. 95-47, 95-53, or 95-71.

Mailing list:

- U. S. Environmental Protection Agency - Robert Wills/Eugene Bromley, Pretreatment, Sludge, and Storm Water Section
- U. S. Environmental Protection Agency - Terry Oda, Permits Issuance Section



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- U. S. Environmental Protection Agency - Kenneth Greenberg, Enforcement Section
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STATE OF CALIFORNIA—CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
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LOS ANGELES REGION

July 21, 1995

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Ladies and Gentlemen:

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R0065461

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

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NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
NPDES NO. CA 8000192
AND
WASTE DISCHARGE REQUIREMENTS
ORDER NO. 95-47
FOR
THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUNOFF

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On January 3, 1995, the Riverside County Flood Control and Water Conservation District (RCFC&WCD), in cooperation with the County of Riverside, and the incorporated cities of Beaumont, Corona, Calimesa, Canyon Lake, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as "permittees"), have jointly submitted a National Pollutant Discharge Elimination System (NPDES) Application No. CA 8000192 to renew their areawide NPDES permit for urban storm water runoff.

2. The 1987 amendments to the Clean Water Act required the United States Environmental Protection Agency (EPA) to develop permitting regulations for storm water discharges from municipal separate storm sewer systems serving a population of 100,000 or more and for storm water discharges associated with industrial activities, including construction sites. The EPA published proposed storm water regulations on December 7, 1988 and promulgated the final regulations on November 16, 1990. Prior to the EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Regional Board requested areawide NPDES permits for urban storm water runoff.

3. On July 13, 1990, the Regional Board adopted Order No. 90-104 for urban storm water runoff from urban areas in Riverside County within the Santa Ana Region. Order No. 90-104 expired on July 1, 1995. The Riverside County Flood Control and Water Conservation District was named as the principal permittee and Riverside County and the incorporated cities were named as the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the RCFC&WCD will continue as principal permittee and Riverside County and the incorporated cities will continue as co-permittees. However, the Regional Board, in exercising its enforcement discretion, will take action only against the individual permittee responsible for specific violations of this order, whenever possible.





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4. Order No. 90-104 required the permittees to develop and implement a drainage area management plan (DAMP); develop and implement storm water and receiving water monitoring plans; to eliminate illegal and illicit discharges to the storm drain systems; and, to enact the necessary legal authority to effectively prohibit illegal and illicit discharges. The overall goal of these requirements was to reduce pollutant loadings to surface waters from urban runoff to the maximum extent practicable.

5. The Report of Waste Discharge (the permit renewal application) included the following major components:

   a. A map of the drainage area and maps of existing storm drain facilities
   b. A summary of the storm water management program
   c. A Consolidated Program for Water Quality Monitoring
   d. A copy of a Proposed Storm Water/Urban Runoff Management and Discharge Control Ordinance
   e. A copy of the current Implementation Agreement
   f. A copy of each of the Interagency Agreements
   g. The Drainage Area Management Plan (DAMP)
   h. A copy of Proposed Riverside County Grading and Erosion Control Ordinance

   These and other documents submitted as part of the Report of Waste Discharge are hereby made a part of this order.

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6. Within the Santa Ana Region, the permittees serve a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The permitted area is shown on Appendix 1. This order regulates storm water runoff from areas under the jurisdiction of the permittees. The term storm water as used in this order includes storm water runoff, snow melt runoff, and surface runoff and drainage. The average annual rainfall in the permitted area ranges from 10 to 12 inches. The permittees have jurisdiction over and/or maintenance responsibility for storm water conveyance systems within Riverside County. The storm drain system includes an estimated 200 miles of open and closed storm drains owned and operated by RCFC&WCD and an estimated 57 miles of open and closed storm drains owned and operated by the remaining permittees. The permittees have identified major outfalls (outfalls with a pipe diameter of 36 inches or greater or drainage areas draining 50 acres or more) and have submitted maps of existing storm drain facilities.

7. Approximately one quarter (1/4) of the entire Riverside County area drains into water bodies within the Santa Ana Region. Most of the urbanized areas of Riverside County lie within this Regional Board's jurisdiction. Storm water runoff from other portions of Riverside County is regulated by the San Diego and Colorado River Basin Regional



R0065463

Boards. The discharges consist of runoff from rainfall, snow melt, and surfacing ground water from various land use areas which either discharge directly to the Santa Ana River or to watercourses tributary to the Santa Ana River. Other major rivers in the area include the San Jacinto River and Temescal Creek. The San Jacinto Mountain areas drain into the San Jacinto River, which discharges into Lake Elsinore. Any overflow from Lake Elsinore is tributary to Temescal Creek, which flows into Reach 3 of the Santa Ana River in the Prado Flood Control Basin.

8. The Santa Ana River Basin is the major watershed within this Region. This watershed is divided into the upper and lower Santa Ana watersheds. The lower Santa Ana River Basin (downstream from Prado Dam) includes the Orange County drainage areas and the Upper Santa Ana River Basin includes the San Bernardino County and the Riverside County drainage areas. The San Bernardino County drainage areas are generally upstream of the Riverside County drainage areas.

9. The three county areas within this Region are regulated under three areawide permits for urban storm water runoff. These areawide NPDES permits are:

   a. Orange County, NPDES No. CA 8000180, Order No. 90-71 (upon renewal Order No. 95-52)

   b. Riverside County, NPDES No. CA 8000192, Order No. 90-104 (upon renewal Order No. 95-47)

   c. San Bernardino County, NPDES No. CA 8000200, Order No. 90-136 (upon renewal Order No. 95-53)

10. Runoff from the San Bernardino County drainage areas is generally conveyed to the Riverside County drainage areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Dam (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

11. In addition to the Regional Board, a number of other stakeholders are involved in the management of the water resources of the Region. These include, but are not limited to, the incorporated cities in the Region, publicly owned treatment works, the three counties, and the Santa Ana Watershed Project Authority and its member agencies. The entities listed in Appendix 2 are considered as potential dischargers of storm water to the Riverside County drainage areas. It is expected that these entities will also work cooperatively with the permittees to manage urban runoff. The Regional Board has the



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discretion and authority to require non-cooperating entities to participate in this areawide permit or to issue individual storm water permits, pursuant to 40 CFR 122.26(a). Cooperation and coordination among all the stakeholders are critical to optimize the use of limited resources and insure economical management of the watershed. Recognizing this fact, this order focusses on watershed management and seeks to integrate the programs of all the stakeholders, especially the three municipal storm water permit holders, within this watershed.

12. The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies are threatened or impaired in part due to urban storm water runoff and non-storm water flows from urbanized areas. Preliminary results from urban storm water monitoring programs within the Region indicate that major pollutants of concern in urban runoff are certain heavy metals, sediment, coliform bacteria, pesticides, and nutrients. Municipal storm water runoff is a source of pollutants to waters of the Region that may be causing or contributing to water quality impairment. It is recognized that instream or end-of-channel treatment of storm water is difficult and expensive. Therefore, it is critical to identify the pollutant sources and to develop management practices necessary to reduce pollutant loading to storm water. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events and point source discharges permitted by the Regional Board under individual permits.

13. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources of storm water pollution:

    a. Industrial sites where appropriate pollution control and best management practices (BMPs) are not implemented,

    b. Construction sites where erosion and siltation controls and BMPs are not implemented, and

    c. Urban runoff where the drainage area is not properly managed.

14. To address the industrial and construction sites, the State Water Resources Control Board (State Board) issued two statewide general NPDES permits: one for storm water runoff from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water runoff from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). Most industrial activities (some light industrial activities are exempt) and construction activities on five acres or more are required to get individual NPDES permits for storm water discharges, or get coverage under these statewide general permits by completing and filing a Notice of Intent (NOI) with the State Board.

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15. In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water runoff from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order No. 94-7, NPDES NO. CA 8000336, for concentrated animal feeding operations, including dairies (General Dairy Permit). The Regional Board has issued and continues to issue individual storm water permits for certain industrial facilities within the Region.

16. One of the major components of these statewide permits, the Caltrans permit, and the General Dairy Permit is the requirement for the development and implementation of a storm water pollution prevention plan (SWPPP) for each facility.

17. The Regional Board is the enforcing authority for the two statewide general permits. However, in most cases, the industrial and construction sites discharge directly into storm drains and/or flood control facilities owned and operated by the permittees. These industrial and construction sites are also regulated under local laws and regulations. Therefore, a coordinated effort between the permittees and the Regional Board is critical to avoid duplicative storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

18. The permittees generally conduct inspections of industrial and commercial facilities and construction sites within their jurisdiction. The permittees have established a subcommittee to develop an enforcement/compliance strategy for industrial and commercial facilities and construction sites. The permittees have agreed to notify Regional Board staff of industrial and construction facilities which are not in compliance with the storm water regulations.

19. The permittees have agreed not to issue grading and/or building permits without proof of compliance for projects subject to the General Permit for Storm Water Discharges Associated with Construction Activity.

20. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm drain system maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees are required to assess all of the public agency related



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activities and facilities for potential impact to storm water quality and develop and implement best management practices to reduce pollutant discharges from these activities/facilities. Non-storm water discharges from these facilities and/or activities also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III., Discharge Limitations, 3 of this order or are permitted by the Regional Board under an individual NPDES permit.

21. The major focus of storm water pollution prevention is the development and implementation of an appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to attain water quality consistent with the water quality objectives for the receiving waters in order to protect beneficial uses. The permittees developed and submitted a DAMP, which was approved on January 18, 1994.

22. The DAMP is a dynamic document and the permittees have implemented, or are in the process of implementing its various elements. The Regional Board also recognizes other drainage area management plans such as the Drainage Water Quality Plan for Lake Mathews (DWQPLM), which includes structural BMPs for pollution control. The RCFC & WCD and Riverside County are involved in the DWQPLM.

23. There is some contribution of pollutants in urban runoff from privately owned and operated facilities such as residences, businesses and commercial establishments and public and private institutions. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, and institutions. Therefore, the DAMP has a strong emphasis on public education.

24. The DAMP included 34 BMPs and a time schedule for implementation. These BMPs are organized into two components: BMPs for existing facilities and BMPs for new development. Both components include regulatory activities, public education programs and operations and maintenance activities.

25. In order to characterize storm water discharges, to identify problem areas, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. From 1990 through 1995, the principal permittee administered the monitoring program for the permittees which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The Report of Waste Discharge included a Consolidated Program for Water Quality Monitoring.



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26. In order to make the best use of limited resources of all the permittees (including other municipal permittees in San Bernardino and Orange Counties), and to derive maximum benefit from the storm water management programs, future programs should focus on a watershed approach. An integrated management program may be developed with the cooperation of all the stakeholders, including the permittees in the three counties, and the Regional Board.

27. The permittees have agreed to revise the implementation agreement that was developed in 1990 as required under Order No. 90-104 to coordinate the activities of the principal and co-permittees.

28. Illegal dumping and illicit/illegal connections and discharges to the storm drains are major contributors to storm water and other surface water contamination. Except for the City of Riverside, all the permittees have completed a reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains). The permittees are required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are required to develop a program to prevent any future illegal/illicit connections to their storm drains and flood control facilities.

29. This order requires the permittees to continue to implement the BMPs listed in the DAMP and to effectively prohibit illegal and illicit discharges to the storm drain system. One of the major elements of the DAMP, the Storm Water/Urban Runoff Management and Discharge Controls Ordinance, was adopted by Riverside County on May 9, 1995. The purpose of this ordinance is to reduce pollutant discharges in storm water, and to regulate illicit connections and non-storm water discharges to the storm drain system.

30. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in the development of General Plans, in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc.

31. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Riverside County having programs/activities that have an impact on storm water quality (e.g., Fire Department, Department of Environmental Health, Planning Department, Building and Safety, Code Enforcement, etc.). As such, these organizations are expected to actively participate in implementing this areawide storm water program.



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32. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, agricultural land, utilities and special districts, and Native American tribal lands. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.

33. The permittees may petition the Regional Board to issue a NPDES permit to any discharger of non-storm water into storm drain systems that the permittees own or operate.

34. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region.

35. The requirements contained in this order are necessary to implement the Basin Plan.

36. In accordance with the Clean Water Act and its implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants to waters of the United States to the maximum extent practicable.

37. Numeric and narrative water quality objectives are contained in the Basin Plan for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. Due to the high cost associated with monitoring, and due to the variability that exists in the current storm water monitoring efforts being conducted by the permittees and other municipal permittees in Orange and San Bernardino Counties under their municipal storm water permits, a tri-county monitoring program to develop and implement effective monitoring procedures and strategies will be considered.

38. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Regional Board.



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39. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

40. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

41. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

42. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

**IT IS HEREBY ORDERED** that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and the regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF THE PRINCIPAL PERMITTEE

The principal permittee shall be responsible for managing the overall storm water program and shall:

1. Conduct water quality and hydrographic monitoring of the municipal separate storm drain system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop uniform criteria for inspections of the municipal separate storm drain systems.

3. Conduct inspections of the storm drain systems owned and operated by the RCFC&WCD.

4. Implement management programs, monitoring programs, and related plans as required by this order.



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5. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority within the scope of the Riverside County Flood Control and Water Conservation District Act, as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i).

6. Respond and/or arrange for responding to emergency situations such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or reduce the discharge of pollutants to the municipal separate storm drain systems and to waters of the United States.

7. Prepare and submit to the Executive Officer of the Regional Board, unified reports, plans, and programs necessary to comply with this order.

The activities of the principal permittee should include, but not be limited to, the following:

8. Coordinate permit activities and participate in any committees/subcommittees formed to coordinate permit compliance activities.

9. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

10. Coordinate the implementation of areawide storm water quality management activities such as monitoring programs, public education, other pollution prevention measures, household hazardous waste collection, etc.

11. Gather and disseminate information on the progress of statewide municipal storm water programs and evaluate the information for potential use in the execution of this order.

12. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in reducing pollutant loadings to surface waters to the maximum extent practicable.

13. Coordinate activities pertaining to implementation of this order with the Regional Board.

14. Solicit and coordinate public input for any major proposed storm water management programs and implementation plans.



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15. Develop and implement mechanisms, performance standards, etc., to promote uniform and consistent implementation of BMPs among the permittees.

16. In conjunction with the co-permittees, implement the BMPs listed in the approved DAMP.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

Each co-permittee shall be responsible for managing the storm water program within its jurisdiction and shall:

1. Adopt the Grading and Erosion Control Ordinance or its equivalent, within 120 days of adoption of this order.

2. Conduct storm drain system inspections in accordance with the uniform criteria developed by the principal permittee.

3. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i).

4. Implement management programs, monitoring programs, and related plans as required by this order.

The co-permittees' activities should include, but not be limited to, the following:

5. Administer the storm water and erosion control ordinances adopted pursuant to Item 1., above.

6. Conduct and coordinate with the principal permittee any surveys, monitoring and characterizations needed to identify the pollutant sources and drainage areas.

7. Review and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

8. Participate in any committees or subcommittees formed to address compliance with this order.

9. In conjunction with the principal permittee, implement the BMPs listed in the approved DAMP.



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10. Share all pertinent information regarding the progress of statewide municipal storm water programs and evaluate any information obtained for potential use in the execution of this order.

11. Participate in the tri-county (Orange, Riverside, and San Bernardino counties) efforts for watershed management.

12. Submit to the principal permittee any information necessary to develop unified report submittals to the Executive Officer of the Regional Board.

13. Prepare and submit any specific reports/information related to the permittees' storm water program as deemed necessary by the Executive Officer of the Regional Board.

14. The City of Riverside shall complete the reconnaissance survey of the City's storm drain systems and eliminate all illegal and/or illicit connections by September 29, 1995. The City shall submit a report of the findings by October 30, 1995.

## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.

2. This order authorizes storm water discharges to waters of the State from the permittees' existing municipal separate storm drain systems provided that the permittees implement the BMPs (structural and/or non-structural control measures) necessary to reduce the pollutants in the discharge to the maximum extent practicable. All other discharges are prohibited except those listed under Item 3., below, those for which the Regional Board has issued individual permits, and those discharges which are in accordance with Item 5., below.

3. The following discharges need not be prohibited by the permittees provided that such discharges are identified and appropriate control measures to minimize the adverse impacts of such discharges are developed and implemented.

   a. Discharges composed entirely of storm water;

   b. Discharges covered by an NPDES permit, or for which a written clearance has been issued by the Regional Board office;

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c. Discharges from potable water line flushing and other potable water sources;

d. Discharges from fire fighting and fire hydrant testing and flushing;

e. Discharges from landscape irrigation, lawn watering and other irrigation activities;

f. Diverted stream flows:

g. Rising ground waters and natural springs;

h. Uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)) and uncontaminated pumped groundwater;

i. Passive foundation drains;

j. Air conditioning condensate;

k. Water from crawl space pumps;

l. Passive footing drains;

m. Discharges from individual residential vehicle washing (not including discharges from mobile sources such as automobile/equipment detailing or washing);

n. Flows from riparian habitats and wetlands;

o. Dechlorinated swimming pool discharges;

p. Waters not otherwise containing wastes as defined in California Water Code Section 13050 (d); and

q. Other types of discharges identified and recommended by the permittees and approved by the Regional Board.

For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.



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4. The permittees shall take necessary steps as required under Item 1., above, to ensure that non-storm water discharges do not cause or contribute to violations of water quality objectives or discharge pollutants to waters of the United States.

5. Non-storm water discharges from public agency activities into waters of the state are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3., above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in the storm water pollution prevention strategy, required under Section V., Provision 13., of this order, a proposed plan to eliminate the non-storm water discharges.

6. The discharge shall not cause or contribute to degradation of groundwaters.

7. Pollutants in storm water discharges from the municipal separate storm sewer system shall be reduced to the maximum extent practicable.

## IV. RECEIVING WATER LIMITATIONS

The discharge shall not cause a violation of any applicable water quality objectives for receiving waters adopted by the Regional Board or the State Water Resources Control Board. If more stringent applicable water quality objectives are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this order in accordance with such more stringent standards.

## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order and specifically with Section III., Discharge Limitations, and Section IV., Receiving Water Limitations, through timely implementation of their approved Drainage Area Management Plan and any approved modifications, revisions, or amendments thereto, which are developed pursuant to this order. The Drainage Area Management Plan is hereby made an enforceable part of this ordrer.

2. Permittees shall implement all elements of the approved DAMP. Any proposed revisions to the DAMP shall be submitted to the Executive Officer of the Regional Board for review and approval. All revisions to the DAMP approved by the Executive Officer shall be implemented in a timely manner.

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3. The permittees shall comply with Monitoring and Reporting Program No. 95-47, which is hereby made a part of this order, and any revisions thereto. The Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national, or other monitoring programs in lieu of Monitoring and Reporting Program No. 95-47.

4. Upon approval by the Executive Officer of the Regional Board, all plans and reports required by this order, including any subsequent amendments, shall be implemented and shall become an enforceable part of this order.

5. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any unusual discharge of storm or wastewaters to facilities owned or operated by the permittees or to any waters of the Region (e.g., discharges due to a levee break, illegal discharges to the street, etc.); if the discharge is to Canyon Lake or any tributary to Canyon Lake, Elsinore Valley Municipal Water District shall also be notified immediately;

   b. Any industrial and/or construction facilities not in compliance with the storm water regulations; and

   c. Any activities on federal, state, or other entity's land or facilities, where the permittees do not have any jurisdiction, and where the activities may be contributing pollutants to waters of the United States.

6. The permittees shall not issue any permits for new businesses and/or construction activities until proof of intent to comply with the State's General Storm Water permits is verified. The proof of compliance may include a letter from the Regional Board office, a copy of the Notice of Intent, etc. The permittees shall coordinate the activities of the various departments/sections within each permittee's jurisdiction to insure consistent implementation of storm water regulations.

## IMPLEMENTATION AGREEMENT

7. No later than March 1, 1996, the permittees shall submit to the Executive Officer of the Regional Board an updated copy of an implementation agreement with authorized signatures of each of the permittees. Any subsequent revisions to the implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees. At a minimum, the implementation agreement should include all the essential elements of the existing agreement, developed in accordance with Order No. 90-104.



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## LEGAL AUTHORITY

8. The permittees shall adopt the proposed Storm Water/Urban Runoff Management and Discharge Control Ordinance, or its equivalent. No later than November 30, 1995, each permittee shall certify to the Regional Board that it has adequate legal authority to control the discharges of pollutants into the municipal storm drain system and that it has satisfied the requirements of 40 CFR Section 122.26(d)(2)(i). At a minimum, each permittee's certification shall include a statement attesting that the ordinance adopted provides the permittee the legal authority to enforce storm water regulations within its jurisdiction.

## ENFORCEMENT/COMPLIANCE STRATEGY

9. Permittees shall develop and implement an enforcement strategy to enforce storm water and erosion control ordinances. This enforcement strategy should include a mechanism to determine compliance of industrial facilities and construction sites, and notification to the Executive Officer of any finding of non-compliance and any proposed local enforcement action. The enforcement/compliance strategy shall be submitted to the Executive Officer of the Regional Board by March 30, 1996.

## PUBLIC EDUCATION AND OUTREACH

10. The permittees shall continue to implement the public education efforts already underway and shall implement all of the proposed efforts identified in the Report of Waste Discharge. Any proposed changes shall be submitted to the Executive Officer of the Regional Board for approval.

11. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

12. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.

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## MUNICIPAL FACILITIES

13. The permittees shall develop a pollution prevention strategy to address public agency facilities and activities not currently required to obtain coverage under the State's general storm water permits. The pollution prevention strategy shall be developed to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the United States. The pollution prevention strategy shall be submitted to the Executive Officer of the Regional Board by June 6, 1996 and shall at a minimum include the following:

    a. Identification of all public agency facilities and activities that are potential contributors of pollutants to waters of the United States.

    b. Potential pollutants of concern that are associated with the facilities and/or activities;

    c. Proposed BMPs and a schedule for implementation to ensure that these facilities are not sources of pollutants into the waters of the United States;

    d. A monitoring program to measure the effectiveness of the BMPs;

    e. A schedule for training of public agency staff to ensure proper implementation of the BMPs; and

    f. Identification of any non-storm water discharges from the public agency facilities/activities, frequency of the discharge, characterization of the discharge, volume, flow and duration of the discharge, short term source control BMPs to mitigate the impacts from the discharge, and a schedule for elimination or permitting of the discharge.

## NEW DEVELOPMENT (INCLUDING RE-DEVELOPMENT)

14. Within 90 days of the issuance of this order, the permittees shall begin implementation of the new development BMPs (DAMP Supplement A) that were developed pursuant to Order No. 90-104.



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15. Within 120 days of the issuance of this order, the permittees shall review their General Plan update and CEQA document preparation processes to insure that storm water-related issues are properly considered. If necessary, these processes shall be revised to include requirements for evaluation of storm water-related impacts and identification of appropriate mitigation measures.

16. The permittees shall establish a mechanism to insure proper maintenance and operation of all permanent flood control structures.. For new developments, the parties responsible for the maintenance of the flood control structures and funding sources for maintenance and operation of the facilities shall be identified prior to issuance of grading permits.

## FISCAL RESOURCES

17. The permittees shall prepare and submit a unified fiscal analysis report to the Executive Officer of the Regional Board. The fiscal analysis report shall be submitted no later than September first of each year and shall at a minimum include the following:

    a. Each permittee's expenditures for the previous fiscal year;
    b. Each permittee's budget for the current fiscal year;
    c. A description of the source of funds;
    d. A description of contract services (relating to the NPDES program), including the service provided and the amount charged for the service;
    e. A list of staff, type of work, estimated time dedicated to the storm water program and estimated cost; and
    f. Each permittee's estimated budget for the next fiscal year.

## PERMIT EXPIRATION AND RENEWAL

18. This order expires on September 1, 2000 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

    a. Any revisions to the Drainage Area Management Plan including, but not limited to, all the activities the permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;

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b. Changes in land use and/or population including map updates; and

c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls, including map updates of the storm drain systems.

19. This Order may be modified, revoked or reissued prior to its expiration date for the following reasons:

a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order;

b. To incorporate applicable requirements of statewide water quality control plans and policies adopted by the State Water Resources Control Board or any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

20. This order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

21. Order No. 90-104 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on September 1, 1995.

Gerard J. Thibeault
Executive Officer

*DRAFT: July 21, 1995*

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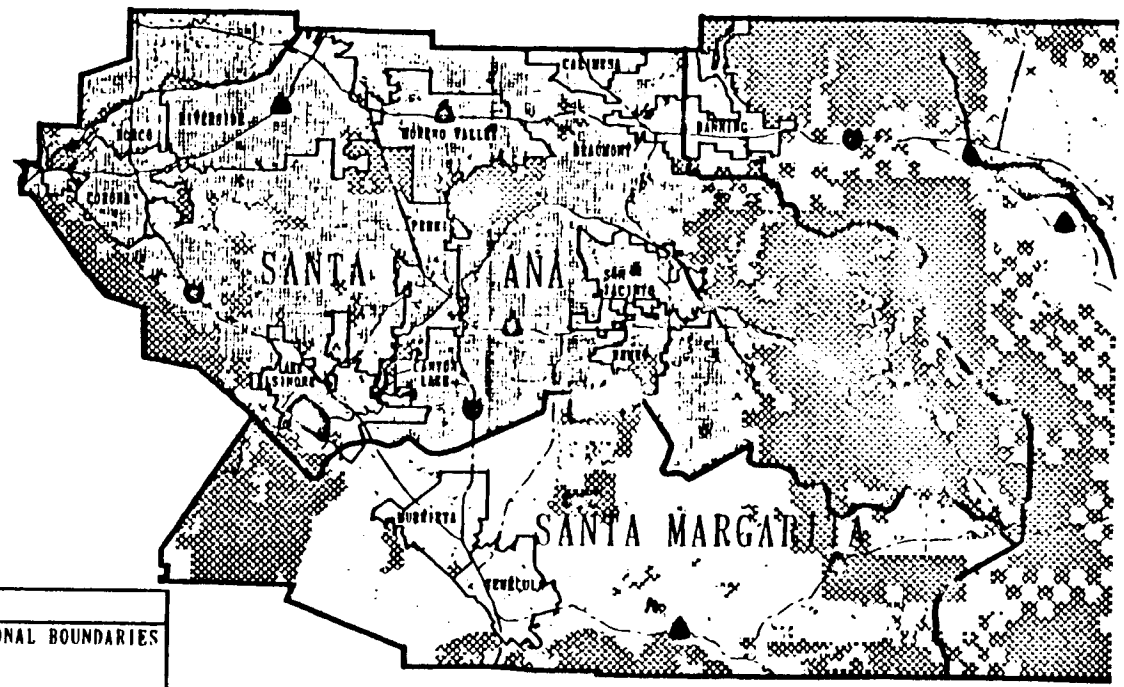
# ORDER NO. 95-47
# APPENDIX 1
# PERMITTED AREA



## WESTERN RIVERSIDE COUNTY NPDES PERMIT AREA




N.T.S.

| LEGEND | |
|---|---|
| | NPDES PERMIT REGIONAL BOUNDARIES |
| | SANTA ANA PERMIT |
| | SANTA MARGARITA PERMIT |
| | STATE & FEDERAL LANDS EXEMPTED FROM NPDES PERMIT AREAS |
| * PAI | DATA WITHIN CITIES MAY NOT BE COMPLETE |

This map was made by the Riverside County Geographic Information System. The map elements were produced by the Assessor and the Transportation and Land Management Agency which is comprised of the Administration, Aviation, and Information Resources divisions and the Building & Safety, Planning and Transportation departments. The County of Riverside assumes no warranty or legal responsibility for the information contained on this map. Data and information represented on this map is subject to update and modification. The Geographic Information System and other sources should be queried for the current information.

12/06/94

FIGURE 2-1

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APPENDIX 2

LIST OF OTHER ENTITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS TO STORMWATER FACILITIES

Government Agencies
- Department of the Air Force, March Air Force Base
- Special Districts
- State Parks
- U.S. Army Corps of Engineers

Hospitals
- AMI Circle City Hospital
- Corona Community Hospital
- Riverside Community Hospital
- Riverside General Hospital

Railroads
- AT&SF Railway Company
- Southern Pacific Railroad

School Districts
- Alvord Unified - School District
- Corona - Norco Unified School District
- Hemet Unified School District
- Lake Elsinore Unified School District
- Menifee Union School District
- Moreno Valley Unified School District
- Nuview Union School District
- Perris Elementary School District
- Perris Union High School District
- Riverside Unified School District
- Romoland School District
- San Jacinto Unified School District
- Val Verde School District

Universities and Colleges
- Chapman College
- Mt. San Jacinto College
- Riverside Community College
- University of California Riverside

Water Districts
- Eastern Municipal Water District
- Elsinore Valley Municipal Water District
- Metropolitan Water District
- Western Municipal Water District

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California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 96-47

NPDES NO. CA 8000192
for
THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE STORM WATER RUNOFF

TENTATIVE

## I. GENERAL

1. Revisions of the monitoring and reporting program may be necessary to ensure that the discharger is in compliance with requirements and provisions contained in this order. Revisions may be made by the Executive Officer at any time during the term of this order, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring or the number and size of samples collected.

2. All sample collection, handling, storage, and analyses shall be in accordance with 40 CFR Part 136.

3. The permittees are authorized to complement their monitoring data with data from other sources provided those sources are identical to sources in the Santa Ana Watershed.

4. The permittees shall implement the Consolidated Program for Water Quality Monitoring (submitted as part of the Report of Waste Discharge) until development and implementation of an acceptable watershed monitoring program.

## II. OBJECTIVES

The overall goal of this monitoring program is to develop and support an effective watershed management program. The following are the major objectives:

1. To define water quality status, trends, and pollutants of concern.

2. To characterize pollutants and to assess the influence of land use on water quality.



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3. A description of the monitoring program including:

   a. The number of monitoring stations;
   b. Environmental indicators (e. g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;
   c. Parameters selected for field screening and for laboratory work; and
   d. Total number of samples to be collected from each station, receiving water and major outfall monitoring, frequency of sampling during dry weather and short or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.

4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including cost sharing.

## *IV.* REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of U. S. EPA, Region 9, no later than September 1, of each year. This progress report may be submitted in a mutually agreed upon electronic format. At a minimum, the annual progress report shall include the following:

   a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order.

   b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the Drainage Area Management Plan. The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and in reducing pollutant loads in storm water discharges.

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c. An analysis of the feasibility and usefulness of using structural BMPs based on data collected from the Drainage Water Quality Plan for Lake Mathews and/or other similar programs..

d. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable.

3. Co-permittees shall be responsible for the submittal of all required information/materials needed to comply with this Monitoring and Reporting Program in a timely manner to the principal permittee. All such submittals shall be signed by a duly authorized representative of the co-permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| ITEM | DUE DATE |
|---|---|
| Report on Illicit/Illegal Discharges (City of Riverside) | October 30, 1995 |
| Legal Authority Certification | November 30, 1995 |
| Revised Implementation Agreement | March 1, 1996 |
| Enforcement Strategy | March 30, 1996 |
| Municipal Activities Pollution Prevention Strategy | June 6, 1996 |
| Fiscal Analyses Report | September 1 of each year (next report due in 1996) |
| Annual Report | September 1 of each year (next report due in 1996) |

Ordered by_____
Gerard J. Thibeault
Executive Officer

September 1, 1995

*DRAFT: July 21, 1995*

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**California Regional Water Quality Control Board**
**Santa Ana Region**
**2010 Iowa Avenue, Suite 100**
**Riverside, CA 92507-2409**

**FACT SHEET**

September 1, 1995

ITEM:

SUBJECT: Waste Discharge Requirements for the Riverside County Flood Control & Water Conservation District, the County of Riverside and Incorporated Cities of Riverside County within the Santa Ana Region, Storm Water Runoff Management Program, Riverside County, Order No. 95-47 (NPDES No. CA 8000192)

PROJECT

The attached pages contain information concerning an application for waste discharge requirements and a National Pollutant Discharge Elimination System (NPDES) permit, Order No. 95-47, NPDES No. CA 8000192, which prescribes waste discharge requirements for urban storm water runoff from the cities and the unincorporated areas in Riverside County within the jurisdiction of the Santa Ana Regional Board. On January 3, 1995 the Riverside County Flood Control and Water Conservation District (RCFC&WCD), the County of Riverside, the Cities of Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as the permittees), submitted NPDES Application No. CA 8000192 for an areawide stormwater permit. The permit application was submitted in accordance with the requirements specified in the previous NPDES permit (Order No. 90-104, NPDES No. CA 8000192) which expired on July 1, 1995. Additionally, the permit application follows guidance provided by staff of the State Water Resources Control Board (State Board) and the Regional Water Quality Control Board (Regional Board).

PROJECT AREA

The permitted area is delineated by the San Bernardino-Riverside County boundary line on the north and northwest, the Orange-Riverside County boundary line on the west, the Santa Ana-San Diego Regional Board boundary line on the south, and the Santa Ana-Colorado River Basin Regional Board boundary line on the east (see Appendix 1). For the following areas/facilities, the permittees may lack legal jurisdiction over storm water discharges into their systems:

- federal lands and state properties, including, but not limited to, military bases, national forests, hospitals, schools, colleges and universities, and highways;
- Native American tribal lands;
- open space and rural (non-urbanized) areas;

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- agricultural lands; and
- utilities and special districts.

## CLEAN WATER ACT REQUIREMENTS

The Federal Clean Water Act (CWA) allows the United States Environmental Protection Agency (USEPA) to delegate its NPDES permitting authority to states with an approved environmental regulatory program. The State of California is one of the delegated states. The Porter-Cologne Water Quality Control Act (California Water Code) authorizes the State Board, and the nine Regional Boards to regulate and control the discharge of pollutants into waters of the State and tributaries thereto. Section 405 of the Water Quality Act (WQA) of 1987 added Section 402(p) to the CWA. Pursuant to Section 402(p)(4) of the CWA, the USEPA promulgated regulations for stormwater permit applications for stormwater discharges associated with industrial activities and municipal separate storm drain systems serving a population of 100,000 or more. This permit governing municipal stormwater discharges meets both the statutory requirements of Section 402(p) and all requirements applicable to an NPDES permit issued under the issuing authority's discretionary authority in accordance with Section 401(a)(1)(B) of the CWA.

## AREAWIDE STORMWATER PERMIT

To regulate and control stormwater discharges from the Riverside County area to the municipal storm drain systems, an areawide approach is essential. The entire storm drain system is not controlled by a single entity; the RCFC&WCD, the County, several Cities, the State Department of Transportation (Caltrans), and the U.S. Army Corps of Engineers, in addition to other smaller entities, manage the systems. In addition to the Cities, the County and the RCFC&WCD, there are a number of other significant contributors of urban stormwater runoff to these storm drain systems. These include: large institutions such as the State university system, schools, hospitals, etc.; federal facilities such as military sites, etc.; State agencies such as Caltrans; water and wastewater management agencies such as Metropolitan Water District, Eastern Municipal Water District and Western Municipal Water District; the National Forest Service and State parks. The Regional Board has issued a separate NPDES permit to Caltrans. In addition, Caltrans and the other contributors identified are not under the jurisdiction of the permittees. The management and control of the entire flood control system cannot be effectively carried out without the cooperation and efforts of all these entities. Also, it would not be meaningful to issue a separate stormwater permit to each of the entities within the permitted area whose land/facilities drain into the storm drain systems operated by the permittees. The Regional Board has concluded that the best management option for the Riverside County area is to issue an areawide stormwater permit to the RCFC&WCD, County of Riverside, and the cities in Riverside County. Stormwater discharges from other state, federal, utility, or special district facilities and state or federal lands will either be added to the Riverside County permit or permitted separately.

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Some of the RCFC&WCD storm drain systems discharge into storm drain systems controlled by other entities, such as the Orange County Flood Control District, which is regulated by the Regional Board under NPDES No. CA 8000180. Some areas within Riverside County are within the Colorado River Basin and San Diego Regional Boards' jurisdictions. Permit requirements for storm water runoff from the drainage areas of Riverside County within the jurisdiction of the San Diego and Colorado River Basin Regional Boards are addressed by these Regional Boards.

COORDINATION WITH OTHER REGIONAL AGENCIES

In developing best management practices and monitoring programs, consultation/coordination with other drainage management entities and other Regional Boards is essential. Regional Board staff will coordinate the program with other Regional Boards and other flood control entities/cities on an "as needed" basis. The permit/program process is at the same stage of development in both the Santa Ana and San Diego Regional Board areas of Riverside County. Common programs, reports, implementation schedules and efforts are desirable and will be utilized to the maximum extent practicable.

EXISTING FACILITIES AND PROGRAMS

Within the Santa Ana Region, the RCFC&WCD serves a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The RCFC&WCD's system includes an estimated 200 miles of open and closed storm drains. The storm drain systems operated by the remaining permittees include an estimated 57 miles of open and closed storm drains. Approximately one-quarter (1/4) of Riverside County drains into water bodies within this Regional Board's jurisdiction. Storm water discharges from urbanized areas consist mainly of surface runoff from residential, commercial, and industrial developments. In addition, there are storm water discharges from agricultural land uses, including dairy operations. However, the WQA specifically excludes agricultural discharges from regulation under this program. Storm water runoff from the dairies is regulated under the General Dairy Permit, Order No. 94-7, NPDES No. CA 8000336, and Order No. 94-5, Npdes No. CA 8000279 regulates the discharge of storm water from Caltrans facilities within the Region.

The constituents of concern and significance in storm water discharges are: total suspended solids, biochemical oxygen demand (BOD), chemical oxygen demand (COD), oil and grease (O&G), heavy metals, nutrients and organic chemicals such as base/neutral and acid extractables, pesticides and herbicides, and petroleum hydrocarbon components.

To protect the beneficial uses of waters of the State, the pollutants from all sources need to be controlled. Recognizing this, and the fact that storm water discharges contain pollutants, the permittees and the Regional Board have all agreed that an areawide storm water permit is the most effective way to develop and implement a comprehensive storm water management program in a timely manner. This areawide stormwater permit contains requirements that will allow the permittees to continue to address water quality problems caused by urban storm water runoff

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through their management programs to reduce pollutants in storm water discharges to the maximum extent practicable.

PERMIT REQUIREMENTS

In accordance with Section 402(p)(3), as part of a program to reduce the pollutants in storm water discharges to the maximum extent practicable, the permittees have been required to submit existing management plans and programs which are being implemented or developed as per the previous municipal storm water NPDES permit to reduce pollutants in storm water discharges. In addition, the permittees will be required to report, review and/or revise the management programs and control measures in accordance with a time schedule approved by the Executive Officer of the Regional Board.

If existing management programs are not effective in controlling pollutant loading and in achieving the water quality objectives of the receiving waters, additional programs shall be developed and implemented upon consultation and approval of the Executive Officer.

The permit also requires the development and implementation of management programs and/or best management practices (BMPs) during the life of the permit such that the quality of storm water discharged can be improved and the water quality objectives of the receiving waters ultimately can be met. It is also expected that through implementation of these programs and/or BMPs, the beneficial uses of the receiving waters will be protected.

BENEFICIAL USES

Storm water flows which are discharged to municipal storm drain systems in Riverside County are tributary to various water bodies (inland surface streams and lakes and reservoirs) of the Region. The beneficial uses of these water bodies include municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and preservation of rare and endangered species. The ultimate goal of this storm water management program is to protect the beneficial uses of the receiving waters.

ANTIDEGRADATION ANALYSIS

The Regional Board has considered whether a complete antidegradation analysis, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, is required for these storm water discharges. The Regional Board finds that the pollutant loading rates to the receiving waters will be reduced with the implementation of the requirements in this order. As a result, the quality of storm water discharges and receiving waters will be improved, thereby protecting the beneficial uses of waters of the United States. This is consistent with the federal and state antidegradation requirements and a complete antidegradation analysis is not necessary.

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PUBLIC WORKSHOP

The Regional Board recognizes the significance of Riverside County's Storm Water Protection Program and will conduct, participate, and/or assist with any public hearing/workshop to solicit public input into this process. The details of any such workshop will be published in local newspapers and mailed to interested parties. Persons wishing to be included in the mailing list for any of the items related to this permit may register their name, mailing address and phone number with the Regional Board office at the address given below.

PUBLIC HEARING

The Regional Board will hold a public hearing regarding the proposed waste discharge requirements. The public hearing is scheduled to be held on September 1, 1995, starting at 8:00 a.m. at the City Council Chambers, City of Loma Linda. Further information regarding the conduct and nature of the public hearing concerning these waste discharge requirements may be obtained by writing or visiting the Santa Ana Regional Board office, 2010 Iowa Avenue, Suite 100, Riverside, CA 92507.

WRITTEN COMMENTS

Interested persons are invited to submit written comments on the proposed waste discharge requirements and the Executive Officer's proposed determinations. Comments should be submitted by August 11, 1995 either in person or by mail to:

Pavlova Vitale
California Regional Water Quality Control Board
Santa Ana Region
2010 Iowa Avenue, Suite 100
Riverside, CA 92507

INFORMATION AND COPYING

Persons wishing further information may write to the above address or call Pavlova Vitale at 909/782-4920. Copies of the application, proposed waste discharge requirements, and other documents (other than those which the Executive Officer maintains as confidential) are available at the Regional Board office for inspection and copying by appointment scheduled between the hours of 10:00 a.m. and 4:00 p.m., Monday through Thursday (excluding holidays).

REGISTER OF INTERESTED PERSONS

Any person interested in a particular application or group for applications may leave his name, address and phone number as part of the file for an application. Copies of tentative waste discharge requirements will be mailed to all interested parties.

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RECOMMENDATION

Adopt Order 95-47, NPDES No. CA 8000192, as presented.

In addition to the permittees, comments were solicited from the following agencies and/or persons:

- U. S. Environmental Protection Agency - Robert Wills/Eugene Bromley, Pretreatment, Sludge, and Storm Water Section
- U. S. Environmental Protection Agency - Terry Oda, Permits Issuance Section
- U. S. Environmental Protection Agency - Kenneth Greenberg, Enforcement Section
- U.S. Army, Los Angeles District, Corps of Engineers - Permits Section
- NOAA, National Marine Fisheries Service
- U.S. Fish and Wildlife Service - Carlsbad
- State Water Resources Control Board - Ted Cobb, Office of the Chief Counsel
- State Water Resources Control Board - Archie Matthews/Bruce Fujimoto, Division of Water Quality
- State Department of Water Resources - Glendale
- California Regional Water Quality Control Board, Region (1) - Nathan Quarles
- California Regional Water Quality Control Board, San Francisco Bay Region (2) - Tom Mumley
- California Regional Water Quality Control Board, Region (3) - Adam White
- California Regional Water Quality Control Board, Los Angeles Region (4) - Mark Pumford
- California Regional Water Quality Control Board, Central Valley Region (5) - Wayne Pierson/Pamela Barksdale
- California Regional Water Quality Control Board, Region (5R) - Carole Crowe
- California Regional Water Quality Control Board, Region (5F) - Darrell Evensen
- California Regional Water Quality Control Board, Region (6) - John Short
- California Regional Water Quality Control Board, Region (6V) - Tom Rheiner
- California Regional Water Quality Control Board, Colorado River Basin Region (7) - Todd Thompson
- California Regional Water Quality Control Board, San Diego Region (9) - Deborah Jayne
- State Department of Fish and Game - Long Beach
- Riverside County Health Department - John Fanning
- South Coast Air Quality Management District, El Monte - James Lents
- Orange County Health Care Agency - Robert Merryman
- State Department of Health Services - San Diego
- State Department of Parks and Recreation - Henry R. Agonia
- Orange County Environmental Management Agency, Environmental Resources Division - Christopher Crompton/ Richard Boon
- Orange County Environmental Management Agency, Department of Public Works, Flood Programs - Herb Nakasone
- San Bernardino County Flood Control District - Naresh Varma
- Riverside County Health Department - John Fanning
- Caltrans, District 8, San Bernardino - Tony Louka
- Southern Pacific Railroad
- Atchison, Topeka & Santa Fe Railway Company
- U.S. Department of the Air Force, March Air Force Base - Ronald Hiebert
- Camp Dresser and McKee - Jeff Endicott
- National Forest Service
- Woodward Clyde - Bob Collacott

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- Uribe And Associates - Pete Uribe
- Larry Walker and Associates - Malcolm Walker
- Building Industry Association - Governmental Affairs Council, Amy Glad
- L.A. County Department of Public Works - Gary Hildebrand
- AMI Circle City Hospital
- Corona Community Hospital
- Riverside Community Hospital
- Riverside General Hospital
- Chapman College
- Mt. San Jacinto College
- University of California, Riverside
- Riverside Community College

School Districts

- Alvord Unified School District
- Corona-Norco Unified School District
- Hemet Unified School District
- Lake Elsinore Unified School District
- Menifee Union School District
- Moreno Valley Unified School District
- Nuview Union School District
- Perris Elementary School District
- Perris Union High School District
- Riverside Unified School District
- Romoland School District
- San Jacinto Unified School District
- Val Verde School District

Environmental Organizations

- Sierra Club, Orange County Chapter
- Sierra Club, Los Angeles Chapter - Dick Hingson Natural Resources Defense Council (NRDC)
- Tri-County Conservation League - Gertrude Hagum
- Press Enterprise - Gary Polakovic
- Santa Ana Watershed Project Authority - Neil Cline
- Orange County Water District - Bill Mills
- Metropolitan Water District - Ed Means
- Western Municipal Water District - Don Harriger
- Eastern Municipal Water District - Andy Schlange
- San Bernardino Valley Municipal Water District - Louis Fletcher
- Elsinore Valley Municipal Water District - John Hoagland
- Lee Lake Water District - John Pastora
- Southern California Association of Governments, Los Angeles - Tabi Hiwot
- Inland Empire West Resource Conservation District - Donald Woo
- Elsinore-Murrieta-Anza RCD - Robert Wheeler
- Riverside-Corona RCD - Shelli Lamb

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Permittees

- City of Beaumont - Dee Morrijani
- City of Calimesa - Gerald Buydos
- City of Canyon Lake - Jeff Butzlaff
- City of Corona - Viren Shah
- City of Hemet - Roland Trietsch
- City of Lake Elsinore - Ray O'Donnell
- City of Moreno Valley - Paul Lau
- City of Norco - Mark Raab
- City of Perris - Habib Motlagh
- City of Riverside - Delia Garrison
- Riverside County Transportation Department - John Ristow
- City of San Jacinto - Les Evans
- Riverside County Flood Control and Water Conservation District - Jason Christie

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

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NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
NPDES NO. CA 8000192
AND
WASTE DISCHARGE REQUIREMENTS
ORDER NO. 95-47
FOR
THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUNOFF

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On January 3, 1995, the Riverside County Flood Control and Water Conservation District (RCFC&WCD), in cooperation with the County of Riverside, and the incorporated cities of Beaumont, Corona, Calimesa, Canyon Lake, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as "permittees"), have jointly submitted a National Pollutant Discharge Elimination System (NPDES) Application No. CA 8000192 to renew their areawide NPDES permit for urban storm water runoff.

2. The 1987 amendments to the Clean Water Act required the United States Environmental Protection Agency (EPA) to develop permitting regulations for storm water discharges from municipal separate storm sewer systems serving a population of 100,000 or more and for storm water discharges associated with industrial activities, including construction sites. The EPA published proposed storm water regulations on December 7, 1988 and promulgated the final regulations on November 16, 1990. Prior to the EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Regional Board requested areawide NPDES permits for urban storm water runoff.

3. On July 13, 1990, the Regional Board adopted Order No. 90-104 for urban storm water runoff from urban areas in Riverside County within the Santa Ana Region. Order No. 90-104 expired on July 1, 1995. The Riverside County Flood Control and Water Conservation District was named as the principal permittee and Riverside County and the incorporated cities were named as the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the RCFC&WCD will continue as principal permittee and Riverside County and the incorporated cities will continue as co permittees. However, the Regional Board, in exercising its enforcement discretion, will take action only against the individual permittee responsible for specific violations of this order, whenever possible.





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4. Order No. 90-104 required the permittees to develop and implement a drainage area management plan (DAMP); develop and implement storm water and receiving water monitoring plans; to eliminate illegal and illicit discharges to the storm drain systems; and, to enact the necessary legal authority to effectively prohibit illegal and illicit discharges. The overall goal of these requirements was to reduce pollutant loadings to surface waters from urban runoff to the maximum extent practicable.

5. The Report of Waste Discharge (the permit renewal application) included the following major components:

   a. A map of the drainage area and maps of existing storm drain facilities
   b. A summary of the storm water management program
   c. A Consolidated Program for Water Quality Monitoring
   d. A copy of a Proposed Storm Water/Urban Runoff Management and Discharge Control Ordinance
   e. A copy of the current Implementation Agreement
   f. A copy of each of the Interagency Agreements
   g. The Drainage Area Management Plan (DAMP)
   h. A copy of Proposed Riverside County Grading and Erosion Control Ordinance

   These and other documents submitted as part of the Report of Waste Discharge are hereby made a part of this order.

6. Within the Santa Ana Region, the permittees serve a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The permitted area is shown on Appendix 1. This order regulates storm water runoff from areas under the jurisdiction of the permittees. The term storm water as used in this order includes storm water runoff, snow melt runoff, and surface runoff and drainage. The average annual rainfall in the permitted area ranges from 10 to 12 inches. The permittees have jurisdiction over and/or maintenance responsibility for storm water conveyance systems within Riverside County. The storm drain system includes an estimated 200 miles of open and closed storm drains owned and operated by RCFC&WCD and an estimated 57 miles of open and closed storm drains owned and operated by the remaining permittees. The permittees have identified major outfalls (outfalls with a pipe diameter of 36 inches or greater or drainage areas draining 50 acres or more) and have submitted maps of existing storm drain facilities.

7. Approximately one quarter (1/4) of the entire Riverside County area drains into water bodies within the Santa Ana Region. Most of the urbanized areas of Riverside County lie within this Regional Board's jurisdiction. Storm water runoff from other portions of Riverside County is regulated by the San Diego and Colorado River Basin Regional



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Boards. The discharges consist of runoff from rainfall, snow melt, and surfacing ground water from various land use areas which either discharge directly to the Santa Ana River or to watercourses tributary to the Santa Ana River. Other major rivers in the area include the San Jacinto River and Temescal Creek. The San Jacinto Mountain areas drain into the San Jacinto River, which discharges into Lake Elsinore. Any overflow from Lake Elsinore is tributary to Temescal Creek, which flows into Reach 3 of the Santa Ana River in the Prado Flood Control Basin.

8. The Santa Ana River Basin is the major watershed within this Region. This watershed is divided into the upper and lower Santa Ana watersheds. The lower Santa Ana River Basin (downstream from Prado Dam) includes the Orange County drainage areas and the Upper Santa Ana River Basin includes the San Bernardino County and the Riverside County drainage areas. The San Bernardino County drainage areas are generally upstream of the Riverside County drainage areas.

9. The three county areas within this Region are regulated under three areawide permits for urban storm water runoff. These areawide NPDES permits are:

   a. Orange County, NPDES No. CA 8000180, Order No. 90-71 (upon renewal Order No. 95-52)

   b. Riverside County, NPDES No. CA 8000192, Order No. 90-104 (upon renewal Order No. 95-47)

   c. San Bernardino County, NPDES No. CA 8000200, Order No. 90-136 (upon renewal Order No. 95-53)

10. Runoff from the San Bernardino County drainage areas is generally conveyed to the Riverside County drainage areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Dam (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

11. In addition to the Regional Board, a number of other stakeholders are involved in the management of the water resources of the Region. These include, but are not limited to, the incorporated cities in the Region, publicly owned treatment works, the three counties, and the Santa Ana Watershed Project Authority and its member agencies. The entities listed in Appendix 2 are considered as potential dischargers of storm water to the Riverside County drainage areas. It is expected that these entities will also work cooperatively with the permittees to manage urban runoff. The Regional Board has the



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discretion and authority to require non-cooperating entities to participate in this areawide permit or to issue individual storm water permits, pursuant to 40 CFR 122.26(a). Cooperation and coordination among all the stakeholders are critical to optimize the use of limited resources and insure economical management of the watershed. Recognizing this fact, this order focusses on watershed management and seeks to integrate the programs of all the stakeholders, especially the three municipal storm water permit holders, within this watershed.

12. The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies are threatened or impaired in part due to urban storm water runoff and non-storm water flows from urbanized areas. Preliminary results from urban storm water monitoring programs within the Region indicate that major pollutants of concern in urban runoff are certain heavy metals, sediment, coliform bacteria, pesticides, and nutrients. Municipal storm water runoff is a source of pollutants to waters of the Region that may be causing or contributing to water quality impairment. It is recognized that instream or end-of-channel treatment of storm water is difficult and expensive. Therefore, it is critical to identify the pollutant sources and to develop management practices necessary to reduce pollutant loading to storm water. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events and point source discharges permitted by the Regional Board under individual permits.

13. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources of storm water pollution:

    a. Industrial sites where appropriate pollution control and best management practices (BMPs) are not implemented,

    b. Construction sites where erosion and siltation controls and BMPs are not implemented, and

    c. Urban runoff where the drainage area is not properly managed.

14. To address the industrial and construction sites, the State Water Resources Control Board (State Board) issued two statewide general NPDES permits: one for storm water runoff from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water runoff from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). Most industrial activities (some light industrial activities are exempt) and construction activities on five acres or more are required to get individual NPDES permits for storm water discharges, or get coverage under these statewide general permits by completing and filing a Notice of Intent (NOI) with the State Board.



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15. In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water runoff from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order No. 94-7, NPDES NO. CA 8000336, for concentrated animal feeding operations, including dairies (General Dairy Permit). The Regional Board has issued and continues to issue individual storm water permits for certain industrial facilities within the Region.

16. One of the major components of these statewide permits, the Caltrans permit, and the General Dairy Permit is the requirement for the development and implementation of a storm water pollution prevention plan (SWPPP) for each facility.

17. The Regional Board is the enforcing authority for the two statewide general permits. However, in most cases, the industrial and construction sites discharge directly into storm drains and/or flood control facilities owned and operated by the permittees. These industrial and construction sites are also regulated under local laws and regulations. Therefore, a coordinated effort between the permittees and the Regional Board is critical to avoid duplicative storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

18. The permittees generally conduct inspections of industrial and commercial facilities and construction sites within their jurisdiction. The permittees have established a subcommittee to develop an enforcement/compliance strategy for industrial and commercial facilities and construction sites. The permittees have agreed to notify Regional Board staff of industrial and construction facilities which are not in compliance with the storm water regulations.

19. The permittees have agreed not to issue grading and/or building permits without proof of compliance for projects subject to the General Permit for Storm Water Discharges Associated with Construction Activity.

20. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm drain system maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees are required to assess all of the public agency related



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activities and facilities for potential impact to storm water quality and develop and implement best management practices to reduce pollutant discharges from these activities/facilities. Non-storm water discharges from these facilities and/or activities also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III., Discharge Limitations, 3 of this order or are permitted by the Regional Board under an individual NPDES permit.

21. The major focus of storm water pollution prevention is the development and implementation of an appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to attain water quality consistent with the water quality objectives for the receiving waters in order to protect beneficial uses. The permittees developed and submitted a DAMP, which was approved on January 18, 1994.

22. The DAMP is a dynamic document and the permittees have implemented, or are in the process of implementing its various elements. The Regional Board also recognizes other drainage area management plans such as the Drainage Water Quality Plan for Lake Mathews (DWQPLM), which includes structural BMPs for pollution control. The RCFC & WCD and Riverside County are involved in the DWQPLM.

23. There is some contribution of pollutants in urban runoff from privately owned and operated facilities such as residences, businesses and commercial establishments and public and private institutions. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, and institutions. Therefore, the DAMP has a strong emphasis on public education.

24. The DAMP included 34 BMPs and a time schedule for implementation. These BMPs are organized into two components: BMPs for existing facilities and BMPs for new development. Both components include regulatory activities, public education programs and operations and maintenance activities.

25. In order to characterize storm water discharges, to identify problem areas, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. From 1990 through 1995, the principal permittee administered the monitoring program for the permittees which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The Report of Waste Discharge included a Consolidated Program for Water Quality Monitoring.



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26. In order to make the best use of limited resources of all the permittees (including other municipal permittees in San Bernardino and Orange Counties), and to derive maximum benefit from the storm water management programs, future programs should focus on a watershed approach. An integrated management program may be developed with the cooperation of all the stakeholders, including the permittees in the three counties, and the Regional Board.

27. The permittees have agreed to revise the implementation agreement that was developed in 1990 as required under Order No. 90-104 to coordinate the activities of the principal and co-permittees.

28. Illegal dumping and illicit/illegal connections and discharges to the storm drains are major contributors to storm water and other surface water contamination. Except for the City of Riverside, all the permittees have completed a reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains). The permittees are required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are required to develop a program to prevent any future illegal/illicit connections to their storm drains and flood control facilities.

29. This order requires the permittees to continue to implement the BMPs listed in the DAMP and to effectively prohibit illegal and illicit discharges to the storm drain system. One of the major elements of the DAMP, the Storm Water/Urban Runoff Management and Discharge Controls Ordinance, was adopted by Riverside County on May 9, 1995. The purpose of this ordinance is to reduce pollutant discharges in storm water, and to regulate illicit connections and non-storm water discharges to the storm drain system.

30. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in the development of General Plans, in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc.

31. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Riverside County having programs/activities that have an impact on storm water quality (e.g., Fire Department, Department of Environmental Health, Planning Department, Building and Safety, Code Enforcement, etc.). As such, these organizations are expected to actively participate in implementing this areawide storm water program.



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32. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, agricultural land, utilities and special districts, and Native American tribal lands. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.

33. The permittees may petition the Regional Board to issue a NPDES permit to any discharger of non-storm water into storm drain systems that the permittees own or operate.

34. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region.

35. The requirements contained in this order are necessary to implement the Basin Plan.

36. In accordance with the Clean Water Act and its implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants to waters of the United States to the maximum extent practicable.

37. Numeric and narrative water quality objectives are contained in the Basin Plan for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. Due to the high cost associated with monitoring, and due to the variability that exists in the current storm water monitoring efforts being conducted by the permittees and other municipal permittees in Orange and San Bernardino Counties under their municipal storm water permits, a tri-county monitoring program to develop and implement effective monitoring procedures and strategies will be considered.

38. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Regional Board.

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39. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

40. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

41. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

42. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

**IT IS HEREBY ORDERED** that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and the regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF THE PRINCIPAL PERMITTEE

The principal permittee shall be responsible for managing the overall storm water program and shall:

1. Conduct water quality and hydrographic monitoring of the municipal separate storm drain system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop uniform criteria for inspections of the municipal separate storm drain systems.

3. Conduct inspections of the storm drain systems owned and operated by the RCFC&WCD.

4. Implement management programs, monitoring programs, and related plans as required by this order.



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5. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority within the scope of the Riverside County Flood Control and Water Conservation District Act, as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i).

6. Respond and/or arrange for responding to emergency situations such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or reduce the discharge of pollutants to the municipal separate storm drain systems and to waters of the United States.

7. Prepare and submit to the Executive Officer of the Regional Board, unified reports, plans, and programs necessary to comply with this order.

The activities of the principal permittee should include, but not be limited to, the following:

8. Coordinate permit activities and participate in any committees/subcommittees formed to coordinate permit compliance activities.

9. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

10. Coordinate the implementation of areawide storm water quality management activities such as monitoring programs, public education, other pollution prevention measures, household hazardous waste collection, etc.

11. Gather and disseminate information on the progress of statewide municipal storm water programs and evaluate the information for potential use in the execution of this order.

12. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in reducing pollutant loadings to surface waters to the maximum extent practicable.

13. Coordinate activities pertaining to implementation of this order with the Regional Board.

14. Solicit and coordinate public input for any major proposed storm water management programs and implementation plans.



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15. Develop and implement mechanisms, performance standards, etc., to promote uniform and consistent implementation of BMPs among the permittees.

16. In conjunction with the co-permittees, implement the BMPs listed in the approved DAMP.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

Each co-permittee shall be responsible for managing the storm water program within its jurisdiction and shall:

1. Adopt the Grading and Erosion Control Ordinance or its equivalent, within 120 days of adoption of this order.

2. Conduct storm drain system inspections in accordance with the uniform criteria developed by the principal permittee.

3. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i).

4. Implement management programs, monitoring programs, and related plans as required by this order.

The co-permittees' activities should include, but not be limited to, the following:

5. Administer the storm water and erosion control ordinances adopted pursuant to Item 1., above.

6. Conduct and coordinate with the principal permittee any surveys, monitoring and characterizations needed to identify the pollutant sources and drainage areas.

7. Review and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

8. Participate in any committees or subcommittees formed to address compliance with this order.

9. In conjunction with the principal permittee, implement the BMPs listed in the approved DAMP.



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10. Share all pertinent information regarding the progress of statewide municipal storm water programs and evaluate any information obtained for potential use in the execution of this order.

11. Participate in the tri-county (Orange, Riverside, and San Bernardino counties) efforts for watershed management.

12. Submit to the principal permittee any information necessary to develop unified report submittals to the Executive Officer of the Regional Board.

13. Prepare and submit any specific reports/information related to the permittees' storm water program as deemed necessary by the Executive Officer of the Regional Board.

14. The City of Riverside shall complete the reconnaissance survey of the City's storm drain systems and eliminate all illegal and/or illicit connections by September 29, 1995. The City shall submit a report of the findings by October 30, 1995.

## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.

2. This order authorizes storm water discharges to waters of the State from the permittees' existing municipal separate storm drain systems provided that the permittees implement the BMPs (structural and/or non-structural control measures) necessary to reduce the pollutants in the discharge to the maximum extent practicable. All other discharges are prohibited except those listed under Item 3., below, those for which the Regional Board has issued individual permits, and those discharges which are in accordance with Item 5., below.

3. The following discharges need not be prohibited by the permittees provided that such discharges are identified and appropriate control measures to minimize the adverse impacts of such discharges are developed and implemented.

   a. Discharges composed entirely of storm water;

   b. Discharges covered by an NPDES permit, or for which a written clearance has been issued by the Regional Board office;



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c. Discharges from potable water line flushing and other potable water sources;

d. Discharges from fire fighting and fire hydrant testing and flushing;

e. Discharges from landscape irrigation, lawn watering and other irrigation activities;

f. Diverted stream flows:

g. Rising ground waters and natural springs;

h. Uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)) and uncontaminated pumped groundwater;

i. Passive foundation drains;

j. Air conditioning condensate;

k. Water from crawl space pumps;

l. Passive footing drains;

m. Discharges from individual residential vehicle washing (not including discharges from mobile sources such as automobile/equipment detailing or washing);

n. Flows from riparian habitats and wetlands;

o. Dechlorinated swimming pool discharges;

p. Waters not otherwise containing wastes as defined in California Water Code Section 13050 (d); and

q. Other types of discharges identified and recommended by the permittees and approved by the Regional Board.

For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.



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4. The permittees shall take necessary steps as required under Item 1., above, to ensure that non-storm water discharges do not cause or contribute to violations of water quality objectives or discharge pollutants to waters of the United States.

5. Non-storm water discharges from public agency activities into waters of the state are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3., above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in the storm water pollution prevention strategy, required under Section V., Provision 13., of this order, a proposed plan to eliminate the non-storm water discharges.

6. The discharge shall not cause or contribute to degradation of groundwaters.

7. Pollutants in storm water discharges from the municipal separate storm sewer system shall be reduced to the maximum extent practicable.

## IV. RECEIVING WATER LIMITATIONS

The discharge shall not cause a violation of any applicable water quality objectives for receiving waters adopted by the Regional Board or the State Water Resources Control Board. If more stringent applicable water quality objectives are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this order in accordance with such more stringent standards.

## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order and specifically with Section III., Discharge Limitations, and Section IV., Receiving Water Limitations, through timely implementation of their approved Drainage Area Management Plan and any approved modifications, revisions, or amendments thereto, which are developed pursuant to this order. The Drainage Area Management Plan is hereby made an enforceable part of this ordrer.

2. Permittees shall implement all elements of the approved DAMP. Any proposed revisions to the DAMP shall be submitted to the Executive Officer of the Regional Board for review and approval. All revisions to the DAMP approved by the Executive Officer shall be implemented in a timely manner.



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3. The permittees shall comply with Monitoring and Reporting Program No. 95-47, which is hereby made a part of this order, and any revisions thereto. The Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national, or other monitoring programs in lieu of Monitoring and Reporting Program No. 95-47.

4. Upon approval by the Executive Officer of the Regional Board, all plans and reports required by this order, including any subsequent amendments, shall be implemented and shall become an enforceable part of this order.

5. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any unusual discharge of storm or wastewaters to facilities owned or operated by the permittees or to any waters of the Region (e.g., discharges due to a levee break, illegal discharges to the street, etc.); if the discharge is to Canyon Lake or any tributary to Canyon Lake, Elsinore Valley Municipal Water District shall also be notified immediately;

   b. Any industrial and/or construction facilities not in compliance with the storm water regulations; and

   c. Any activities on federal, state, or other entity's land or facilities, where the permittees do not have any jurisdiction, and where the activities may be contributing pollutants to waters of the United States.

6. The permittees shall not issue any permits for new businesses and/or construction activities until proof of intent to comply with the State's General Storm Water permits is verified. The proof of compliance may include a letter from the Regional Board office, a copy of the Notice of Intent, etc. The permittees shall coordinate the activities of the various departments/sections within each permittee's jurisdiction to insure consistent implementation of storm water regulations.

## IMPLEMENTATION AGREEMENT

7. No later than March 1, 1996, the permittees shall submit to the Executive Officer of the Regional Board an updated copy of an implementation agreement with authorized signatures of each of the permittees. Any subsequent revisions to the implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees. At a minimum, the implementation agreement should include all the essential elements of the existing agreement, developed in accordance with Order No. 90-104.



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## LEGAL AUTHORITY

8. The permittees shall adopt the proposed Storm Water/Urban Runoff Management and Discharge Control Ordinance, or its equivalent. No later than November 30, 1995, each permittee shall certify to the Regional Board that it has adequate legal authority to control the discharges of pollutants into the municipal storm drain system and that it has satisfied the requirements of 40 CFR Section 122.26(d)(2)(i). At a minimum, each permittee's certification shall include a statement attesting that the ordinance adopted provides the permittee the legal authority to enforce storm water regulations within its jurisdiction.

## ENFORCEMENT/COMPLIANCE STRATEGY

9. Permittees shall develop and implement an enforcement strategy to enforce storm water and erosion control ordinances. This enforcement strategy should include a mechanism to determine compliance of industrial facilities and construction sites, and notification to the Executive Officer of any finding of non-compliance and any proposed local enforcement action. The enforcement/compliance strategy shall be submitted to the Executive Officer of the Regional Board by March 30, 1996.

## PUBLIC EDUCATION AND OUTREACH

10. The permittees shall continue to implement the public education efforts already underway and shall implement all of the proposed efforts identified in the Report of Waste Discharge. Any proposed changes shall be submitted to the Executive Officer of the Regional Board for approval.

11. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

12. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.

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## MUNICIPAL FACILITIES

13. The permittees shall develop a pollution prevention strategy to address public agency facilities and activities not currently required to obtain coverage under the State's general storm water permits. The pollution prevention strategy shall be developed to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the United States. The pollution prevention strategy shall be submitted to the Executive Officer of the Regional Board by June 6, 1996 and shall at a minimum include the following:

    a. Identification of all public agency facilities and activities that are potential contributors of pollutants to waters of the United States.

    b. Potential pollutants of concern that are associated with the facilities and/or activities;

    c. Proposed BMPs and a schedule for implementation to ensure that these facilities are not sources of pollutants into the waters of the United States;

    d. A monitoring program to measure the effectiveness of the BMPs;

    e. A schedule for training of public agency staff to ensure proper implementation of the BMPs; and

    f. Identification of any non-storm water discharges from the public agency facilities/activities, frequency of the discharge, characterization of the discharge, volume, flow and duration of the discharge, short term source control BMPs to mitigate the impacts from the discharge, and a schedule for elimination or permitting of the discharge.

## NEW DEVELOPMENT (INCLUDING RE-DEVELOPMENT)

14. Within 90 days of the issuance of this order, the permittees shall begin implementation of the new development BMPs (DAMP Supplement A) that were developed pursuant to Order No. 90-104.



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15. Within 120 days of the issuance of this order, the permittees shall review their General Plan update and CEQA document preparation processes to insure that storm water-related issues are properly considered. If necessary, these processes shall be revised to include requirements for evaluation of storm water-related impacts and identification of appropriate mitigation measures.

16. The permittees shall establish a mechanism to insure proper maintenance and operation of all permanent flood control structures.. For new developments, the parties responsible for the maintenance of the flood control structures and funding sources for maintenance and operation of the facilities shall be identified prior to issuance of grading permits.

## FISCAL RESOURCES

17. The permittees shall prepare and submit a unified fiscal analysis report to the Executive Officer of the Regional Board. The fiscal analysis report shall be submitted no later than September first of each year and shall at a minimum include the following:

    a. Each permittee's expenditures for the previous fiscal year;
    b. Each permittee's budget for the current fiscal year;
    c. A description of the source of funds;
    d. A description of contract services (relating to the NPDES program). including the service provided and the amount charged for the service;
    e. A list of staff, type of work, estimated time dedicated to the storm water program and estimated cost; and
    f. Each permittee's estimated budget for the next fiscal year.

## PERMIT EXPIRATION AND RENEWAL

18. This order expires on September 1, 2000 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

    a. Any revisions to the Drainage Area Management Plan including, but not limited to, all the activities the permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;



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b. Changes in land use and/or population including map updates; and

c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls, including map updates of the storm drain systems.

19. This Order may be modified, revoked or reissued prior to its expiration date for the following reasons:

a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order;

b. To incorporate applicable requirements of statewide water quality control plans and policies adopted by the State Water Resources Control Board or any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

20. This order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

21. Order No. 90-104 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on September 1, 1995.

Gerard J. Thibeault
Executive Officer

*DRAFT: July 21, 1995*

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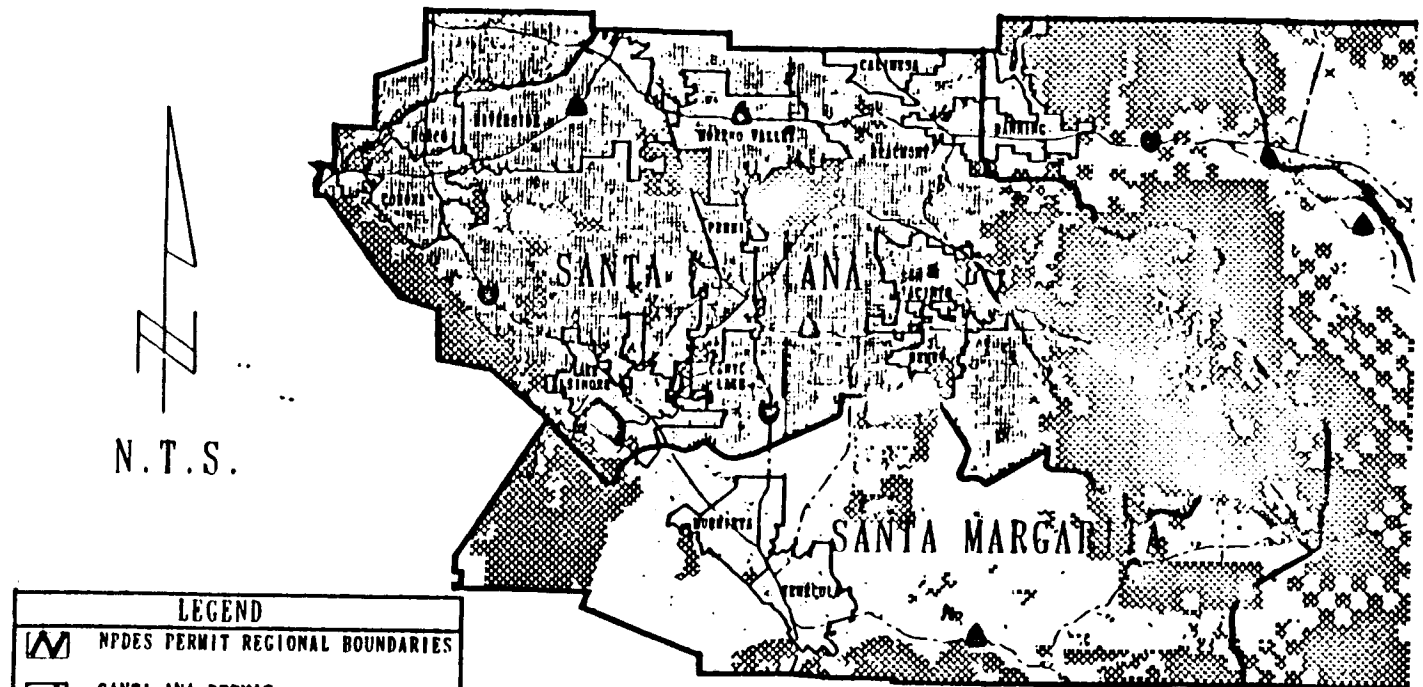
# ORDER NO. 95-47
# APPENDIX 1
# PERMITTED AREA

## WESTERN RIVERSIDE COUNTY NPDES PERMIT AREA




LEGEND

- NPDES PERMIT REGIONAL BOUNDARIES
- SANTA ANA PERMIT
- SANTA MARGARITA PERMIT
- STATE & FEDERAL LANDS EXEMPTED FROM NPDES PERMIT AREAS
- * P[illegible] DATA WITHIN CITIES MAY NOT BE COMPLETE

This map was made by the Riverside County Geographic Information System. The map elements were produced by the Assessor and the Transportation and Land Management Agency which is comprised of the Administration, Aviation, and Information Resources divisions and the Building & Safety, Planning and Transportation departments. The County of Riverside assumes no warranty or legal responsibility for the information contained on this map. Data and information represented on this map is subject to update and modification. The Geographic Information System and other sources should be queried for the most current information.

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ORDER NO. 95-47

APPENDIX 2

LIST OF OTHER ENTITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS TO STORMWATER FACILITIES

Government Agencies
- Department of the Air Force, March Air Force Base
- Special Districts
- State Parks
- U.S. Army Corps of Engineers

Hospitals
- AMI Circle City Hospital
- Corona Community Hospital
- Riverside Community Hospital
- Riverside General Hospital

Railroads
- AT&SF Railway Company
- Southern Pacific Railroad

School Districts
- Alvord Unified - School District
- Corona - Norco Unified School District
- Hemet Unified School District
- Lake Elsinore Unified School District
- Menifee Union School District
- Moreno Valley Unified School District
- Nuview Union School District
- Perris Elementary School District
- Perris Union High School District
- Riverside Unified School District
- Romoland School District
- San Jacinto Unified School District
- Val Verde School District

Universities and Colleges
- Chapman College
- Mt. San Jacinto College
- Riverside Community College
- University of California Riverside

Water Districts
- Eastern Municipal Water District
- Elsinore Valley Municipal Water District
- Metropolitan Water District
- Western Municipal Water District

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California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 96-47

NPDES NO. CA 8000192
for
THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE STORM WATER RUNOFF

TENTATIVE

## I. GENERAL

1. Revisions of the monitoring and reporting program may be necessary to ensure that the discharger is in compliance with requirements and provisions contained in this order. Revisions may be made by the Executive Officer at any time during the term of this order, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring or the number and size of samples collected.

2. All sample collection, handling, storage, and analyses shall be in accordance with 40 CFR Part 136.

3. The permittees are authorized to complement their monitoring data with data from other sources provided those sources are identical to sources in the Santa Ana Watershed.

4. The permittees shall implement the Consolidated Program for Water Quality Monitoring (submitted as part of the Report of Waste Discharge) until development and implementation of an acceptable watershed monitoring program.

## II. OBJECTIVES

The overall goal of this monitoring program is to develop and support an effective watershed management program. The following are the major objectives:

1. To define water quality status, trends, and pollutants of concern.

2. To characterize pollutants and to assess the influence of land use on water quality.



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3. To identify significant water quality problems related to storm water discharges within the watershed.

4. To identify other sources of pollutants in storm water runoff to the extent possible (e.g., atmospheric deposition, contaminated sediments, other nonpoint sources, etc.).

5. To verify and to control illicit discharges.

6. To identify those waters which without additional action to control pollution from storm water discharges cannot reasonably be expected to attain or maintain applicable water quality objectives or the goals and requirements of the Basin Plan.

7. To evaluate the effectiveness of existing management programs, including an estimate of pollutant reductions achieved by the structural and nonstructural BMPs.

8. To evaluate costs and benefits to the stakeholders including the public.

## III. MONITORING PROGRAM REQUIREMENTS

The permittees shall develop and submit for the approval of the Executive Officer an integrated watershed monitoring program to achieve the above stated objectives. This program shall be developed in cooperation with the permittees from San Bernardino and Orange counties. The Executive Officer or his/her designated representative(s) shall facilitate the coordination meetings or subcommittees formed to achieve this goal. The development and implementation of the monitoring program shall be in accordance with the time schedule prescribed by the Executive Officer. At a minimum, the program shall include the following:

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1. Uniform guidelines for quality control, quality assurance, data collection and data analyses.

2. A mechanism for the collection, analysis and interpretation of existing data from Orange, Riverside, and San Bernardino County monitoring programs. These and other data from local, regional or national sources should be utilized to characterize different storm water sources; to determine pollutant generation, transport and fate; to develop a relationship between land use, development size, storm size and the event mean concentration of pollutants; to determine spatial and temporal variances in storm water quality and seasonal and other bias in the collected data; and to identify any unique features of the Santa Ana Watershed. The permittees are encouraged to use data from similar studies, if available.



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3. A description of the monitoring program including:

   a. The number of monitoring stations;
   b. Environmental indicators (e. g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;
   c. Parameters selected for field screening and for laboratory work; and
   d. Total number of samples to be collected from each station, receiving water and major outfall monitoring, frequency of sampling during dry weather and short or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.

4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including cost sharing.

## *IV.* REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of U. S. EPA, Region 9, no later than September 1, of each year. This progress report may be submitted in a mutually agreed upon electronic format. At a minimum, the annual progress report shall include the following:

   a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order.

   b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the Drainage Area Management Plan. The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and in reducing pollutant loads in storm water discharges.

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c. An analysis of the feasibility and usefulness of using structural BMPs based on data collected from the Drainage Water Quality Plan for Lake Mathews and/or other similar programs..

d. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable.

3. Co-permittees shall be responsible for the submittal of all required information/materials needed to comply with this Monitoring and Reporting Program in a timely manner to the principal permittee. All such submittals shall be signed by a duly authorized representative of the co-permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| *ITEM* | *DUE DATE* |
|---|---|
| Report on Illicit/Illegal Discharges (City of Riverside) | October 30, 1995 |
| Legal Authority Certification | November 30, 1995 |
| Revised Implementation Agreement | March 1, 1996 |
| Enforcement Strategy | March 30, 1996 |
| Municipal Activities Pollution Prevention Strategy | June 6, 1996 |
| Fiscal Analyses Report | September 1 of each year (next report due in 1996) |
| Annual Report | September 1 of each year (next report due in 1996) |

Ordered by_____
Gerard J. Thibeault
Executive Officer

September 1, 1995

*DRAFT: July 21, 1995*

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**California Regional Water Quality Control Board**
**Santa Ana Region**
**2010 Iowa Avenue, Suite 100**
**Riverside, CA 92507-2409**

# FACT SHEET

**September 1, 1995**

ITEM:

SUBJECT: Waste Discharge Requirements for the Riverside County Flood Control & Water Conservation District, the County of Riverside and Incorporated Cities of Riverside County within the Santa Ana Region, Storm Water Runoff Management Program, Riverside County, Order No. 95-47 (NPDES No. CA 8000192)

## PROJECT

The attached pages contain information concerning an application for waste discharge requirements and a National Pollutant Discharge Elimination System (NPDES) permit, Order No. 95-47, NPDES No. CA 8000192, which prescribes waste discharge requirements for urban storm water runoff from the cities and the unincorporated areas in Riverside County within the jurisdiction of the Santa Ana Regional Board. On January 3, 1995 the Riverside County Flood Control and Water Conservation District (RCFC&WCD), the County of Riverside, the Cities of Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as the permittees), submitted NPDES Application No. CA 8000192 for an areawide stormwater permit. The permit application was submitted in accordance with the requirements specified in the previous NPDES permit (Order No. 90-104, NPDES No. CA 8000192) which expired on July 1, 1995. Additionally, the permit application follows guidance provided by staff of the State Water Resources Control Board (State Board) and the Regional Water Quality Control Board (Regional Board).

## PROJECT AREA

The permitted area is delineated by the San Bernardino-Riverside County boundary line on the north and northwest, the Orange-Riverside County boundary line on the west, the Santa Ana-San Diego Regional Board boundary line on the south, and the Santa Ana-Colorado River Basin Regional Board boundary line on the east (see Appendix 1). For the following areas/facilities, the permittees may lack legal jurisdiction over storm water discharges into their systems:

- federal lands and state properties, including, but not limited to, military bases, national forests, hospitals, schools, colleges and universities, and highways;
- Native American tribal lands;
- open space and rural (non-urbanized) areas;

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- agricultural lands; and
- utilities and special districts.

## CLEAN WATER ACT REQUIREMENTS

The Federal Clean Water Act (CWA) allows the United States Environmental Protection Agency (USEPA) to delegate its NPDES permitting authority to states with an approved environmental regulatory program. The State of California is one of the delegated states. The Porter-Cologne Water Quality Control Act (California Water Code) authorizes the State Board, and the nine Regional Boards to regulate and control the discharge of pollutants into waters of the State and tributaries thereto. Section 405 of the Water Quality Act (WQA) of 1987 added Section 402(p) to the CWA. Pursuant to Section 402(p)(4) of the CWA, the USEPA promulgated regulations for stormwater permit applications for stormwater discharges associated with industrial activities and municipal separate storm drain systems serving a population of 100,000 or more. This permit governing municipal stormwater discharges meets both the statutory requirements of Section 402(p) and all requirements applicable to an NPDES permit issued under the issuing authority's discretionary authority in accordance with Section 401(a)(1)(B) of the CWA.

## AREAWIDE STORMWATER PERMIT

To regulate and control stormwater discharges from the Riverside County area to the municipal storm drain systems, an areawide approach is essential. The entire storm drain system is not controlled by a single entity; the RCFC&WCD, the County, several Cities, the State Department of Transportation (Caltrans), and the U.S. Army Corps of Engineers, in addition to other smaller entities, manage the systems. In addition to the Cities, the County and the RCFC&WCD, there are a number of other significant contributors of urban stormwater runoff to these storm drain systems. These include: large institutions such as the State university system, schools, hospitals, etc.; federal facilities such as military sites, etc.; State agencies such as Caltrans; water and wastewater management agencies such as Metropolitan Water District, Eastern Municipal Water District and Western Municipal Water District; the National Forest Service and State parks. The Regional Board has issued a separate NPDES permit to Caltrans. In addition, Caltrans and the other contributors identified are not under the jurisdiction of the permittees. The management and control of the entire flood control system cannot be effectively carried out without the cooperation and efforts of all these entities. Also, it would not be meaningful to issue a separate stormwater permit to each of the entities within the permitted area whose land/facilities drain into the storm drain systems operated by the permittees. The Regional Board has concluded that the best management option for the Riverside County area is to issue an areawide stormwater permit to the RCFC&WCD, County of Riverside, and the cities in Riverside County. Stormwater discharges from other state, federal, utility, or special district facilities and state or federal lands will either be added to the Riverside County permit or permitted separately.

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Some of the RCFC&WCD storm drain systems discharge into storm drain systems controlled by other entities, such as the Orange County Flood Control District, which is regulated by the Regional Board under NPDES No. CA 8000180. Some areas within Riverside County are within the Colorado River Basin and San Diego Regional Boards' jurisdictions. Permit requirements for storm water runoff from the drainage areas of Riverside County within the jurisdiction of the San Diego and Colorado River Basin Regional Boards are addressed by these Regional Boards.

COORDINATION WITH OTHER REGIONAL AGENCIES

In developing best management practices and monitoring programs, consultation/coordination with other drainage management entities and other Regional Boards is essential. Regional Board staff will coordinate the program with other Regional Boards and other flood control entities/cities on an "as needed" basis. The permit/program process is at the same stage of development in both the Santa Ana and San Diego Regional Board areas of Riverside County. Common programs, reports, implementation schedules and efforts are desirable and will be utilized to the maximum extent practicable.

EXISTING FACILITIES AND PROGRAMS

Within the Santa Ana Region, the RCFC&WCD serves a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The RCFC&WCD's system includes an estimated 200 miles of open and closed storm drains. The storm drain systems operated by the remaining permittees include an estimated 57 miles of open and closed storm drains. Approximately one-quarter (1/4) of Riverside County drains into water bodies within this Regional Board's jurisdiction. Storm water discharges from urbanized areas consist mainly of surface runoff from residential, commercial, and industrial developments. In addition, there are storm water discharges from agricultural land uses, including dairy operations. However, the WQA specifically excludes agricultural discharges from regulation under this program. Storm water runoff from the dairies is regulated under the General Dairy Permit, Order No. 94-7, NPDES No. CA 8000336, and Order No. 94-5, Npdes No. CA 8000279 regulates the discharge of storm water from Caltrans facilities within the Region.

The constituents of concern and significance in storm water discharges are: total suspended solids, biochemical oxygen demand (BOD), chemical oxygen demand (COD), oil and grease (O&G), heavy metals, nutrients and organic chemicals such as base/neutral and acid extractables, pesticides and herbicides, and petroleum hydrocarbon components.

To protect the beneficial uses of waters of the State, the pollutants from all sources need to be controlled. Recognizing this, and the fact that storm water discharges contain pollutants, the permittees and the Regional Board have all agreed that an areawide storm water permit is the most effective way to develop and implement a comprehensive storm water management program in a timely manner. This areawide stormwater permit contains requirements that will allow the permittees to continue to address water quality problems caused by urban storm water runoff

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through their management programs to reduce pollutants in storm water discharges to the maximum extent practicable.

PERMIT REQUIREMENTS

In accordance with Section 402(p)(3), as part of a program to reduce the pollutants in storm water discharges to the maximum extent practicable, the permittees have been required to submit existing management plans and programs which are being implemented or developed as per the previous municipal storm water NPDES permit to reduce pollutants in storm water discharges. In addition, the permittees will be required to report, review and/or revise the management programs and control measures in accordance with a time schedule approved by the Executive Officer of the Regional Board.

If existing management programs are not effective in controlling pollutant loading and in achieving the water quality objectives of the receiving waters, additional programs shall be developed and implemented upon consultation and approval of the Executive Officer.

The permit also requires the development and implementation of management programs and/or best management practices (BMPs) during the life of the permit such that the quality of storm water discharged can be improved and the water quality objectives of the receiving waters ultimately can be met. It is also expected that through implementation of these programs and/or BMPs, the beneficial uses of the receiving waters will be protected.

BENEFICIAL USES

Storm water flows which are discharged to municipal storm drain systems in Riverside County are tributary to various water bodies (inland surface streams and lakes and reservoirs) of the Region. The beneficial uses of these water bodies include municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and preservation of rare and endangered species. The ultimate goal of this storm water management program is to protect the beneficial uses of the receiving waters.

ANTIDEGRADATION ANALYSIS

The Regional Board has considered whether a complete antidegradation analysis, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, is required for these storm water discharges. The Regional Board finds that the pollutant loading rates to the receiving waters will be reduced with the implementation of the requirements in this order. As a result, the quality of storm water discharges and receiving waters will be improved, thereby protecting the beneficial uses of waters of the United States. This is consistent with the federal and state antidegradation requirements and a complete antidegradation analysis is not necessary.

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PUBLIC WORKSHOP

The Regional Board recognizes the significance of Riverside County's Storm Water Protection Program and will conduct, participate, and/or assist with any public hearing/workshop to solicit public input into this process. The details of any such workshop will be published in local newspapers and mailed to interested parties. Persons wishing to be included in the mailing list for any of the items related to this permit may register their name, mailing address and phone number with the Regional Board office at the address given below.

PUBLIC HEARING

The Regional Board will hold a public hearing regarding the proposed waste discharge requirements. The public hearing is scheduled to be held on September 1, 1995, starting at 8:00 a.m. at the City Council Chambers, City of Loma Linda. Further information regarding the conduct and nature of the public hearing concerning these waste discharge requirements may be obtained by writing or visiting the Santa Ana Regional Board office, 2010 Iowa Avenue, Suite 100, Riverside, CA 92507.

WRITTEN COMMENTS

Interested persons are invited to submit written comments on the proposed waste discharge requirements and the Executive Officer's proposed determinations. Comments should be submitted by August 11, 1995 either in person or by mail to:

Pavlova Vitale
California Regional Water Quality Control Board
Santa Ana Region
2010 Iowa Avenue, Suite 100
Riverside, CA 92507

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INFORMATION AND COPYING

Persons wishing further information may write to the above address or call Pavlova Vitale at 909/782-4920. Copies of the application, proposed waste discharge requirements, and other documents (other than those which the Executive Officer maintains as confidential) are available at the Regional Board office for inspection and copying by appointment scheduled between the hours of 10:00 a.m. and 4:00 p.m., Monday through Thursday (excluding holidays).

REGISTER OF INTERESTED PERSONS

Any person interested in a particular application or group for applications may leave his name, address and phone number as part of the file for an application. Copies of tentative waste discharge requirements will be mailed to all interested parties.

RECOMMENDATION

Adopt Order 95-47, NPDES No. CA 8000192, as presented.

In addition to the permittees, comments were solicited from the following agencies and/or persons:

- U. S. Environmental Protection Agency - Robert Wills/Eugene Bromley, Pretreatment, Sludge, and Storm Water Section
- U. S. Environmental Protection Agency - Terry Oda, Permits Issuance Section
- U. S. Environmental Protection Agency - Kenneth Greenberg, Enforcement Section
- U.S. Army, Los Angeles District, Corps of Engineers - Permits Section
- NOAA, National Marine Fisheries Service
- U.S. Fish and Wildlife Service - Carlsbad
- State Water Resources Control Board - Ted Cobb, Office of the Chief Counsel
- State Water Resources Control Board - Archie Matthews/Bruce Fujimoto, Division of Water Quality
- State Department of Water Resources - Glendale
- California Regional Water Quality Control Board, Region (1) - Nathan Quarles
- California Regional Water Quality Control Board, San Francisco Bay Region (2) - Tom Mumley
- California Regional Water Quality Control Board, Region (3) - Adam White
- California Regional Water Quality Control Board, Los Angeles Region (4) - Mark Pumford
- California Regional Water Quality Control Board, Central Valley Region (5) - Wayne Pierson/Pamela Barksdale
- California Regional Water Quality Control Board, Region (5R) - Carole Crowe
- California Regional Water Quality Control Board, Region (5F) - Darrell Evensen
- California Regional Water Quality Control Board, Region (6) - John Short
- California Regional Water Quality Control Board, Region (6V) - Tom Rheiner
- California Regional Water Quality Control Board, Colorado River Basin Region (7) - Todd Thompson
- California Regional Water Quality Control Board, San Diego Region (9) - Deborah Jayne
- State Department of Fish and Game - Long Beach
- Riverside County Health Department - John Fanning
- South Coast Air Quality Management District, El Monte - James Lents
- Orange County Health Care Agency - Robert Merryman
- State Department of Health Services - San Diego
- State Department of Parks and Recreation - Henry R. Agonia
- Orange County Environmental Management Agency, Environmental Resources Division - Christopher Crompton/ Richard Boon
- Orange County Environmental Management Agency, Department of Public Works, Flood Programs - Herb Nakasone
- San Bernardino County Flood Control District - Naresh Varma
- Riverside County Health Department - John Fanning
- Caltrans, District 8, San Bernardino - Tony Louka
- Southern Pacific Railroad
- Atchison, Topeka & Santa Fe Railway Company
- U.S. Department of the Air Force, March Air Force Base - Ronald Hiebert
- Camp Dresser and McKee - Jeff Endicott
- National Forest Service
- Woodward Clyde - Bob Collacott

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- Uribe And Associates - Pete Uribe
- Larry Walker and Associates - Malcolm Walker
- Building Industry Association - Governmental Affairs Council, Amy Glad
- L.A. County Department of Public Works - Gary Hildebrand
- AMI Circle City Hospital
- Corona Community Hospital
- Riverside Community Hospital
- Riverside General Hospital
- Chapman College
- Mt. San Jacinto College
- University of California, Riverside
- Riverside Community College

School Districts

- Alvord Unified School District
- Corona-Norco Unified School District
- Hemet Unified School District
- Lake Elsinore Unified School District
- Menifee Union School District
- Moreno Valley Unified School District
- Nuview Union School District
- Perris Elementary School District
- Perris Union High School District
- Riverside Unified School District
- Romoland School District
- San Jacinto Unified School District
- Val Verde School District

Environmental Organizations

- Sierra Club, Orange County Chapter
- Sierra Club, Los Angeles Chapter - Dick Hingson Natural Resources Defense Council (NRDC)
- Tri-County Conservation League - Gertrude Hagum
- Press Enterprise - Gary Polakovic
- Santa Ana Watershed Project Authority - Neil Cline
- Orange County Water District - Bill Mills
- Metropolitan Water District - Ed Means
- Western Municipal Water District - Don Harriger
- Eastern Municipal Water District - Andy Schlange
- San Bernardino Valley Municipal Water District - Louis Fletcher
- Elsinore Valley Municipal Water District - John Hoagland
- Lee Lake Water District - John Pastora
- Southern California Association of Governments, Los Angeles - Tabi Hiwot
- Inland Empire West Resource Conservation District - Donald Woo
- Elsinore-Murrieta-Anza RCD - Robert Wheeler
- Riverside-Corona RCD - Shelli Lamb

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Permittees

- City of Beaumont - Dee Morrijani
- City of Calimesa - Gerald Buydos
- City of Canyon Lake - Jeff Butzlaff
- City of Corona - Viren Shah
- City of Hemet - Roland Trietsch
- City of Lake Elsinore - Ray O'Donnell
- City of Moreno Valley - Paul Lau
- City of Norco - Mark Raab
- City of Perris - Habib Motlagh
- City of Riverside - Delia Garrison
- Riverside County Transportation Department - John Ristow
- City of San Jacinto - Les Evans
- Riverside County Flood Control and Water Conservation District - Jason Christie

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# DRAFT

P.N. 8/25/95

Permit No. AZS000003

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq.; the "Act"),

City of Phoenix
200 West Washington Street
Phoenix, Arizona 85003-1611

is authorized to discharge storm water runoff from the municipal separate storm sewer system (MS4) operated by the City of Phoenix to waters of the United States from all MS4 outfalls within the city limits of the City of Phoenix

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Part I, and in the attached 11 pages of EPA Region IX "Standard Federal NPDES Permit Conditions for MS4 Discharges," dated August 15, 1995.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight, July 31, 2000.

Signed this day of 1995

For the Regional Administrator

Director, Water Management Division

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge storm water from all outfalls of the permittee's MS4.

2. Storm Water Management Program

The permittee shall control pollutants in storm water discharges to the maximum extent practicable, and to demonstrate compliance with this requirement, the permittee shall implement in its entirety the proposed storm water management program (SWMP) described in the documents listed in Part I.E.12 of this permit. All storm water pollution control measures identified in the SWMP shall be implemented, including existing measures and proposed measures. Proposed control measures shall be implemented in accordance with the implementation schedules provided in the SWMP, with the effective date of the permit serving, at a minimum, as the starting date for the implementation schedule. Existing controls shall be continued throughout the entire term of the permit.

The permittee shall also implement the additional control measures related to the SWMP set forth in Appendix 1 to this permit in the time frame set forth in Appendix 1.

3. Storm Water Monitoring Program

The permittee shall implement the storm water monitoring program described in the document listed in Part I.E.13 of this permit. The time frame for implementation of this program shall be as specified in the storm water monitoring program.

The permittee shall also implement the additional provision of Appendix 1 to this permit related to monitoring activities, in the time frame set forth in Appendix 1.

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4. Compliance with Arizona Water Quality Standards.

Will be revised to not preclude WQS from applying

During the term of this permit, no compliance schedules shall be established to require compliance with the water quality standards of the State of Arizona (Arizona Administrative Code, Title 18, Chapter 11, Articles 1 and 2).

B. SOURCE IDENTIFICATION AND INSPECTION PRIORITIZATION

1. The permittee shall maintain and update annually, at a minimum, a list of the following facilities within the jurisdiction of the permittee: municipal landfills (operating and closed); hazardous waste treatment, disposal and recovery facilities; and industrial facilities (from those listed at 40 CFR 122.26(b)(14)) which are subject to section 313 of title III of the Superfund Amendments and Reauthorization Act of 1986.

2. The list shall also include other industrial facilities, and non-industrial sources or categories of sources which the permittee believes may discharge significant quantities of pollutants in storm water runoff. In addition, the list shall be prioritized to indicate the individual sources, or categories of sources which the permittee believes are the most significant sources of pollutants.

3. Where the permittee believes that the non-industrial sources identified in Part I.B.2 above may be more significant sources of pollutants than those identified in Part I.B.1, the permittee may inspect such sources as an alternative for inspections of sources which would have otherwise taken place in accordance with the permittee's SWMP.

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C. MODIFICATIONS TO THE SWMP AND MONITORING REQUIREMENTS

During the term of this permit, the permittee may propose modifications of the SWMP or the monitoring requirements. The modifications may be proposed with the annual report (Part I.F of this permit), or any time when such modifications are necessary.

Significant modifications (based on the judgment of Region 9 and ADEQ) which are proposed by the City shall follow the procedures of 40 CFR 124. Other modifications shall be considered minor modifications and shall be made following the procedures of 40 CFR 122.63.

Modifications other than those proposed by the City, or those listed as 40 CFR 122.63, shall not be considered minor modifications.

D. ANNUAL REPORT

The permittee shall submit an annual report summarizing the storm water program activities including, at a minimum, the following items:

1. The status of implementing the components of the SWMP required by this permit; at a minimum, the report shall include a description of the status of each program element listed in Table 1 of the fact sheet accompanying this permit, and activities of the permittee during the previous year.
2. Any proposed changes to the SWMP;
3. Any revisions or updates to the assessment of controls and fiscal analysis reported in the permit application;
4. A summary of the data, including monitoring data, that is accumulated throughout the reporting year;
5. Annual expenditures and budget and the year following each annual report;
6. A summary describing the number and nature of enforcement actions, inspections, and public education programs; and
7. Identification of water quality improvement or degradation.

The first report is due on , 1996 and subsequent reports are due on of each year thereafter.

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E. REQUIREMENTS FOR STATE OF ARIZONA 401 CERTIFICATION

{reserved pending state action}

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F. DEFINITIONS

(1) Best Management Practices (BMPs) refer to schedules of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

(2) "CWA" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et seq.

(3) "Illicit Discharge" means any discharge to a municipal separate storm sewer system that is not composed entirely of storm water except discharges pursuant to an NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges from fire fighting activities.

(4) "Major Outfall" means a municipal separate storm sewer outfall from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or for municipal separate storm sewers that receive storm water from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more, or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more).

(5) "Municipal Separate Storm Sewer" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streams, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):
(i) owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal or sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized tribal organization, or a designated and approved

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management agency under section 208 of the CWA that discharges to water of the United States;
(ii) designed or used for collecting of conveying storm water;
(iii) which is not a combined sewer; and
(iv) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

(6) "Outfall" means a point source where a municipal separate storm sewer discharges to water of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.

(7) "Permittee" means the City of Phoenix.

(8) "Point Source" means any discernible, confined and discrete conveyance, including but not limited to , any pipe, ditch, channel tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.

(9) "Representative Storm" means a storm event of greater than 0.1" of rainfall and at least 72 hours after the previously measurable (greater than 0.1" rainfall) storm event. Where feasible, the variance in the duration of the event and the total rainfall of the event should not exceed 50 percent from the average or median rainfall event in the area.

(10) "Significant sources of pollutants" includes, but is not limited to: discharges which could cause or contribute to violations of water quality standards of the State of Arizona, and discharges which could include releases of oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and 40 CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4).

(11) "Storm water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

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(12) The "storm water management program" (SWMP) consists of the following documents:

SWMP identified in section 4.0 of the document entitled "City of Phoenix NPDES Part 2 Permit Application for EPA, dated November 10, 1992, and updated by the following documents:

a) Description of maintenance of drainage facilities in the City of Phoenix found in the letter of May 31, 1994 from the City of Phoenix to Region 9;
b) Description of spill prevention and response procedures in the City of Phoenix found in the letter of May 31, 1994 from the City of Phoenix to Region 9;
c) Description of procedures for controlling exfiltration from the sanitary sewer system into the storm drains in the City of Phoenix found in the letter of May 31, 1994 from the City of Phoenix to Region 9; and
d) Description of BMPs implemented by the City of Phoenix at the City's vehicle maintenance facilities enclosed in letter dated August 11, 1995 from the City of Phoenix to Region 9.

(13) The "storm water monitoring program" consists of the following document:

storm water monitoring program identified in section 3.5 of the document entitled "City of Phoenix Part 2 NPDES Permit Application which was submitted on November 10, 1992.

(14) "Waters of the United States means:
(a) all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which ar subject to the ebb and flow of the tide;
(b) all interstate waters, including interstate "wetlands;"
(c) all other waters such as intrastate lakes, rivers, streams (including intermittent streams, mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
(1) which are or could be used by interstate or foreign travelers for recreational or other purposes;
(2) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

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(3) which are used or could be used for industrial purposes by industries in interstate commerce;
(d) all impoundments of waters otherwise defined as waters of the United States under this definition;
(e) tributaries of waters identified in paragraphs (a) through (d) of this definition;
(f) the territory sea; and
(g) wetlands adjacent to areas (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.
Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to man-made bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States.

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Appendix 1 - Permit Requirements in Addition to Those Set Forth in the City of Phoenix Part 2 Permit Application

I. Storm Water Management Program Requirements

a) Additional Field Screening Activities for Illicit Connections

The permittee shall implement an ongoing program to re-evaluate major outfalls for illicit discharges. At a minimum, this program shall include rescreening of each major outfall once during the five year term of the permit. Twenty percent of the outfalls shall be screened in each year. The screening procedure shall be as set forth at 40 CFR 122.26(d)(1)(iv)(D).

The permittee shall prohibit non-storm water discharges into the MS4. NPDES permitted discharges are exempt from this prohibition. In addition, the following types of discharges need only be prohibited when the permittee determines that the discharges are a source of pollutants:

water line flushing
landscape irrigation
diverted stream flows
rising ground waters
uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers
uncontaminated pumped ground water
discharges from potable water sources
foundation drains
air conditioning condensate
irrigation water
springs
water from crawl space pumps
footing drains
lawn watering
individual residential car washing
flows from riparian habitats and wetlands
dechlorinated swimming pool discharges
street wash water

Discharges from fire fighting activity shall be prohibited only when the discharges are identified as significant sources of pollutants to waters of the United States.

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b) Additional Industrial Facilities to be Addressed Under the Industrial Storm Water Program

The list of industrial facilities to be addressed under the permittee's industrial storm water pollution control program shall also include the following additional facilities which are located within the jurisdiction of the permittee: municipal landfills (operating and closed), and hazardous waste storage, treatment, and recovery facilities.

c) Review of Industrial Storm Water Pollution Prevention Plans (SWPPPs)

As part of the permittee's inspection program for industrial facilities covered by an individual or general NPDES storm water permit, the permittee shall review SWPPPs (if SWPPP preparation is required by the NPDES permit) to assist the permittee in determining the compliance status of the facility with the requirements of relevant local ordinances and permittee's storm water management program. SWPPPs may be reviewed prior to or during inspections. The permittee shall also take appropriate actions to ensure compliance by industrial facilities with local authorities and the permittee's storm water management program.

When the permittee observes significant deficiencies (based on the judgment of the permittee) in the SWPPPs, or their implementation at a particular facility, which the permittee believes would constitute noncompliance with the general or individual NPDES permit, such noncompliance shall be reported to ADEQ and Region 9 unless, in the process of obtaining compliance with the local requirements, the permittee is also successful in obtaining compliance with the general permit. However, it shall not be the responsibility of the permittee to assume responsibility for enforcing the requirements of the general NPDES permit.

d) Review of Construction Site Storm Water Pollution Prevention Plans (SWPPPs)

As part of the permittee's inspection program for construction sites covered by a general or individual storm water NPDES permit, the permittee shall review SWPPPs (if SWPPP preparation is required by the NPDES permit) to assist the permittee in ensuring compliance by construction sites with the objectives of the permittee's storm water management program. SWPPPs may be reviewed prior to or during inspections. The permittee shall also take appropriate actions to ensure compliance with local authorities and the permittee's storm water management program.

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When the permittee observes significant deficiencies (based on the judgment of the permittee) in the SWPPPs, or their implementation at a particular construction site, which the permittee believes would constitute noncompliance with the general or individual NPDES permit, the permittee shall report such noncompliance to ADEQ and Region 9 unless, in the process of obtaining of compliance with local requirements by the construction site, the permittee is also successful in obtaining compliance with the general NPDES permit. However, it shall not be the responsibility of the permittee to assume responsibility for enforcing the requirements of the general NPDES permit.

II. Monitoring Program Requirement

a) Seasonal Loading Estimates for Infrequently Detected Parameters

The permittee shall submit seasonal loading estimates for each pollutant detected in the permittee's Part 2 monitoring report, but for which the permittee is not conducting additional monitoring during the term of the permit. These estimates shall be submitted concurrently with the seasonal pollutant loadings estimates discussed in section 3.2.3 of the Part 2 application. These additional estimates may be based on NURP data, the monitoring results obtained by the permittee for the Part 2 application or other appropriate data.

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DRAFT

August 21, 1995

FACT SHEET
NPDES PERMIT No. AZS000003

CITY OF PHOENIX MUNICIPAL SEPARATE STORM SEWER SYSTEM

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SUMMARY

The City of Phoenix has applied to the U. S. Environmental Protection Agency (EPA), Region 9 for a National Pollutant Discharge Elimination System (NPDES) permit to discharge storm water runoff from the City's municipal separate storm sewer system (MS4). The NPDES storm water permit is required in accordance with the provisions of the 1987 Water Quality Act (WQA) which require an NPDES permit for storm water discharges from MS4s serving a population of 100,000 or more. Final regulations were promulgated by EPA on November 16, 1990 (55 Federal Register 47990) which set forth permit application requirements for municipal storm water dischargers affected by the 1987 WQA.

EPA's permit application regulations require a two-part permit application for MS4s. Part 1 requires the submittal of general information about the MS4, certain discharge characterization data, information concerning sources of pollutants and existing pollution control programs, and the legal authority of the municipality to regulate storm water discharges into the MS4. Part 2 requires additional programmatic information, additional information concerning sources of pollutants, storm water monitoring data, a proposed storm water management program and monitoring program (to be implemented over the term of the permit), and a fiscal analysis.

The 1987 WQA requires that pollutants in storm water discharges from MS4s be controlled to the maximum extent practicable (MEP). The storm water management program (required by Part 2 of the application) is the means by which a municipality complies with the MEP standard. However, EPA recognizes that storm water issues and methods for controlling pollutants vary considerably with climatic and other differences around the country. Therefore, while the regulations set forth the basic requirements of a storm water management program, the regulations also provide flexibility in that municipalities are given an opportunity to propose their own storm water management program.

Region 9 has reviewed the permit application submitted by the City of Phoenix and believes that the City's proposals for the storm water management program, monitoring program and other program elements comply (with certain minor exceptions) with the regulations. Region 9 has prepared and proposes to issue a draft permit based on the application. The draft permit basically requires that the City implement its own proposals which are

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discussed in more detail in the application. Appendix 1 of the draft permit sets forth certain additional pollution control measures which Region 9 believes are needed to ensure compliance with the regulations. The draft permit requires that these additional controls be implemented by the City as well as the City's own proposals.

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## I. BACKGROUND

### A. Water Quality Act of 1987

The 1987 Water Quality Act (WQA) amended the Clean Water Act (CWA) by adding section 402(p) which requires that NPDES permits be issued for the following five categories of storm water discharges:

(1) Facilities which have been issued a permit prior to February 4, 1987.

(2) Facilities which discharge storm water associated with industrial activity.

(3) Municipal separate storm sewer systems (MS4s) which serve a population of 250,000 or more (large systems).

(4) MS4s which serve a population of 100,000 or more, but less than 250,000 (medium systems).

(5) Storm water discharges which the Director determines contribute to a violation of a water quality standard or are significant contributors of pollutants to waters of of the United States.

The five categories listed above are generally referred to as Phase I of the storm water program. The program also includes a Phase II, which includes all discharges not included in Phase I. EPA has recently promulgated a final rule which sets forth the Agency's regulatory program for Phase II sources (60 Federal Register 40230, August 7, 1995). The program calls for development of draft permit application regulations for Phase II sources by September 1, 1997, final regulations by March 1, 1999 and submittal of permit applications by specified sources by August 7, 2001. EPA is also committed to a participatory process in which stakeholders would be invited to assist in the development of the new regulations.

The 1987 WQA also clarified that industrial storm water runoff is subject to the BAT/BCT requirements of the CWA and applicable water quality standards. For MS4s, the WQA specifies a new technology-related level of control for pollutants in the discharges - control to the maximum extent practicable (MEP). However, the WQA is silent on the issue of compliance with water quality standards for municipal discharges and this has given rise to the argument that perhaps Congress did not intend for water quality standards to apply. In January, 1991, EPA's Office

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of General Counsel reviewed this issue and concluded that the best reading of the CWA is that water quality standards apply to municipal as well as industrial storm water discharges.

B. Water Quality Concerns

The 1987 decision by Congress to require NPDES permitting for the storm water discharges listed above was based a growing awareness of the environmental significance of nonpoint sources of pollutants. For example, EPA's report entitled "National Water Quality Inventory, 1992 Report to Congress" shows that nonpoint sources, including storm water runoff, are the leading cause of existing water quality impairments. The study also shows that approximately one-third of the nation's waterbodies are currently impaired. EPA estimates that storm water runoff itself from urbanized areas and industries is responsible for approximately 30% of existing water quality impairments.

The Nationwide Urban Runoff Program (NURP), which was sponsored by EPA in the years 1978 through 1983, also showed that storm water runoff is a significant source of pollutants (EPA, 1983). The study identified 77 priority toxic pollutants in storm water discharged from residential, commercial and light industrial areas. Of these toxic pollutants, heavy metals such as copper, lead and zinc were detected most frequently and at levels of greatest concern. Nearly half the end-of-pipe storm water samples from the study contained copper at a concentration exceeding EPA's acute toxicity criteria for fresh water.

Although the NURP study investigated urban runoff at 28 locations around the country, none of these locations was in Arizona where many of the receiving waters are ephemeral. As a result, Arizona municipalities have questioned the applicability of the conclusions of the NURP study to Arizona. However, the NURP study itself recognizes that the effects of urban runoff are quite site-specific. For Arizona specifically, the State's 1994 Water Quality Assessment Report (ADEQ, 1994) provides an assessment of the significance of urban runoff discharges in Arizona. The report shows that urban runoff is a contributor of concern to the degradation of Arizona's receiving waters.

C. History of Storm Water Permitting

In amending the CWA to include specific permitting provisions for storm water discharges, Congress was also mindful of the fact that although the NPDES permit program is 20 years old, implementation of the program for storm water discharges has proceeded very slowly and storm water discharges are still

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largely unregulated. EPA's first regulations applicable to storm water discharges were promulgated in 1973. These regulations basically exempted all discharges which were not judged to be significant sources of pollutants. This approach was challenged by the Natural Resources Defense Council (NRDC) and in 1975, the U. S. District Court for the District of Columbia ruled that such an exemption was not allowable under the NPDES permit program.

In the years following the District Court ruling, additional regulations applicable to storm water discharges were promulgated or proposed by EPA. However, these regulations prompted additional challenges from dischargers and environmental groups, and little progress has been made in controlling the pollutants in the discharges. Accordingly, to deal with the impasse, the CWA was amended to include specific permitting requirements for storm water discharges.

On November 16, 1990, as a first step in implementing the requirements of the 1987 WQA, EPA promulgated final permit application regulations for storm water discharges from MS4s serving a population of 100,000 or more, and for storm water discharges associated with industrial activity (55 Federal Register 47990).

## II . STORM WATER PERMIT APPLICATION REGULATIONS FOR MUNICIPALITIES

### A. Definition of a Large or Medium MS4

EPA considered a number of options for defining a large or medium MS4, including systems based on urbanized areas, watersheds, boundaries of cities or counties, and systems owned or operated by cities or counties. The final definition or a large or medium MS4 includes systems which are:

1) located within an incorporated place having a population or 250,000 or more (large systems), or 100,000 or more but less than 250,000 (medium systems);

2) located in counties having unincorporated urbanized areas (as defined by the Census Bureau) with a population of 250,000 or more (large systems), or 100,000 or more but less than 250,000 (medium systems);

3) owned or operated by a municipality other than those identified in (i) or (ii) above, but are designated by

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the Director of the NPDES permit program due to physical interconnections with the systems identified in (i) or (ii) above, or are designated for other relevant factors such as the nature of the pollutant loadings or the receiving water;

4) in lieu of defining a system as described in (i), (ii) or (iii) above, the Director may designate as a system any municipal storm sewers located within boundaries of a region defined by a storm water management regional authority. The regional authority and/or its co-applicants must have the necessary authority to comply with permit requirements.

Nationally, there are 173 cities and 47 counties which have the minimum necessary population to be considered large or medium MS4s (based on the 1980 census). In Arizona, the affected cities and counties are Phoenix and Tucson (large systems), and Tempe, Mesa and Pima County (medium systems). In the near future, EPA also plans to permit additional municipalities based on the 1990 census. In Arizona, the additional municipalities to be permitted are the cities of Glendale and Scottsdale.

B. Municipal Storm Water Permit Application Requirements

The storm water permit application regulations require a 2-part application for storm water discharges from large and medium MS4s. Part 1 focuses on existing information such as the current legal authority of the municipality to regulate storm water discharges, existing storm water management practices, existing data on the sources, volume and quality of storm water runoff, and funding mechanisms available to the municipality for the storm water program.

Part 1 also requires a field investigation at up to 500 major outfalls (large systems) or 250 outfalls (medium systems) to detect illicit connections to the storm sewer and evidence of illegal dumping. In addition, Part 1 requires a discharge characterization plan in which the municipality selects five to ten representative major outfalls for sampling and analysis of selected conventional pollutants and EPA's priority toxic pollutants. The sampling results are submitted with Part 2 of the application.

Part 2 of the application also requires additional information concerning sources, funding mechanisms, administrative capabilities and a demonstration of adequate legal authority to control pollutants in municipal discharges. In addition, Part 2

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requires the submittal of a storm water management program which is the single most important component of the municipal application. The storm water management program is the discharger's proposal for the MEP level of control of pollutants in the municipality's storm water runoff. By allowing a municipality to propose its own storm water management program, the regulations ensure flexibility and input from municipalities regarding the most appropriate controls for pollutants in storm water at the local level.

There are four key elements in a storm water management program which are: (1) a program to reduce pollutants from commercial and residential areas, (2) a program to control illicit connections and illegal dumping, (3) a program to reduce pollutants in industrial discharges and (4) a program to reduce pollutants in construction site runoff.

Structural and non-structural controls must both be considered in developing the storm water management program. EPA expects that initially the programs will focus on non-structural controls (e.g., public awareness programs, recycling programs, catch basin cleaning, street cleaning, programs to control illegal dumping, and implementation of source controls by major dischargers). However, structural controls (e.g. detention basins, infiltration basins, grassy swales) must also be considered and included in the plan if found to be reasonable. As noted earlier, storm water discharges must comply with water quality standards. If the non-structural controls prove insufficient to meet water quality standards, structural controls or additional non-structural controls may be necessary.

Compliance with water quality standards for municipal storm water discharges could prove to be difficult and costly. A recent study by the American Public Works Association (James M. Montgomery Consulting Engineers, 1992) estimated that the costs could range into the hundreds of billions of dollars nationally if numeric effluent limits based on water quality standards were applied. In view of such results, Arizona's recently adopted water quality standards provide up to 10 years (from February 18, 1992) to achieve compliance for storm water discharges.

C. Municipal Permit Application Deadlines

The permit application deadlines for municipal storm water discharges are summarized below:

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| | Part 1 | Review Period | Part 2 |
|---|---|---|---|
| Medium MS4s | May 18, 1992 | 90 Days | May 17, 1993 |
| Large MS4s | Nov. 18, 1991 | 90 Days | Nov. 16, 1992 |

All municipalities in Arizona including the City of Phoenix submitted timely Part 1 and Part 2 applications. The City also provided additional descriptive information concerning the SWMP in letters to Region 9 dated May 31, 1994, and August 11, 1995.

## III. PROPOSED MS4 PERMIT FOR THE CITY OF PHOENIX

### A. Proposed Storm Water Management Program

As noted above, EPA's permit application regulations require that municipal storm water dischargers propose a storm water management program to control pollutants in storm water discharges in accordance with the MEP standard. However, the regulations do not provide specific numeric criteria which set forth precisely when the MEP level of control has been attained. In this respect, NPDES permits for discharges from an MS4 differ from most other types of discharges commonly regulated through the NDPES permit program. Since numeric criteria are not available, the permitting authority must use a certain amount of judgment in evaluating whether the proposed storm water management program complies with the MEP standard. EPA's manual entitled "Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems" ("Guidance Manual") (EPA, 1992) also provides benchmark information from which to evaluate a proposed program.

NPDES regulations at 40 CFR 122.26(d)(2)(iv) set forth the basic required components of a storm water management program. These requirements are summarized in Table 1. In its Part 2 application, the City of Phoenix proposed a storm water management program which addresses most of the requirements of Table 1. Region 9 has reviewed the City's proposal and with the relatively minor exceptions which are discussed below, Region 9 believes that the City's proposal is consistent with the MEP standard.

Region 9 has prepared a supplement to the proposed storm water management program and monitoring program (Appendix 1 to the draft permit) which includes certain additional conditions which we believe are necessary to ensure compliance with MEP for the storm water discharges. The proposed permit requires that the permittee implement the proposed storm water management program, monitoring program and other program elements found in

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TABLE 1

SUMMARY OF REQUIREMENTS FOR A STORM WATER MANAGEMENT PROGRAM

(A) Measures to Reduce Pollutants from Residential and Commercial Areas (40 CFR 122.26(d)(iv)(A))

(1) Drainage system maintenance
(2) Controls for new development and significant redevelopment
(3) Maintenance of public streets, road and highways
(4) Flood management projects
(5) Controls for municipal waste facilities
(6) Controls for pesticides, herbicides and fertilizers

(B) Measures to Control Illicit Connections and Illegal Dumping to the Storm Drain (40 CFR 122.26(d)(iv)(B))

(1) Preventing illicit discharges
(2) Ongoing field screening activities
(3) Investigating potential illicit discharges
(4) Spill prevention and response
(5) Public awareness and reporting program
(6) Proper management of used oils and toxics
(7) Controlling exfiltration of sanitary sewage

(C) Measures to Control Pollutants from Municipal Landfills and Industrial Facilities (40 CFR 122.26(d)(iv)(C))

(1) Identifying priorities and implementing controls
(2) Inspections and monitoring

(D) Measures to Control Pollutants from Construction Sites (40 CFR 122.26(d)(iv)(D))

(1) Reviewing construction site plans
(2) Requiring nonstructural and structural BMPs
(3) Site inspections and enforcement
(4) Education of construction site operators

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the Part 2 permit application, and the additional measures included in Appendix 1. As noted in section II.C, the City's original proposals of November 10, 1992 were also supplemented by several letters to Region 9 from the City. The documents which constitute the SWMP and the monitoring program are listed in Parts I.F.12 and I.F.13 of the draft permit, respectively.

1. Controls for Commercial and Residential Areas

Item A.1 of Table 1 requires a description of the drainage system maintenance activities which the permittee would implement. Region 9 believes that the City's response to the requirements of item A.1 (including the additional information in the letter of May 31, 1994) is adequate to comply with the MEP standard. The original application of November 10, 1992 did not include specific information concerning a program of regular inspection and maintenance of the drainage system to remove miscellaneous debris. Debris such as car bodies and batteries, tires, and miscellaneous wastes and litter could constitute a significant source of pollutants to downstream receiving waters. However, the City's letter of May 31, 1994 did provide information concerning the City's inspection and maintenance program for the drainage system which Region 9 believes is adequate to comply with the MEP standard. The proposed permit includes the inspection and maintenance program as part of the SWMP which would be implemented.

Item A.2 of Table 1 requires that the permittee consider longer term storm water quality impacts associated with new developments and significant redevelopment. The storm water ordinance which was adopted by the City on November 4, 1992 requires that developers submit storm water management plans to the City for new residential, commercial and industrial developments. These plans must include in the design of the projects practicable control measures to reduce storm water pollution after the project is completed. Region 9 believes that the City's procedures will comply with the intent of item A.2.

The City's original responses of November 10, 1992 to item A.3 and A.5 in Table 1 were judged to be adequate with the exception that no BMPs were proposed to reduce pollutants from the City's maintenance and storage yards for road maintenance equipment and waste transportation equipment. The Guidance Manual recommends that municipal permittees consider BMPs for maintenance equipment yards since these yards may be significant sources of pollutants. However, the City's letter of August 11, 1995 describes BMPs which are implemented by the City at its vehicle maintenance facilities. These BMPs were judged to be

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adequate to comply with the MEP standard and are considered to be part of the SWMP which would be implemented.

Item A.4 of Table 1 requires that storm water quality be factored into the planning of flood control projects. This item also requires a review of existing structural flood control devices for possible retrofit for improved storm water pollution control. The Part 2 permit application notes that the Maricopa County Flood Control District (MCFCD) has primary responsibility for flood control planning in Maricopa County, including within the City of Phoenix. However, the existing flood control structures occur in waters of the United States rather within the storm drain system. As such, these structures are outside the scope of this permit program. In addition, the MCFCD is working on a manual through which storm water quality could be addressed in the planning of future flood control projects. Region 9 believes that for future flood control projects which are not in waters of the United States (if any), the requirements of item A.4 will be adequately addressed via cooperation between the City and the MCFCD.

The City's responses to item A.6 of Table 1 was judged to be adequate to comply with the MEP standard. The City's proposal includes adequate controls and educational programs to address pollution stemming from the use of pesticides, herbicides and fertilizers.

2. Controls for Illicit Connections and Illegal Dumping

The storm water regulations at 40 CFR 122.26(d)(iv)(B) require an ongoing program of various activities related to the prevention of illicit connections and illegal dumping. The City has proposed on ongoing program for locating and eliminating illicit connections which Region 9 believes will generally satisfy the requirements of items B.1, B.2 and B.3 of Table 1. However, the precise scheduling and the number of inspections for illicit discharges was not established. As such, Appendix 1 requires that all major outfalls be rescreened (in accordance with the procedure at 40 CFR 122.26(d)(1)(iv)(D)) at least once during the 5 year term of the permit. Twenty percent of the outfalls would be rescreened during each of the 5 years. Region 9 believes that this schedule is appropriate considering the relatively few instances of illicit discharges which were detected for the Part 1 application. Appendix 1 also clarifies that although the City must address all types of non-storm water discharges to the MS4, certain types of minor discharges which are listed at 40 CFR 122.26(d)(iv)(B)(1) need not be addressed unless the City determines that they are a source of pollutants. Such non-storm water

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discharges may be permitted separately by Region 9 in the future, however.

With regards to item B.4 (spill prevention and response), the original application of November 10, 1992 was unclear with regards to the nature of the spill prevention and response activities which are currently being implemented within the City of Phoenix. However, additional clarifying information was submitted by the City with its letter May 31, 1994, and Region 9 believes that the City's program satisfies the requirements of item B.4. This program is considered to be part of the SWMP which would be implemented.

The City has proposed a program to promote public reporting of illicit discharges which Region 9 believes is adequate to addresses item B.5 in Table 1. With regards to item B.6, a broad program for facilitating the proper management of used motor oil and other toxic materials has been initiated in the City of Phoenix and several surrounding communities in response to the requirements of the NPDES permits for the 91st Avenue and 23rd Avenue sewage treatment plants which are operated by the City of Phoenix (NPDES permit Nos AZ0020524 and AZ0020559). We believe that this program adequately satisfies the requirements of item B.6.

With regards to item B.7, the City's application of November 10, 1992 described the City's procedures for preventing future improper connections to the storm sewer system; however, a program was not proposed for regular inspection of the existing sanitary sewer system to detect and control possible seepage into the storm sewer. The City's letter of May 31, 1994 does provide a description of the City's procedures which Region 9 believes to be adequate and are considered part of the SWMP.

The Guidance Manual also includes a recommendation that municipalities investigate malfunctioning septic systems within the permitted area for the possibility that such systems may be contributing pollutants to the MS4. Within Maricopa County, however, this item is addressed by the Maricopa County Health Department and the existing program appears to be adequate.

3. Controls for Municipal Landfills and Industries

EPA's storm water regulations of November 19, 1990 envision a cooperative effort between municipal permittees and NPDES permit authorities regarding the regulation of industrial facilities which discharge storm water associated with industrial activity into an MS4. The Guidance Manual lists the types of

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activities which should be included in the municipal program to assist in the implementation of the industrial storm water program. These activities include:

a) identifying priority industrial facilities
b) reviewing storm water pollution prevention plans (SWPPPs) developed by industries
c) requiring implementation of BMPs
d) monitoring and inspection of industrial facilities

The City's application includes a program which generally addresses the above activities. However, Appendix 1 does add the two items discussed below.

First, the storm water regulations at 40 CFR 122.26(b)(2)(iv)(C)(1) specifically require that permittees address the following types of industrial facilities: municipal landfills (operating and closed), hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and other facilities which the permittee believes may be contributing significant quantities of pollutants to the MS4. The City's proposal had only mentioned the SARA 313 facilities and the "other" industrial facilities on its core list of facilities. As such, Appendix 1 clarifies that the municipal landfills (operating and closed) and hazardous waste treatment, disposal and recovery facilities must also be included on the core list.

As discussed below in section III.E, the proposed permit would require that the City also include on the list non-industrial facilities or categories of facilities which the City believes may contribute significant quantities of pollutants to the MS4. The overall list of sources would be prioritized with regards to storm water pollution risks and the City's inspection activities would focus on the sources believed to pose the greatest risks to storm water.

Secondly, reviewing SWPPPs was not specifically mentioned in the application, and Appendix 1 clarifies that SWPPPs must be reviewed by the City as part of the inspection program. SWPPPs are most commonly required by the general NPDES permit for Arizona (NPDES permit No. AZR000000), but may also be required by other general permits or individual permits. In addition to assisting with the implementation of the NPDES permits, review of SWPPPs will also assist the City in assessing compliance with the intent of local ordinances which are much less detailed than the SWPPPs. The City would also be required to report to ADEQ and

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Region 9 significant deficiencies (based on the judgment of the City) in the SWPPPs, or their implementation, unless the City is successful in obtaining compliance on its own by a facility. However, it is not the intent of the municipal storm water permit to require the City to assume responsibility for enforcing the general NPDES storm water permit for industries.

4. Controls for Construction Sites

Items D.1 through D.4 of Table 1 require a comprehensive program to control pollutants in storm water discharges from construction sites, including a program for reviewing construction sites plans and requiring appropriate BMPs for erosion and pollution control during construction, inspections and enforcement of municipal policies and regulations, and education of construction site operators. The City has proposed a program which Region 9 believes will largely meet the intent of the regulations. However, as with industrial facilities, review of SWPPPs which are required by the general NPDES permit for construction site runoff in Arizona (NPDES permit No. AZR100000) was not included in the proposal. As such, Appendix 1 to the proposed permit would require that during (or prior to) inspections of construction sites, the City would be required to review the SWPPPs which are required by the general NPDES permit for construction sites, and SWPPPs which may be required by other NPDES permits for construction sites. Region 9 believes that these reviews will assist the City in assessing the compliance of a facility with the objectives of the storm water management program, as well as assisting with the implementation of the NPDES construction site runoff program. However, as noted in section III.C.3 above, it is not the intent of the municipal permit to require the City to assume responsibility for enforcing the general construction storm water permit. It should also be noted that the construction permit only applies to construction sites which disturb 5 or more acres and thus only these sites would be required by develop and implement SWPPPs.

B. Storm Water Monitoring Program

The Part 2 permit application regulations for MS4s require the following items to be submitted (or implemented during the term of the permit) which are related to storm water monitoring:

(1) Storm water monitoring data collected during the permit application phase.
(2) Annual pollutant load estimates.

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(3) Development of seasonal pollutant load estimates during the term of the permit for any pollutant detected in any sample collected during the application phase.
(4) Proposed storm water monitoring program to be implemented during the term of the permit.

Region 9 has reviewed the materials submitted pursuant to items (1) and (2) above and we that the City has complied with the requirements of the regulations.

With regards to item (3) above, the City does propose to gather additional data during the term of the permit to develop seasonal load estimates. However, the additional monitoring during the term of the permit would only cover the more commonly detected parameters. The regulations require seasonal load estimates for all pollutants detected during the monitoring required by the Part 2 permit application regulations. Therefore, Appendix 1 of the permit clarifies that seasonal estimates must be provided for all pollutants detected for the Part 2 permit application. NURP data or the Part 2 results could be used for estimating seasonal loads for the parameters which would not be monitored during the term of the permit. The application does not specify precisely when the seasonal estimates would be provided; presumably the estimates would be provided toward the end of the 5-year permit term, which is acceptable since considerable time will be required to acquire the necessary data in the desert environment.

With regards to item (4) above, the City proposes monitoring for 6 sites which would be representative of residential, commercial and industrial land uses. In addition, 2 receiving water locations would be monitored to assess the effects of the discharges on the receiving water. We have reviewed the proposal and believe that it is in accord with the intent of the storm water regulations for monitoring activities to be implemented during the term of the permit.

The City's program would focus on chemical monitoring for the parameters which were detected most frequently in the Part 2 application. However, EPA is also currently evaluating a list of 28 proposed storm water environmental indicators which were developed by the Center for Watershed Protection (EPA, 1995). A broad range of indicators is under consideration including the chemical monitoring which is the focus of the proposal by the City, and other types of indicators such as biological indicators, physical and hydrological indicators, and programmatic indicators.

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Part I.C of the draft permit provides that the City may propose modifications to the monitoring program (or storm water management program) during the term of the permit. This provision could be utilized to modify the monitoring requirements of the permit to incorporate (or substitute for existing monitoring activities) selected environmental indicators or measures of success which are under development. The proposed permit would not require the City to use any of the alternate storm water environmental indicators. However, Region 9 would like to encourage the City to consider the use of these indicators and the proposed permit clarifies that the City may propose appropriate modifications during the term of the permit. EPA recently co-sponsored a conference in Crested Butte, CO (ASCE, 1995) to consider storm water monitoring needs and how to obtain the most meaningful results based on limited monitoring dollars. A general conclusion from the conference was that alternate indicators of the types being developed by EPA should be considered when designing storm water monitoring programs.

C. Storm Water Toxicity

Region 9 has recently funded a study (which was conducted by the U.S. Geological Survey) of storm water toxicity in Maricopa County. Although a final report is not yet available, the preliminary results showed that 50% (14 of 28 samples) of the first flush samples were toxic (with toxicity defined as 20% mortality in 100% storm water) and 25% (7 of 28 samples) of the composite samples were toxic. Similar results have been obtained in other areas such as Alameda County, California.

NPDES regulations at 40 CFR 122.44 require effluent limits for discharges with a reasonable potential to cause or contribute to a violation of a water quality standard, including the narrative standards related to toxicity found in Arizona water quality standards. As noted earlier, however, the Arizona standards provide until the year 2002 for compliance for storm water discharges. The proposed permit would expire in the year 2000, prior to the date on which compliance with the standards is required. The Arizona municipalities subject to the storm water program have also pointed out that the test species used in the Maricopa County study (water flea, Ceriodaphnia dubia), and the fathead minnow (Pimaphales promelas) are not indigenous to the receiving waters. As a result, the municipalities question the applicability of the results to Arizona receiving waters. However, EPA's basic policy regarding test species as set forth in the document entitled "Technical Support Document for Water

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Quality-based Toxics Control" (EPA, 1991) is to discourage the use of resident species unless required pursuant to state requirements. Current Arizona water quality standards do not provide guidance regarding the particular test species which should be used.

Given the above factors, the proposed permit does not include any specific requirements related to storm water toxicity. However, Region 9 anticipates that additional studies will be conducted during the term of the permit to further investigate storm water toxicity and its implications for Arizona receiving waters. We anticipate that such studies will be conducted in Arizona, or other states such as California where the results may be transferable to Arizona. Funding for such studies could come from section 104(b)(3) of the CWA or from other sources. For example, the CWA reauthorization bill approved by the House of Representatives on May 16, 1995 would provide $20 million annually for 5 years for storm water research, including research directed at identifying the specific pollutants causing impacts in storm water discharges. The Maricopa County study identified the principal class of compounds believed to be responsible for the toxicity as acid/base/neutral organic compounds, with dissolved metals thought to be a secondary source. The specific toxicants were not identified, however.

Region 9 anticipates working with the Arizona municipalities (including the City of Phoenix) regarding the design of additional storm water toxicity studies to be conducted in Arizona. We also anticipate that these studies will eventually yield the type of information necessary for the City to achieve timely compliance with the toxicity requirements of the Arizona water quality standards.

D. Legal Authority

The City's Part 1 permit application indicated that the City already had the necessary legal authority to comply with the requirements of the regulations at 40 CFR 122.26(d)(2)(i). In responding to the City's Part 1 application on February 12, 1992, Region 9 recommended that the City adopt an ordinance specifically directed toward controlling storm sewer system pollution. Such an ordinance was adopted by the City Council on November 4, 1992. We believe that the City has now adequately responded to the requirements of the regulations regarding necessary legal authority. Therefore, the draft permit includes no new provisions related to this matter.

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F. Permit Modifications During the Term of the Permit

The proposed permit includes by reference the SWMP and storm water monitoring program which were proposed by the City. However, these programs are quite lengthy and detailed and Region 9 anticipates that modifications of the programs may be necessary during the term of the permit. The annual report requirements (see Section G below) specifically provide an opportunity for the City to propose modifications of the SWMP. The proposed permit provides that minor changes (based on the judgment of Region 9 and ADEQ) will be treated as minor permit modifications under NPDES regulations at 40 CFR 122.62; significant modifications will be made following the procedures at 40 CFR 124.5, which includes public notice of the proposal. Also, all modifications other than those proposed by the City, or those listed at 40 CFR 122.63 would be handled following the procedures at 40 CFR 124.5.

Region 9 recognizes that these procedures would differ from the strict requirements of NPDES regulations. However, we also believe that municipal NPDES storm water permits differ substantially from most other types of NPDES permits and that these alternate procedures are appropriate since a substantial number of changes might occur during the term of the permit (many of which would be minor) and following the procedures at 40 CFR 124.5 for all such changes would not be justified.

G. Annual Reporting

In accordance with NPDES regulations at 40 CFR 122.42(c), the draft permit requires the submittal of an annual report describing the pollutant control and monitoring activities of the permittee during the previous year. The report must include the following information at a minimum:

1. The status of implementing the components of the storm water management program required by the permit. The City must describe its activities undertaken for each component listed in Table 1 for a storm water management program;
2. Any proposed changes to the storm water management program;
3. Any revisions or updates to the assessment of controls and fiscal analysis reported in the permit application;
4. A summary of the data, including monitoring data, that is accumulated throughout the reporting year;
5. Annual expenditures and budget for the year following each annual report;
6. A summary describing the number and nature of enforcement actions, inspections, and public education programs; and

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E. Source Identification and Inspection Prioritisation

The proposed permit would require that the City maintain (and update at least annually) a list of the following facilities which are located within the jurisdiction of the permittee: municipal landfills (operating and closed); hazardous waste treatment, disposal and recovery facilities; and industrial facilities (from those listed at 40 CFR 122.26(b)(14)) which are subject to section 313 of title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986, and other industrial facilities which the City believe may be discharging significant quantities of pollutants into the MS4. The storm water regulations at 40 CFR 122.26(d)(2)(iv)(C)(1) require that permittees address runoff from industrial facilities in their SWMPs and focus on these facilities in particular.

The proposed permit would also require the City to include on the list non-industrial sources or categories of sources which the City believes may discharge significant quantities of pollutants. In addition, the proposed permit would require a general assessment by the City regarding the individual facilities, or categories or facilities, which are believed to be the most significant sources of pollutants in storm water runoff.

The City has proposed an industrial storm water control program which would focus on facilities subject to SARA 313 requirements, and "other" industrial facilities which may contribute significant quantities of pollutants. As discussed above in section III.A.3, the permit would require that the City also include landfills, hazardous waste treatment, disposal and recovery facilities. However, the proposed permit provides that where the City believes that non-industrial facilities may be more significant sources of pollutants, the City may inspect such sources as an alternative to the industrial facilities which would have been inspected under the City's SWMP. These requirements will ensure that the City fully consider all major sources of pollutants to the MS4 and prioritize its program in accordance with the risks presented by the particular types of the facilities within its jurisdiction.

The Part 2 application indicates that the City has already developed a significant amount of information concerning industrial facilities in the City. This information concerning pollutant sources will assist the City in implementing the requirements of the storm water management program and reducing pollutants in accordance with the MEP standard.

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7. Identification of water quality improvement or degradation.

H. Compliance with Arizona Water Quality Standards

As noted earlier, current water quality standards for the State of Arizona (Arizona Administrative Code, Title 18, Chapter 11, Articles 1 and 2) provide up to 10 years (from February 18, 1992) for storm water discharges to come into compliance with applicable standards. The Arizona municipalities have expressed concern that numeric effluent limits based on water quality standards might be established during the term of the permit since the Arizona standards provide that compliance schedules to establish effluent limitations may be established which would require compliance prior to the full 10 years. However, Region 9 believes that the intent of the standards (and the compliance schedule which is provided) is to provide time for the City to gain experience with storm water quality management and determine the best means of achieving compliance with the standards. We expect that the full 5-year term of the permit is likely to be necessary to gain the necessary experience. Therefore, Part I.A.4 of the proposed permit provides that compliance schedules leading to effluent limitations based on Arizona water quality standards will not be established by Region 9 during the term of the permit.

to be revised to not preclude compliance schedules for WQS

I. Endangered Species Act Requirements

Region 9 reviewed the publications: Endangered and Threatened Species of Arizona, Summer, 1991, Ecological Services Field Office, U.S. Fish and Wildlife Service; and an updated list of "Federally Threatened and Endangered Species of Arizona", July, 1994, to determine whether the discharges authorized by this permit would affect any endangered or threatened species. The review showed that there are no aquatic endangered or threatened species downstream of the area in which the regulated discharges would occur. Since this permit will result in benefits to water quality, the permit should not adversely impact any endangered or threatened species.

A copy of the draft permit and fact sheet were forwarded to the U.S. Fish and Wildlife Service for comment. The U.S. Fish and Wildlife Service was also provided with a representative Part 1 and Part 2 permit application for Arizona (from the City of Tucson). This application provides detailed information which is representative of the activities which would be undertaken by all Arizona municipalities subject to the storm water program, including the City of Phoenix. In addition, the draft permit was placed on public notice for a period of 30 days.

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J. Requirements for State of Arizona 401 Certification

Additional permit requirements may be established by the State of Arizona to ensure compliance with all state laws and requirements. Section E of the permit has been reserved to include any such requirements.

K. Standard Conditions

NPDES regulations at 40 CFR 122.41 and 122.42 require the inclusion of certain standard conditions in all NPDES permits. Region 9 normally includes these conditions in all NPDES permits, and we also include certain other basic conditions which set forth additional requirements of the CWA.

However, the City has requested certain modifications or deletions to Region 9's list of standard conditions for clarity and in consideration of the unique nature of storm water discharges. In response to this request, Region 9 has made certain modifications to the standard conditions which we believe are responsive to this request, but do not significantly affect the intent of the standard conditions overall.

IV. EXPIRATION DATE OF PROPOSED PERMIT

The expiration date of the proposed permit is July 31, 2000.

IV. FOR ADDITIONAL INFORMATION

For additional information concerning the proposed permit, please contact either of the following:

Eugene Bromley
EPA, Region 9
Section W-5-1
Water Management Division
75 Hawthorne Street
San Francisco, CA 94105
Telephone: (415) 744-1906

Robert Wilson
Water Permits Unit
Arizona Department of
Environmental Quality
3033 North Central Avenue
Phoenix, AZ 85012
Telephone: (602) 207-4574

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**REFERENCES**

ADEQ. 1994. Arizona Water Quality Assessment 1994, Arizona Department of Environmental Quality, 1994.

ASCE. 1995. Harry C. Torno, Editor, Stormwater NPDES Related Monitoring Needs, Proceedings of an Engineering Foundation Conference.

EPA. 1983. Results of the Nationwide Urban Runoff Program, Final Report, Water Planning Division.

EPA. 1991. Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March, 1991.

EPA. 1992. Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems, EPA 833-B-92-002, November, 1992.

EPA. 1995. Environmental Indicators to Assess the Effectiveness of Municipal and Industrial Stormwater Control Programs, Indicator Profile Sheets, Draft, March, 1995.

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STATE OF CALIFORNIA - Environmental Protection Agency
PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
3443 Routier Road, Suite A
Sacramento, CA 95827-3098
PHONE (916) 255-3000
FAX (916) 255-3015

21 July 1995

JUL 27 1995

Mr. Douglas M. Fraleigh, Administrator
Public Works Agency
County of Sacramento
827 Seventh Street
Sacramento, CA 95814

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LOS ANGELES REGION

**NOTICE**

**TENTATIVE WASTE DISCHARGE REQUIREMENTS FOR SACRAMENTO COUNTY WATER AGENCY CITIES OF SACRAMENTO, FOLSOM, AND GALT AREA-WIDE STORM WATER DISCHARGES FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS SACRAMENTO COUNTY**

**TO ALL CONCERNED PERSONS AND AGENCIES:**

Any comments or recommendations you may have concerning this tentative order should be submitted to this office by **18 August 1995** in order that consideration may be given them prior to the September meeting of the Regional Board.

Please note that Provisions D.5 and D.6 of this Tentative Order permit the discharge of storm water associated with industrial activities from industrial facilities owned and operated by the Dischargers that are currently regulated by the State of California General Permit for Storm Water Discharges Associated with Construction Activities, and the General Permit for Storm Water Discharges Associated with Industrial Activities. These discharges are not required by the Federal Regulations to be included in a municipal storm water NPDES permit, and are done so in an effort to reduce the number of NPDES permits issued to facilities owned and operated by the Dischargers. These provisions may be removed from the Tentative Order prior to bringing it before the Board for adoption.

If you have any questions, please call Pamela Barksdale at (916) 255-3024.

Kenneth D. Landau

KENNETH D. LANDAU
Senior Engineer

PCB

Enclosures w/ Standard Provisions

cc: (see attached list)

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cc: w/ Standard Provisions

Ms. Donna Dean. Sacramento County. Department of Public Works. Water Resources Division
Mr. Dave Brent. City of Sacramento. Department of Utilities
Mr. Craig Hamner. City of Folsom. Department of Public Works
Mr. Parviz Lasnai. City of Galt. Department of Public Works

cc: w/o Standard Provisions

Mr. Eugene Bromley. Environmental Protection Agency. San Francisco
U.S. Army Corps of Engineer. Sacramento
U.S. Fish and Wildlife Service. Sacramento
Department of Health Services. Office of Drinking Water. Sacramento
Environmental Management Branch. Department of Health Services. Sacramento
Department of Fish and Game. Region II. Sacramento
Department of Water Resources. Central District. Sacramento
Mr. Merle E. Larrabee. State of California Caltrans District 3
Ms. Betsy Jennings. Office of Chief Counsel. State Water Resources Control Board. Sacramento
Mr. Archie Matthews. Division of Water Quality. State Water Resources Control Board. Sacramento
Mr. Tom Mumley. State of California Regional Water Quality Control Board. San Francisco Region
Mr. Mark Pumford. State of California Regional Water Quality Control Board. Los Angeles Region
Ms. Debra Jayne. State of California Regional Water Quality Control Board. San Diego Region
Mr. Daryl Evensen. State of California Regional Water Quality Control Board. Central Valley Region. Fresno Office
Ms. Carole Crowe. State of California Regional Water Quality Control Board. Central Valley Region. Redding Office
Mr. Nathan Quarles. State of California Regional Water Quality Control Board. North Coast Region
Mr. Adam White. State of California Regional Water Quality Control Board. Central Coast Region
Mr. John Short. State of California Regional Water Quality Control Board. Lahonton Region. South Lake Tahoe Office
Mr. Tom Rheiner. State of California Regional Water Quality Control Board. Lahonton Region. Victorville Office
Mr. Todd Thompson. State of California Regional Water Quality Control Board. Colorado River Basin Region
Ms. Paviova Vitale. State of California Regional Water Quality Control Board. Santa Ana Region
Sacramento County Planning Department
Sacramento County Department of Environmental Health
Mr. Donald Freitas. Contra Costa County Clean Water Program
Mr. Morris L. Allen. City of Stockton. Department of Municipal Utilities
Mr. Manual Lopez. County of San Joaquin. Department of Public Works

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Mr. William A. Wilbanks. Kern County Engineering and Survey Services Department
Mr. Fred L. Kloepper. City of Bakersfield. Department of Public Works
Mr. Joe Turner. City of Bakersfield.
Ms. Alice Tulloch. City of Modesto
Mr. Doug Harrison. Fresno Metropolitan Flood Control District
Mr. Richard Boone. Orange County. Environmental Management Agency
Citizens for Better Environment
Natural Resources Defense Council. San Francisco
Environmental Defense Fund. Oakland

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. _____

NPDES NO. CA 0082597

WASTE DISCHARGE REQUIREMENTS
FOR

SACRAMENTO COUNTY WATER AGENCY
CITIES OF SACRAMENTO, FOLSOM, AND GALT
AREA-WIDE STORM WATER DISCHARGES
FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS
SACRAMENTO COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Board) finds that:

1. The Sacramento County Water Agency, and the cities of Sacramento, Folsom, and Galt (hereafter collectively referred to as Dischargers) have submitted a completed permit application on 3 March 1995, for re-issuance of waste discharge requirements under the National Pollutant Discharge Elimination System (NPDES) to discharge storm water runoff from storm drains and watercourses within the Dischargers' jurisdictions.

2. The Dischargers are currently subject to NPDES area-wide municipal storm water permit, Order No. 90-158 (NPDES No. CA0082597) adopted on 22 June 1990.

3. The Sacramento County Water Agency (hereafter referred to as the County) and the City of Sacramento are defined as large municipalities (with populations greater than 250,000) in Appendices H and F, respectively, of Part 122 of Title 40 of the Federal Code of Regulations (40CFR). As such, the County and the City of Sacramento must obtain an NPDES municipal storm water permit for storm water discharges associated with urbanized areas in their respective jurisdictions.

4. The Cities of Galt and Folsom are urbanized areas with populations less than 100,000. Due to their proximity to the urbanized areas of the County, and the location of their storm sewer system discharges relative to discharges from the County's system, the Cities of Galt and Folsom are designated as part of the large municipal separate storm sewer system (40 CFR 122.26(b)(7)(iii)). Attachment A shows Sacramento County and illustrates the relationship of the co-permittees in Sacramento County.

5. As directed by Section 402(p)(4)(a) of the Federal Clean Water Act (CWA), the United States Environmental Protection Agency (hereafter referred to as U.S. EPA) promulgated regulations addressing NPDES permit application requirements for storm water discharges (hereafter referred to as the regulations) on November 16, 1990. The Dischargers' current NPDES permit for storm water

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discharges was adopted prior to the promulgation of these regulations. The requirements of the Dischargers' current NPDES permit, and subsequent compliance with the permit requirements by the Dischargers, adequately addressed the regulations.

6. The regulations do not address renewal application requirements for storm water discharges from separate municipal storm sewer systems. Renewal application requirements were established by Board staff, in consultation with U.S.EPA, and the Dischargers, and consisted of the Dischargers submitting the following:

   a. USEPA General Information, Form 1, and the State of California Application for Facility Permit/Waste Discharge, Report of Waste Discharge, Form 200, submitted on 23 November 1994.
   b. Comprehensive Stormwater Management Program submitted on 21 June 1994, which provides a plan, with a schedule, for the development, implementation, and monitoring of best management practices, and other programs and activities required to reduce the discharge of pollutants in storm water discharges to the maximum extent practicable (MEP) during the life of this Order.
   c. Effectiveness Evaluation Report submitted on 3 March 1995, summarizing the effectiveness of the Dischargers' Storm Water Management Program under the current Permit requirements, and provided a plan on how the effectiveness of the storm water program for this Order will be evaluated.

7. The Dischargers have jurisdiction over, and/or maintenance responsibility for certain municipal separate storm drain systems, and/or watercourses in the County. Discharges consist of surface runoff generated from various land uses that discharge into the Sacramento and American Rivers through natural water courses or manmade conveyances. Based on monitoring data collected during the term of the current Order, the Dischargers have initially identified the pollutants of concern in runoff and receiving waters as certain heavy metals, petroleum hydrocarbons, and certain pesticides. The quality of the discharge, and resulting impact it may have on receiving waters, varies, and is affected by hydrology, geology, land use, season, and sequence and duration of rainfall events.

   Over the term of this Order, the Dischargers will continue to develop and refine the list of constituent of concerns through monitoring, or through special studies.

8. The permit application submitted by the Dischargers included a Comprehensive Stormwater Management Program (Program), which describes the framework for management of storm water discharges during the term of this Order. The title page and table of contents of the Program are included in Attachment B of this Order. The Program defines the priorities in development and implementation of best management practices (BMPs), and provides an implementation program which summarizes the major activities to be accomplished during the five-year term of this Order. Specific activities regarding implementation of the Program will be provided by the Dischargers on

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an annual basis through submittal of a work plan as part of the Annual Monitoring and Reporting Program.

The Implementation Chapter of the Program consists of the following elements:

a. Construction Site Management Program
b. New Development Management Program
c. Public Education and Awareness Program
d. Industrial Discharge Management Program
e. Illegal Discharge Program
f. Illicit Connection Program
g. Public Agency Program
h. Monitoring Program
i. Intra/Inter Agency Coordination
j. Legal Authority
k. Program Management

9) The Program emphasizes incorporating BMPs into established programs as much as possible in order to maximize the use of existing resources, to minimize the risk of creating redundant and overlapping regulatory programs, and to expedite the implementation of the Program.

10) The permit application included an Effectiveness Evaluation Report. This report summarized the Dischargers' evaluation of the effectiveness of the Program during the current Order, and provided methodologies the Dischargers intend to implement to determine BMP and overall Program effectiveness over the term of this Order. The proposed methodologies are detailed in the Effectiveness Evaluation Plan (EEP). The EEP is designed to gradually increase the level of sophistication used to judge the effectiveness of the Program, and consists of three principle components:

a. Identification and reduction of constituents of concerns (hereafter referred to as COC)
b. Program evaluation
c. Effectiveness evaluation process

Over the course of this Order, the primary methods for evaluation performance standards and estimating water quality improvements will be special studies for structural and non-structural BMPs, sub-watershed pilot studies for COC reduction programs, and statistical methods and water quality models for predicting the effectiveness of the Program.

The title sheet, table of contents and a summary of the EEP schedule are included in Attachment C of this Order.

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11. The Program and EEP, and modifications or revisions to the Program and EEP that are approved in accordance with Provision D.7 of this Order, and future year work plans to be submitted in accordance with Monitoring and Reporting Program No. ____ Provision B.3 of this Order, are integral and enforceable components of this Order. Program elements identified in Finding Nos. 8 and 10 that have been found to be deficient have been identified and are addressed as permit requirements provided in Provisions D.2 and D.3 of this Order.

12. Under the current Permit, the roles and responsibilities of the Dischargers are defined in a Memorandum of Understanding (MOU) that was effective through the term of the current permit, and expired on 1 June 1995. Provision D.2.b of this Order directs the Dischargers to complete and submit to the Board a MOU that specifically defines the roles and responsibilities of each co-permittee as they relate to compliance and participation with this Order.

13. Discharges from municipal separate storm sewer systems owned and operated by the Dischargers consist of storm water runoff, and non-storm water discharges which discharge directly, or indirectly, to lakes, water-supply reservoirs, ground waters, rivers, tributary streams and water courses and contiguous water bodies in Sacramento County.

14. The Regulations require NPDES permits for storm water discharges from separate municipal storm drain systems, storm water discharges associated with industrial activity (including construction activities), and designated storm water discharges which are significant contributors of pollutants to waters of the United States. Storm water discharges from separate municipal separate storm sewer systems are subject to MEP discharge standards. Discharges of non-storm water and storm water from industrial activities defined in the Federal Regulations are subject to Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) standards.

    This Order regulates both storm water and non-storm water discharges from municipal separate storm sewer systems, and storm water discharges associated with industrial activities (including construction) from industrial facilities, as identified by the Dischargers in accordance with Provisions D.5 and D.6 of this Order, that are owned or operated by the Dischargers.

15. Clean Water Act Section 402(p)(3)(B)(ii) requires that NPDES permits shall require the Dischargers to effectively prohibit non-storm water discharges into storm sewers. The Regulations recognize certain categories of non-storm water discharges that do not need to be prohibited if the discharges have been determined by the Dischargers to not be significant sources of pollutants.

    The State Water Resources Control Board is currently conducting a study of non-storm water discharges. In addition, the Dischargers may, over the term of this Order, conduct studies to determine the threat to water quality for various non-storm water discharges. These studies may

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result in additional de minimis categories of non-storm water discharges being identified. Provision D.4.d allows this Order to be amended to include additional de minimis categories of non-storm water discharges.

16. The State Water Resources Control Board (State Board) has issued NPDES General Permits for the regulation of storm water discharges associated with industrial and construction activities. To effectively implement the industrial, new development, and construction elements of the Program, the Dischargers may conduct regulatory activities at industrial or construction sites currently covered by one of the State NPDES General Permits. Under the CWA, the Dischargers cannot enforce the State's NPDES General Permit. However, Board staff intends to work cooperatively with the Dischargers to ensure the industries, businesses, and developers within the Dischargers jurisdiction are not subject to duplicate or overlapping storm water regulatory activities.

17. Federal, state, or regional entities within the Dischargers' boundaries, not currently named in this Order, operate storm drain facilities and/or discharge storm water to the storm drains and watercourses covered by this Order. The Dischargers may lack legal jurisdiction over these entities under the state and federal constitutions. Consequently, the Regional Board recognizes that the Dischargers should not be held responsible for such facilities and/or discharges. The California Department of Transportation (Caltrans) is a state agency that is currently, among others, such an entity. The Regional Board issued a separate storm water permit (Order No. 95-001, NPDES No. CA0083640), to Caltrans in 1995 January, and will consider issuing separate NPDES permits for storm water discharges to other federal, state, or regional entities within the Dischargers' boundaries.

As an alternative to a separate NPDES permit being issued to other federal, state, or regional entities, Provision D.8 allows the Dischargers to request that this Order be amended to allow these entities to be named as co-permittees to this Order.

18. On 6 June 1995, the Dischargers entered into a Memorandum of Understanding (MOU) with Caltrans. This MOU provided agreements and procedures regarding communication, coordination, cooperation, and collaboration between the Dischargers and Caltrans concerning individual or shared activities required to achieve compliance with their respective Board Orders. Attachment D provides a copy of the MOU.

As stated in Finding No. 17, there may be other federal, state or regional agencies, within the Dischargers' boundaries that may be issued separate municipal NPDES permits. Provision D.2.e directs the Dischargers to develop a plan on how they will develop and implement adequate communication, coordination, cooperation, and collaboration with other possible future municipal storm water permittees to ensure timely compliance with this Order.

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19. The Board adopted a Water Quality Control Plan, Third Edition, (Basin Plan) which contains water quality objectives for all waters in the Basin. This Order implements the Basin Plan.

20. The beneficial uses of the receiving waters, the Sacramento, American, Consumnes, and Mokelumne Rivers and the Delta are municipal and domestic, industrial, and agricultural supply; water contact and non-contact recreation; aesthetic enjoyment; navigation; ground water recharge; fresh water replenishment; and preservation and enhancement of fish, wildlife and other aquatic resources. Attachment E lists all of the Sacramento area surface waters that could be impacted by storm water discharges.

21. Urban storm water runoff discharges contain pollutants that may lower the quality of receiving waters and impact beneficial uses. Studies indicate there may be increases in pollutant levels and aquatic toxicity in receiving waters as a result of urban storm water discharges.

22. This Order requires evaluation of existing water quality impacts from urban storm water runoff discharges, and the implementation and evaluation of the Program to reduce the discharge of pollutants into storm water runoff to the maximum extent practicable (MEP) for discharges from municipal separate storm sewer systems, and BAT/BCT for discharges from industrial facilities, to improve water quality and protect beneficial uses. Implementation of the Program to reduce pollutant loads from industrial and construction sites, new developments and existing urbanized areas are required as part of this permit. Additionally, this Order requires that the effectiveness of the Program in reducing the discharge of pollutants, attaining water quality objectives and protecting beneficial uses, be evaluated.

23. The permitted discharge is consistent with the anti-degradation provisions of 40CFR 131.12 and the State Board Resolution 68-16.

24. This Order requires implementation of programs (i.e., BMPs) to reduce the level of pollutants in storm water discharges from municipal separate storm sewer systems. However, given the continuing development within the area, it is possible that future degradation in water quality could occur. Any such change in water quality will not unreasonably affect the present and anticipated beneficial use of water and will not result in water quality less than that prescribed in policies of the State Board. The programs required pursuant to this Order constitute the best practicable treatment or control of discharges necessary to assure that a pollution or nuisance will not occur and the highest quality consistent with maximum benefit to people of the State will be maintained.

25. It is not feasible at this time to establish numeric effluent limits for pollutants in storm water discharges from municipal storm sewer systems. Therefore, the effluent limitations in the Order are narrative, and include the requirement to reduce pollutants in storm water discharges to the MEP. This Order requires the implementation of BMPs, identified in the Program, to control and abate the

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discharge of pollutants in storm water discharges. Implementation of BMPs, in accordance with the Program and its schedule, the EEP, and any revisions, modifications, and amendments as approved by the Executive Officer or Board, constitutes compliance with MEP requirements, and with requirements to achieve water quality standards.

26. It is not feasible at this time to establish numeric effluent limits for pollutants in non-storm water and storm water discharges from industrial facilities, including construction sites, owned or operated by the Dischargers. Therefore, the effluent limitations in the Order are narrative, and include the requirement to reduce pollutants in storm water discharges through implementation of BAT/BCT technologies. Until such time numeric effluent limits are developed, implementation of BMPs, both structural and nonstructural, constitute compliance with BAT/BCT effluent limitation standards.

27. Section 402(p)(4)(B) of the Clean Water Act (CWA) requires that the dischargers shall be in full compliance with this permit as expeditiously as practicable, but in no event later than three (3) years after the date of issuance of this permit.

28. The Regulations require that the Plan be implemented during the entire duration of the Permit (40CFR 122.26(d)(2)(iv)), which is 5 years. Implementation of the Program, in accordance with its schedule, will result in substantial compliance being achieved within three (3) years.

The Dischargers shall demonstrate substantial compliance with the Program and Permit through the information and data supplied in the Annual Report.

29. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21100, et seq.), in accordance with Section 13389 of the California Water Code.

30. The Board has notified the Dischargers and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

31. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

32. This Order supersedes Order No. 90-158 which is hereby rescinded.

33. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided EPA has no objections.

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**IT IS HEREBY ORDERED** that Order No. 90-158 is rescinded, and that the Dischargers, their agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Waste Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. **Discharge Prohibitions:**

1. The Dischargers shall effectively prohibit discharge of non-storm water through their systems into waters of the United States. The following non-storm water discharges listed as 'a' through 'r' below, do not need to be prohibited provided such sources are identified and the appropriate control measures to minimize the impact of such sources are developed in the Program. However, dischargers of such non-storm water discharges *may* need to obtain NPDES permits:

   a. water line flushing;
   b. landscape irrigation;
   c. diverted stream flows;
   d. rising ground waters;
   e. uncontaminated ground water infiltration [as defined in 40CFR 35.2005(20)] to separate storm sewers;
   f. uncontaminated pumped ground water;
   g. discharges from potable water sources;
   h. foundation drains;
   i. air conditioning condensate;
   j. irrigation water;
   k. springs;
   l. water from crawl space pumps;
   m. footing drains;
   n. lawn watering;
   o. individual residential car washing;
   p. flows from riparian habitats and wetlands;
   q. dechlorinated swimming pool discharges;
   r. discharges or flows from emergency fire fighting activities.

2. NPDES permitted non-storm water discharges are exempt from this prohibition, unless the Dischargers establish legal prohibitions against such discharges into their separate storm sewer systems.

3. List 'a' through 'r' in Discharge Prohibition A.1 may be amended, as approved by the Executive Officer, over the term of this Order in accordance with Provision D.4.d of this Order, to incorporate other de minimis categories of non-storm waters determined as a result of studies conducted by the State and Regional Boards, or Dischargers.

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**B. Effluent Limitations:**

1. The Dischargers shall reduce the discharge of pollutants from municipal sewers to the MEP.

2. The Dischargers shall reduce or eliminate the discharge of pollutants in storm water runoff from industrial and construction activities, as defined in the Federal Code of Regulations, 40CFR Part 122.26(b)(14)(i) through (xi), being conducted at facilities that are owned or operated by the Discharger, through implementation of Best Available Technologies Economically Achievable for toxic and nonconventional pollutants, and Best Conventional Control Technologies for conventional pollutants.

3. The Dischargers shall reduce or eliminate, to the extent feasible, the discharge of pollutants in non-storm water discharges from facilities owned or operated by the Dischargers. Discharges of pollutants in non-storm water discharges that cannot be eliminated shall be reduced or eliminated through implementation of Best Available Technologies Economically Achievable for toxic and nonconventional pollutants, and Best Conventional Control Technologies for conventional pollutants.

**C. Receiving Water Limitations:**

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. However, a receiving water violation not in conformance with the limitation is not necessarily a violation of this Order. The Board may require an investigation to determine cause and culpability prior to asserting a violation has occurred.

1. Discharges shall not cause the following conditions to create a condition of nuisance or to adversely affect beneficial uses of waters of the State:

   a. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.
   b. Oils, greases, waxes, floating material (liquids, solids, foams, and suds) or suspended material to create a nuisance or adversely affect beneficial uses.
   c. Aesthetically undesirable discoloration.
   d. Fungi, slime, or other objectionable growths.
   e. Deposition of material that causes nuisance or adversely affects beneficial uses.
   f. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

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g. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

2. The discharge shall not cause violations of any applicable water quality standard for receiving waters contained in the Basin Plan. If different applicable water quality objectives are adopted after the date of adoption of this Order, the Regional Board may revise and modify this Order, as appropriate.

3. The discharge shall not cause underlying ground water to be degraded.

**D. Provisions**

1. The Dischargers shall demonstrate compliance with this Order through timely implementation of the Program, EEP, and monitoring program submitted in their application, and any modifications, revisions, or amendments developed pursuant to this Order. Each permittee needs only to comply with all requirements of this Order for storm water discharges from municipal separate storm sewers for which they are operators or owners.

2. **Storm Water Management Plan**

a. The Dischargers shall begin implementing forthwith the Storm Water Management Program as submitted on 21 June 1994, and shall subsequently demonstrate its effectiveness and provide for necessary and appropriate revisions, modifications, and improvements to it as required by Provisions D.7, D.11 and D.12 of this Order. In addition, the Dischargers shall comply forthwith with the following:

i. *Construction Site Management Program (CSMP)*

The goal of the CSMP is to minimize water quality degradation through controlling runoff of sediment and other pollutants in storm water runoff from construction activities being conducted by private developers in the Dischargers' jurisdiction.

The CSMP includes five (5) BMPs (see Attachment F). The CSMP shall be amended or revised to address the following:

1) The Dischargers shall include a BMP for the control and enforcement of all construction activities, including the construction of structures, in addition to sediment and erosion control.

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2) The Dischargers shall include educating architects, engineers, contractors, and developers through holding workshops, and distribution of educational material regarding appropriate construction activities management. In particular, construction site inspectors, superintendents, and other appropriate field personnel responsible for implementing all control measures for the developers should be appropriately educated in construction site management measures.
3) The Dischargers shall submit to the Regional Board **quarterly**, a listing of approved development projects, and all developments that have been issued a grading or building permit.
4) The Dischargers shall include provisions for continued training and education of public agency staff to insure all new and continuing staff remain apprised of the storm water management program.

ii. *New Development Management Program (NDMP)*

The goal of the NDMP is to control the discharge of pollutants from new development into the waterways of Sacramento County.

The NDMP includes four (4) BMPs (see Attachment F).

1) The Dischargers shall submit copies of all draft and final documents developed in response to the NDMP for Board staff review and comment.

iii. *Public Education and Awareness Program (PEAP)*

The goal of the PEAP is to enhance the awareness, and educate the community and public agencies and officials in regards to the importance of storm water quality management, and foster community involvement in the storm water program.

The PEAP includes four (4) BMPs (see Attachment F).

1) The Dischargers are to notify Board staff sufficiently in advance of all anticipated public education events.

iv. *Industrial Discharge Management Program (IDMP)*

The goal of the IDMP is to control the discharge of pollutants associated with industrial activity into waterways of Sacramento County.

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The IDMP includes three (3) BMPs (see Attachment F). The CMP shall be amended or revised to address the following:

1) The Dischargers shall develop clear legal authority to conduct control programs for industries in their respective jurisdictions that the Dischargers determine contribute, or threaten to contribute, significant pollutants to storm sewer systems owned, operated and maintained by the Dischargers. Dischargers shall implement controls over all industrial dischargers determined to be a major contributor, or threatened contributor, of pollutants to storm water runoff, regardless if the industry is regulated by permits issued by the Board, State Water Resources Control Board, or U.S. EPA. The legal authority developed by the Dischargers shall be written such that an industry that complies with the Dischargers' controls will be in compliance with all State or Federal requirements.
2) The Dischargers shall submit draft copies of proposed control programs to Board staff for their review and comment.
3) The Dischargers shall implement industrial control programs as soon as practicably possible, but no later than **January 1, 1997**.

v. *Illegal Discharge Program (IDP)*

The goal of the IDP is to identify and prevent illegal discharges to the storm sewer system, to educate the public and industry on the water quality impacts of illegal discharges, and to promote alternatives to illegal discharges to the storm sewer system.

There are four (4) BMPs included in the IDP (see Attachment F).

1) IDP-1 shall be revised or amended as appropriate to include follow-up reporting provisions for all departments or agencies not directly reporting to the storm water management program that respond to a report of an illegal discharge. Follow-up reporting will provide the storm water management program with a summary of all the activities conducted by the responding department or agency relating to the response, cleanup, enforcement, and other pertinent activities of the illegal discharge.

vi. *Public Agency Program (PAP)*

The goal of the PAP is to address a wide spectrum of activities being conducted by the Dischargers that are a source of pollutants to storm water runoff, or are activities being conducted by the Dischargers that could result in the reduction or elimination of pollutants in storm water discharges.

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The PAP includes four (4) BMPs (see Attachment F). The CMP shall be amended or revised to address the following:

i) The Dischargers shall amend the PAP to include appropriate BMPs, in addition to street sweeping, to address runoff from streets and major thoroughfares in their respective jurisdictions.

b. **Storm Water Program Management Activities**

i. The Dischargers shall complete and submit to the Board a Memorandum of Understanding (MOU) no later than **6 months** from the date of adoption of this Order. The MOU should specifically identify management, development, implementation, evaluating, monitoring, reporting, and other activities required to comply with the requirements of this Order. The MOU will specifically identify the roles and responsibilities of each Discharger named as a co-permittee to this Order for the activities identified. A draft of the MOU shall be submitted to Board staff for review and comment prior to its final adoption by the Dischargers.

Any changes, deletions or revisions made to the MOU subsequent to its adoption shall be reported as part of the Annual Report required by Monitoring and Reporting Program No. _____.

c. **Legal Authority**

i. Annually the Dischargers shall review and assess their legal authority to adequately implement the Program. If the Dischargers find their legal authority is not adequate they shall submit a plan, with a schedule, on how they propose to address and change their legal authorities to cause their authority to be adequate to implement the program. Reporting of the Dischargers findings, and plan, if needed, will be submitted as part of the Annual Report required by Monitoring and Reporting Program No. _____.

d. **Fiscal and Staffing Analysis**

i. Annually the Dischargers shall provide a fiscal and staffing analysis. The fiscal analysis will detail the capital, and operation and maintenance expenditures necessary to accomplish the activities of the Program. Such analysis shall include a description of the source(s) of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds. The staffing analysis will detail the equivalent staffing required to accomplish the activities of the Program. The fiscal and

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staffing analysis will be submitted as part of the Annual Report required to by the Monitoring and Reporting Program No. ____.

e. **Local Agencies**

i. **Within 6 months** from the adoption of this Order, the Dischargers shall submit a plan to the Regional Board, acceptable to the Executive Officer, that describes communication, coordination, cooperation, and collaboration of the Dischargers' Program, and other pertinent storm water quality activities, with other municipal storm water programs, with the exception of Caltrans', that are not named to this Order. The plan shall include the establishment of agreements or policies with municipalities, flood control department, or districts as necessary, or appropriate.

f. **Intra/Interagency Agreements**

i. The Program proposes to utilize agencies or departments in the jurisdiction of the Dischargers, that may not directly report, or receive direction from the storm water personnel or department, to implement some of the BMPs. Some Program BMPs address the need for intra/interagency agreements, while others do not. The Dischargers shall enter into intra/interagency agreements prior to implementation of all BMPs that would require the use of an agency or department other than that specifically named as the storm water program lead agency or department by each Discharger named to this Order. The agreements must be explicit and formal, and would specify the role and responsibilities of each department or agency in regards to the implementation and enforcement of the BMPs or Program.

3. **Effectiveness Evaluation Plan (EEP)**

a. The Dischargers shall begin implementing forthwith the EEP as submitted on 3 March 1995, and shall subsequently demonstrate its effectiveness and provide for necessary and appropriate revisions, modifications, and improvements to it as required by Provisions D.7, D.11, and D.12 of this Order. In addition, the Dischargers shall comply forthwith with the following:

i. The Dischargers shall conduct an annual audit to determine the applicability and adequacy of the EEP. Based on the audit findings, the Dischargers shall make all revisions, or amendments necessary to the EEP to insure continued applicability and adequacy. The Dischargers may report their audits findings as part of the Annual Report required by Monitoring and Reporting Program No. ____.

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ii. The primary emphasis in the Program is on source controls, i.e., education and training. Currently there is little information statewide regarding the effectiveness of source controls. In order to ensure the Dischargers can quantify the effectiveness of such control measures, the Dischargers shall conduct at least two (2) special studies, subject to the Executive Officer approval, over the term of this Order. The studies are to validate the Dischargers selection of source control measures in their Program.

iii. **Within 3 months** from the adoption of this Order, the Dischargers shall submit a detailed work plan, including a schedule, subject to Executive Officer approval, of the special studies that will be conducted by the Dischargers during the first year of this Order. Subsequent special study work plans will be submitted annually as part of the Annual Report required by Monitoring and Reporting Program No. _____.

4. **Non-Storm Water Discharges**

The Dischargers shall identify and describe the categories of non-storm water discharges of the non-prohibited types listed in Discharge Prohibition A of this Order which they wish to exempt from the prohibition. For each category, the Dischargers shall identify and describe as necessary and appropriate the category, and incorporate into the Program, control measures to minimize the adverse impacts of such sources, procedures for notifying the Regional Board of these discharges, and procedures for monitoring and record management.

a. Discharges of non-storm water from sources owned or operated by the Dischargers are authorized and permitted by this Order, if they are in accordance with the conditions of this provision and the Dischargers' Program.
b. The Regional Board may require the dischargers of non-storm water other than the Dischargers, to apply for and obtain coverage under an NPDES permit.
c. The Regional Board may prohibit, or establish additional monitoring and reporting requirements, for any non-storm water discharges identified as a non-prohibited discharge by the Dischargers.
d. The Dischargers may propose, as part of their Annual Report required by Monitoring and Reporting Program No. _____, additional categories of non-storm water discharges, subject to Executive Officer approval, to be included in the exemption to Discharge Prohibition A.

5. **Storm Water Discharges Associated with Construction Activity**

a. Discharges of storm water from construction sites owned or operated by the Dischargers involving the disturbance of five or more acres of total land area, or less if the site is part of a larger common plan of development (40 CFR 122.26 (b)(14)(x)), are currently regulated by the State of California General Permit for Storm Water Dischargers Associated with

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Construction Activities. In an effort to reduce the number of NPDES permits issued to the Dischargers, this Provision allows the Dischargers to request that storm water discharges from construction activities at facilities owned and operated by the Dischargers are permitted by this Order, if the following conditions are met:

i. The Dischargers shall establish procedures for notifying the Regional Board of construction activities being conducted by the Dischargers that are to be regulated by this Order.
ii. The Dischargers shall amend their Program which defines construction management BMPs to be implemented at construction sites owned and operated by the Dischargers that are regulated by this Order.
iii. The Dischargers shall develop site specific Storm Water Pollution Prevention Plans pursuant to, and in accordance with Appendix I of this Order, for all construction sites regulated by this Order.
iv. **Annually**, as part of their Annual Report required by Monitoring and Reporting Program No. _____, the Dischargers shall report the effectiveness of the Storm Water Pollution Prevention Plans for each site, and certify the construction sites are in compliance with the requirements of this Order.

b. Construction activities at facilities owned and operated by the Dischargers that the Dischargers do not specify to be covered by this Order, and that are required to be regulated by an NPDES for storm water discharges from construction activities defined in the Federal regulations, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities.

6. **Storm Water Discharges Associated with Industrial Activity**

a. Discharges of storm water from industrial facilities defined in 40CFR 122.26(b)(14)(i) through (ix) and (xi), or as designated by the Regional Board, are currently regulated by the State of California General Permit for Storm Water Dischargers Associated with Industrial Activities. In an effort to reduce the number of NPDES permits issued to the Dischargers, this Provision allows the Dischargers to request that storm water discharges from industrial activities at facilities owned and operated by the Dischargers are permitted by this Order, if the following conditions are met:

i. The Dischargers shall establish procedures for notifying the Regional Board of industrial sites owned or operated by the Dischargers to be permitted by this Order.
ii. The Dischargers shall amend their Program which defines the industrial management BMPs to be implemented at industrial sites owned and operated by the Dischargers.

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iii. The Dischargers shall develop site specific Storm Water Pollution Prevention Plans pursuant to, and in accordance with Appendix 2 of this Order, for all industrial sites regulated by this Order.

iv. **Annually**, as part of their Annual Report required by Monitoring and Reporting Program No. _____, the Dischargers shall report the effectiveness of the Storm Water Pollution Prevention Plans for each site, and certify the construction sites are in compliance with the requirements of this Order.

b. Industrial activities at facilities owned and operated by the Dischargers that the Dischargers do not specify to be covered by this Order, and that are required to be regulated by an NPDES for storm water discharges from industrial activities defined in the Federal regulations, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Industrial Activities.

7. It is anticipated that the Program and EEP may be modified, revised or amended from time to time to respond to changed conditions and to incorporate more effective approaches to pollutant control. Requests for changes may be initiated by the Regional Board's Executive Officer or by the Dischargers. Major revisions to the program will be brought before the Regional Board as permit amendments. Minor changes may be made with the Executive Officers' approval, and will be brought to the Board as informational items. Such proposed changes shall be submitted to the Regional Board as technical reports as needed, and shall be reported as part of the Annual Report required by Monitoring and Reporting Program No. _____.

8. At the request of the Dischargers, this Order may be amended to name other municipalities, or federal, state, or regional entities that own or operate separate municipal separate storm sewer systems in Sacramento County, as co-permittees.

9. This Order may be modified, or alternatively, revoked or reissued, prior to the expiration date as follows:

a. to address changed conditions identified in the required technical reports, or other sources deemed significant by the Regional Board;

b. to incorporate applicable requirements of statewide water quality control plans adopted by the State Board or amendments to the Basin Plan; or

c. to comply with any applicable requirements, guidelines, or regulations issued or approved under Section 402(p) of the CWA, if the requirement, guideline, or regulation so issued or approved contains different conditions or additional requirements not provided for in this

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Order. The Order as modified or reissued under this paragraph shall also contain any other requirements of the CWA then applicable.

10. All applications, reports, or information submitted to the Board shall be signed and certified pursuant to signatory requirements specified in 40CFR Part 122.41(k).

11. The Dischargers shall comply with Monitoring and Reporting Program No. ____, which is part of this Order, and any revisions or modifications thereto as ordered by the Executive Officer.

It is anticipated that the monitoring and reporting Program will change as the Program develops and program priorities change. To accommodate such changes, the monitoring program will be subject to review and approval on an annual basis throughout the life of this Order. The Dischargers shall submit a proposed annual monitoring and reporting program for the following year's monitoring period to the Executive Officer for review and approval, such that the proposed monitoring program is approved by 1 April of each year, and implemented by 1 September of each year.

12. All revisions, modifications, and amendments made to the Program, EEP, and Monitoring and Reporting Program as approved by the Executive Officer are integral and enforceable parts of this Order.

13. The Dischargers shall comply with all applicable items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions".

14. This Order expires on _____. The Dischargers must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, no later than 180 days in advance of such date in application for renewal of waste discharge requirements.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Board, Central Valley Region, on _____.

_____
WILLIAM H. CROOKS, Executive Officer

PCB

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM _____

NPDES NO. CA 0082597

SACRAMENTO COUNTY WATER AGENCY
CITIES OF SACRAMENTO, FOLSOM, AND GALT
AREA-WIDE STORM WATER DISCHARGES FROM
MUNICIPAL SEPARATE STORM SEWER SYSTEMS
SACRAMENTO COUNTY

A. **Monitoring Program**

1. The Dischargers shall develop a monitoring program on a fiscal year basis. The Dischargers shall develop and submit their proposed monitoring program no later than **15 February** of each year for review and comments by Board, and to ensure Executive Officer approval of the program by **1 April** of each year for implementation by **1 September** of each year. Each year's program shall be developed based on past monitoring results, program evaluation and effectiveness, program priorities and direction, and as directed by the Executive Officer. The program should be developed to ensure minor changes or revisions can be accomodated prior to implementation.

   It is recognized that the Dischargers are being directed to submit a proposed monitoring program prior to the submittal of the Annual Report on 1 September of each year, and prior to the Dischargers obtaining all analytical results of the current year monitoring program. Therefore, the Dischargers may request minor revisions to the approved monitoring program based on monitoring or special study results, if the request is made prior to its implementation each fiscal year, with Executive Officer approval.

   The Monitoring Program shall be developed such that it is an integral part in the evaluation of the Plan's effectiveness, provides quantitative information regarding program priorities and direction, demonstrates the reduction in pollutants in storm water runoff, and is designed to achieve the following objectives:

   a. Characterization of representative drainage areas and storm water discharges, including land use characteristics, pollutants concentrations, and mass loadings;

   b. Assessment of existing or potential adverse impacts on beneficial uses caused by pollutants of concern in storm water discharges, including an evaluation of representative receiving waters;

   c. Identification of potential sources of pollutants of concern found in storm water discharges; and

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d. Evaluation of effectiveness of representative storm water pollution prevention or control measures.

2. The Dischargers submitted a draft proposed fiscal year 1995-1996 monitoring program in April 1995, and have been working with Board staff to revise, and amend the program to ensure the program will be implemented by the anticipated first flush storm event. The Dischargers shall implement the 1995-1996 monitoring program forthwith upon adoption of this Order.

The Dischargers shall implement subsequent year monitoring programs by 1 **September** of each year.

3. **Annually** the Dischargers shall report the results of their monitoring program. The report shall be submitted such that it provides a summary of the analytical results, and provides a discussion on the findings, how the analytical results apply to the Dischargers studies towards discharge characterization, Program effectiveness, receiving water impacts, reductions in pollutants, and other pertinent areas or activities required by this Order. The monitoring report is to submitted as part of the Annual Report identified in B.2 of the below.

B. **Annual Report and Work Plans**

1. The Annual Report is an important element of the program and reporting procedures. The report is to be formatted such that it provides both the Dischargers and Regional Board staff an opportunity to adequately evaluate:

a. Implementation progress of the Plan;
b. Summary and evaluation of the monitoring program analytical results, and how these results relate to the Plan's priorities and directions;
c. Dischargers' fiscal and manpower resources, and legal authority to implement an effective Plan; and
d. The overall effectiveness of the Plan and its control measures both qualitatively and quantitatively.

The Annual Report is a tool for the Dischargers to establish that, through implementing their Program, they have reduced the discharge of pollutants to storm water to the MEP. As such the report format, and its contents may change as the Program develops, and Program, EEP, and monitoring program priorities and direction change.

2. The Dischargers shall submit **by 1 September** each year, an Annual Report documenting the status of all the general program and individual tasks contained in the Program and EEP, and monitoring program. The Annual Report will be a detailed report on the status of

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implementation of the Program and EEP and include an evaluation of the effectiveness of the control measures, management practices, and other actions and activities described in the Program and EEP. Measures of effectiveness include, but are not limited to, quantitative monitoring to assess the effectiveness of control measures, detailed accounting of program accomplishments, funds expended and staff hours utilized. This Annual Report shall provide an overall evaluation of the Program and set forth plans and schedule of implementation for the upcoming year. The Annual Report may also include proposed modifications or revisions to the Program and EEP.

In the report, the Dischargers shall propose pertinent updates, improvements, or revisions to the Program and EEP, which shall be deemed to be incorporated into this Order as provided in Provision D.12, unless disapproved by the Executive Officer.

3. By **1 April** of each year the Dischargers shall submit draft work plans for the following year which describe the proposed implementation of the Program and EEP for the next fiscal year. The work plans shall consider the status of implementation of current year activities and actions of the Dischargers, problems encountered, and proposed solutions, and shall address any comments received from the Executive Officer on their previous year Annual Report. The work plans shall include clearly defined tasks, responsibilities, and schedules for implementation of Program and Discharger actions for the next fiscal year. The work plans shall be deemed to be incorporated into the Program and EEP as provided in Provision D.12, and shall be implemented by **1 July** of each year except for those parts of the work plan determined to be unacceptable by the Executive Officer.

All parts, if any, found to unacceptable to the Executive Officer shall be revised or amended as appropriate by the Dischargers, and submitted as part of the Annual Report, at which time the work plans shall be deemed to be incorporated into the Program and EEP as provided in Provision D.12, unless disapproved by the Executive Officer.

a. It is recognized that the Dischargers will be submitting and implementing the work plan prior to the submittal of the Annual Report, and that the Dischargers may wish to revise their work plan as a result of their findings in the development of their Annual Report. Therefore, the Dischargers may submit proposed revisions to the work plan, subject to Executive Officer approval, with the Annual Report. All approved revisions to the work plan shall be deemed to be incorporated into the Program and EEP as provided in Provision D.12.

C. **Monitoring Program Alternatives**

1. It is recognized that costs associated with storm water monitoring, determination of program effectiveness, and other activities required for the Dischargers to evaluate compliance with this

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Order could be significant. It is also recognized that municipalities, and other agencies state and country wide are, or will be, permitted by municipal NPDES storm water permits similar to this Order, and will be conducting storm water monitoring, and conducting other special studies similar to the Dischargers'. As such, we recognize that the Dischargers may wish to reduce their costs associated with compliance evaluation by proposing alternative monitoring methods. Alternative methods may include, but not be limited to, special projects, financial participation in regional, state or national special projects or research, literature review, visual observations, use of indicator parameters, recognition and reliance on special studies conducted by others, etc.

a. The Dischargers may submit a written proposal of alternative monitoring methods, subject to the Executive Officer approval, as part of their work plan to be submitted in accordance with item B.3 above. Such proposal shall be detailed, and provide the Dischargers' justification for requesting the alternative method, and demonstrate how the data or information obtained is applicable and useful to the Dischargers. The proposal shall include a schedule, and define the roles and responsibilities of parties involved in the alternative monitoring proposal.

Ordered by _____
WILLIAM H. CROOKS, Executive Officer

_____
(Date)

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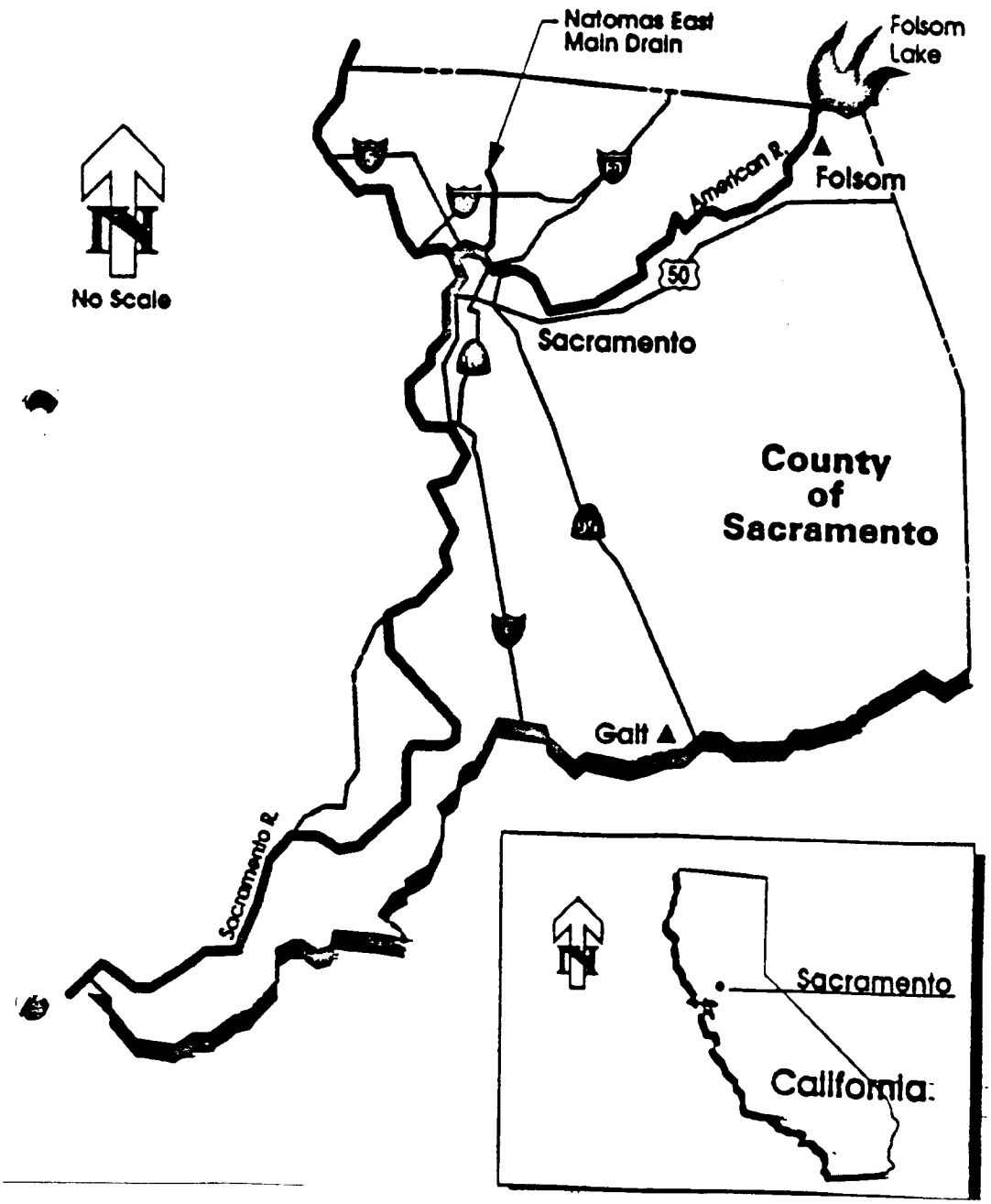
ATTACHMENT A

BOUNDARY OF SACRAMENTO COUNTY AND
LOCATION OF CO-PERMITTEES IN SACRAMENTO COUNTY

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ATTACHMENT B

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# Comprehensive Stormwater Management Program

## Final Report

Sacramento County Water Agency
City of Sacramento
City of Folsom
City of Galt

June 1994

BROWN AND CALDWELL

Sacramento Stormwater Management Program

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FINAL CSWMP REPORT

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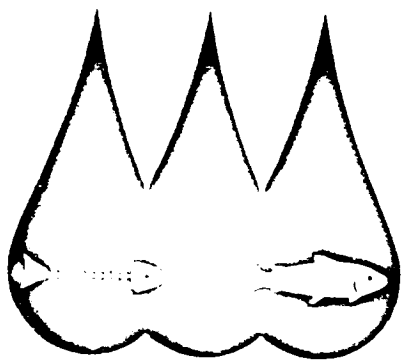
VOL 2

Sacramento Stormwater Management Program

# Effectiveness Evaluation Report

Sacramento County Water Agency
City of Sacramento
City of Folsom
City of Galt



STORMWATER POLLUTION SOLUTIONS

SACRAMENTO
STORMWATER
MANAGEMENT PROGRAM

March 1995

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MEMORANDUM OF UNDERSTANDING
BETWEEN LOCAL AGENCIES AND
CALIFORNIA DEPARTMENT OF TRANSPORTATION

This is a Memorandum of Understanding entered into this 6th day of June, 1995, by and between the State of California, Department of Transportation (Caltrans), and the Local Agencies consisting of the County of Sacramento, the City of Sacramento, the City of Galt and the City of Folsom. The purpose of this MOU is to provide communication, coordination, cooperation, and collaboration between the State and Local Agencies concerning National Pollutant Discharge Elimination Systems (NPDES) stormwater requirements as directed by the California Regional Water Quality Control Board Central Valley Region. Each party in this MOU administers its own stormwater management program and is equally represented by this MOU.

This Memorandum of Understanding constitutes solely a guide to the respective intentions and policies of the parties involved. It is not intended to authorize funding or project effort nor is it a legally binding contract. Funding commitments providing for the deposit of funds for specific work phases or project effort committing either equipment or personnel time will be covered by one or more separate cooperative agreements as may be outlined herein.

AGREEMENTS AND PROCEDURES

Communication - Each individual agency has identified a specific contact person to resolve water quality issues pertaining to NPDES.

| | |
|---|---|
| NPDES Coordinator - Caltrans - District 3 | 916-741-4585 |
| Stormwater Program Manager - County of Sacramento | 916-440-6851 |
| Stormwater Program Manager - City of Sacramento | 916-433-6634 |
| Stormwater Program Manager - City of Galt | 209-745-3077 |
| Stormwater Program Manager - City of Folsom | 916-355-7267 |

Coordination - The State and Local agencies will meet semi-annually, or more often if needed. The purpose of meeting is to coordinate on-going projects, share information to identify problem areas, discuss and resolve problem areas, and investigate possibilities of pilot programs and special studies.

Cooperation - State and Local Agencies agree to share information on approaches and conclusions on the different aspects of stormwater programs on an on-going basis. These programs would include, but are not limited to, construction activities, public information, stormwater monitoring, Best Management Practices (BMP) technology, and illicit connection programs.

Collaboration - The group of NPDES coordinators will identify and explore the available resources of the different agencies and determine a means, on a case by case basis, to jointly implement common activities of the individual stormwater programs.

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**AMENDMENT**

This Memorandum of Understanding may be amended by written agreement of all parties.

**TERMINATION**

This Memorandum of Understanding may be terminated by any party upon sixty (60) days written notice.

| | |
|---|---|
| District Director of Caltrans | Date 6/6/95 |
| Agency Engineer, Sacramento County Water Agency | Date 5/20/95 |
| Director of Utilities City of Sacramento | Date 6/2/95 |
| Director of Public Works City of Galt | Date 5/31/95 |
| Director of Public Works City of Folsom | Date 5/31/95 |

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ATTACHMENT E



**Table 1-1 Sacramento Area Surface Waters**

| Surface Waters Hydrologic Order | | | | Jurisdiction (a) | Watershed area in Sacramento County (square miles) | Current degree of urbanization (b) | Type of channel (c) | Type and source of flow (d) |
|---|---|---|---|---|---|---|---|---|
| Primary | Secondary | Tertiary | Quaternary | | | | | |
| American River | | | | | | | | |
| | Chicken Ranch Slough | | | Co | 4.8 | predominately | C | YPost |
| | Strong Ranch Slough (e) | | | Co | 5.3 | predominately | C | YPost |
| | Carmichael Creek | | | Co | 2.9 | predominately | N | YPost |
| | Minnesota Creek | | | Co | 1.6 | predominately | N | YPost |
| | Buffalo Creek | | | Co | 8.8 | partially | C | YPost |
| | Folsom South Canal | | | Co | N/A | N/A | M | YPost |
| | Alder Creek | | | F, Co | 12.0 | non-urban | N | YInc, NS |
| | Willow Creek | | | F | 11.2 (f) | partially | N | YInc, NS |
| | | Humbug Creek | | F | 4.0 | partially | N | YInc, NS |
| | Hinkle Creek | | | F | 0.2 | predominately | N | YPost |
| Sacramento River | | | | | | | | |
| | Natomas North Drainage Canal | | | | | | | |
| | Natomas Main Drainage Canal (e) | | | Co | 2.5 | non-urban | M, I | YInc, Ag |
| | | Natomas West Drainage Canal | | S | 12.8 | partially | M, I | YInc, Ag |
| | | Natomas East Drainage Canal | | S | 9.1 | non-urban | M, I | YInc, Ag |
| | Natomas East Main Drainage Canal (NEMDC | | | S | 8.3 | partially | M, I | YInc, Ag |
| | | Arcade Creek (e) | | S | 13.5.7 | partially | M, I | YInc, Ag |
| | | | Verde Cruz Creek | Co, S | 5.3.0 | predominately | C | YPost |
| | | | Brooktree Creek | Co | 1.7 | predominately | C | YPost |
| | | | Cripple Creek | Co | 3.6 | predominately | C | YPost |
| | | | San Juan Creek | Co | 9.7 | predominately | C | YPost |
| | | | Arcade Creek South Branch | Co | 2.1 | predominately | C | YPost |
| | | Magpie Creek (e) | | Co | 2.6 | predominately | C | YPost |
| | | | Don Julio Watercourse | Co, S | 1.1.7 | predominately | C | YPost |
| | | Robla Creek (e) | | S | 1.5 | predominately | M, I | YPost |
| | | Dry Creek (e) | | Co, S | 1.7.0 | predominately | C | YPost |
| | | | Sierra Creek (e) | S | 11.6 (f) | partially | N | YPost |
| | | | Linda Creek | Co | 2.7 | partially | C | YPost |
| | | NEMDC Tributary 3 (e) | | Co, F | 5.1 | partially | C | YPost |
| | | NEMDC Tributary 2 (e) | | Co | 3.0 | partially | N | YPost |
| | | NEMDC Tributary 1 (e) | | Co | 2.1 | partially | N | F, Ag |
| | Sacramento Drainage Canal | | | Co | 3.1 | partially | N | F, Ag |
| | Morrison Creek (e) | | | Co | 5.1 | partially | N | F, Ag |
| | | Laguna Creek (e) | | Co | 1.1.7 | predominately | M | |
| | | | | Co | 4.8.3 | partially | C | YInc |
| | | | Whitehouse Creek (e) | Co | 2.4 | partially | C | YInc |
| | | | Elk Grove Creek (e) | Co | 6.0 | partially | C | YPost |
| | | | Laguna Creek Tributary 1 | Co | 6.1 | predominately | C | YPost |
| | | Unionhouse Creek (e) | | Co | 1.1.5 | non-urban | C | YPost |
| | | | Strawberry Creek (e) | Co, S | 4.9 | partially | C | YPost |
| | | Elder Creek | | Co | 2.2.3 | partially | C | YPost |
| | | | Florin Creek (e) | Co | 5.5 | partially | C | YPost |
| | | | Gerber Creek | Co | 4.1 | predominately | C | YPost |
| | | | | | | non-urban | C | YPost |

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## Table 1-1 Sacramento Area Surface Waters

| Surface Waters - Hydrologic Order | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Primary | Secondary | Tertiary | Quaternary | Jurisdiction (a) | Watershed area in Sacramento County (square miles) | Current degree of urbanization (b) | Type of channel (c) | Type and source of flow (d) |
| American River | | | | | | | | |
| | Chicken Ranch Slough | | | Co | 4.8 | predominately | C | YPost |
| | Strong Ranch Slough (e) | | | Co | 5.3 | predominately | C | YPost |
| | Carmichael Creek | | | Co | 2.9 | predominately | N | YPost |
| | Minnesota Creek | | | Co | 1.6 | predominately | N | YPost |
| | Buffalo Creek | | | Co | 8.8 | partially | C | YPost |
| | Folsom South Canal | | | Co | N/A | N/A | M | YPost |
| | Alder Creek | | | F, Co | 12.0 | non urban | N | YPre, NS |
| | Willow Creek | | | F | 13.2 (f) | partially | N | YPre, NS |
| | | Humbug Creek | | F | 4.0 | partially | N | YPre, NS |
| | Hinkle Creek | | | F | 0.2 | predominately | N | YPost |
| Sacramento River | | | | | | | | |
| | Natomas North Drainage Canal | | | Co | 2.5 | non urban | M, I | YPre, Ag |
| | Natomas Main Drainage Canal (e) | | | S | 12.8 | partially | M, I | YPre, Ag |
| | | Natomas West Drainage Canal | | S | 3.1 | non urban | M, I | YPre, Ag |
| | | Natomas East Drainage Canal | | S | 8.3 | partially | M, I | YPre, Ag |
| | Natomas East Main Drainage Canal (NEMDC | | | S | 135.7 | partially | M, I | YPre, Ag |
| | | Arcade Creek (e) | | Co, S | 53.0 | predominately | C | YPost |
| | | | Verde Cruz Creek | Co | 1.7 | predominately | C | YPost |
| | | | Brookiree Creek | Co | 3.6 | predominately | C | YPost |
| | | | Cripple Creek | Co | 9.7 | predominately | C | YPost |
| | | | San Juan Creek | Co | 2.1 | predominately | C | YPost |
| | | | Arcade Creek South Branch | Co | 2.6 | predominately | C | YPost |
| | | Magpie Creek (e) | | Co, S | 11.7 | predominately | C | YPost |
| | | | Don Julio Watercourse | Co, S | 1.5 | predominately | M, I | YPost |
| | | Robla Creek (e) | | Co, S | 17.0 | predominately | C | YPost |
| | | Dry Creek (e) | | Co, S | 11.6 (f) | partially | N | YPost |
| | | | Sierra Creek (e) | Co | 2.7 | partially | C | YPost |
| | | | Linda Creek | Co, F | 5.1 | partially | N | YPost |
| | | NEMDC Tributary 3 (e) | | Co | 3.0 | partially | N | E, Ag |
| | | NEMDC Tributary 2 (e) | | Co | 2.1 | partially | N | E, Ag |
| | | NEMDC Tributary 1 (e) | | Co | 3.1 | partially | N | E, Ag |
| | Sacramento Drainage Canal | | | S | 5.1 | predominately | M | |
| | Morrison Creek (e) | | | Co | 110.7 | partially | C | YPre |
| | | Laguna Creek (e) | | Co | 48.3 | partially | C | YPre |
| | | | Whitehouse Creek (e) | Co | 2.4 | partially | C | YPost |
| | | | Elk Grove Creek (e) | Co | 6.0 | predominately | C | YPost |
| | | | Laguna Creek Tributary 1 | Co | 6.1 | non-urban | C | YPost |
| | | Unionhouse Creek (e) | | Co | 11.5 | partially | C | YPost |
| | | | Strawberry Creek (e) | Co, S | 4.9 | partially | C | YPost |
| | | Elder Creek | | Co | 22.3 | partially | C | YPost |
| | | | Florin Creek (e) | Co | 5.3 | predominately | C | YPost |
| | | | Gerber Creek | Co | 4.1 | non-urban | C | YPost |



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## Table 1-1 Sacramento Area Surface Waters

| Surface Waters - Hydrologic Order | | | | Jurisdiction (a) | Watershed area in Sacramento County (square miles) | Current degree of urbanization (b) | Type of channel (c) | Type and source of flow (d) |
|---|---|---|---|---|---|---|---|---|
| Primary | Secondary | Tertiary | Quaternary | | | | | |
| Cosumnes River | | | | | | | | |
| | Laguna Creek South | | | Co | 110.7 | non-urban | N | E, Ag |
| | | Headman Gulch | | G, Co | 11.4 | predominately | C | Y, Ag |
| | Badger Creek | Shunk Creek | | Co | 12.3 | non-urban | N | E, Ag |
| | Deer Creek (e) | | | Co | 40.2 | non-urban | N | E, Ag |
| | | | | Co | 70.7 | non-urban | N | E, Ag |
| Mokelumne River | | | | | | | | |
| | Dry Creek | | | G, Co | 64.9 | predominately | C | Y, Ag |

Footnotes:

(a) Co = County of Sacramento
S = City of Sacramento
F = City of Folsom
G = City of Galt

(b) Non-urban = 0 to 30% urban
Partially urban = 30 to 70% urban
Predominantly urban = greater than 70% urban

(c) N = natural
M = man-made
C = combination of modified natural
L = levied

(d) E = ephemeral flow
Y = year round flow
YPre = year round flow prior to development of the watershed
YPost = year-round flow only after development of the watershed
NS = natural sources of flow (snow melt, springs, groundwater inflow)
NGO = contains water due to an gravity outfall
Ag = agricultural sources of flow

(e) These watersheds have been scheduled for master planning as described in the County of Sacramento's September 5, 1991 "Sacramento County Water Agency New Development Management Program" submitted to the Central Valley Regional Water Quality Control Board

(f) Watershed area extends beyond Sacramento County border. Only Sacramento County watershed area is shown



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ATTACHMENT F

**Table 2-1. Construction Site Management Program (CSMP) BMP's**

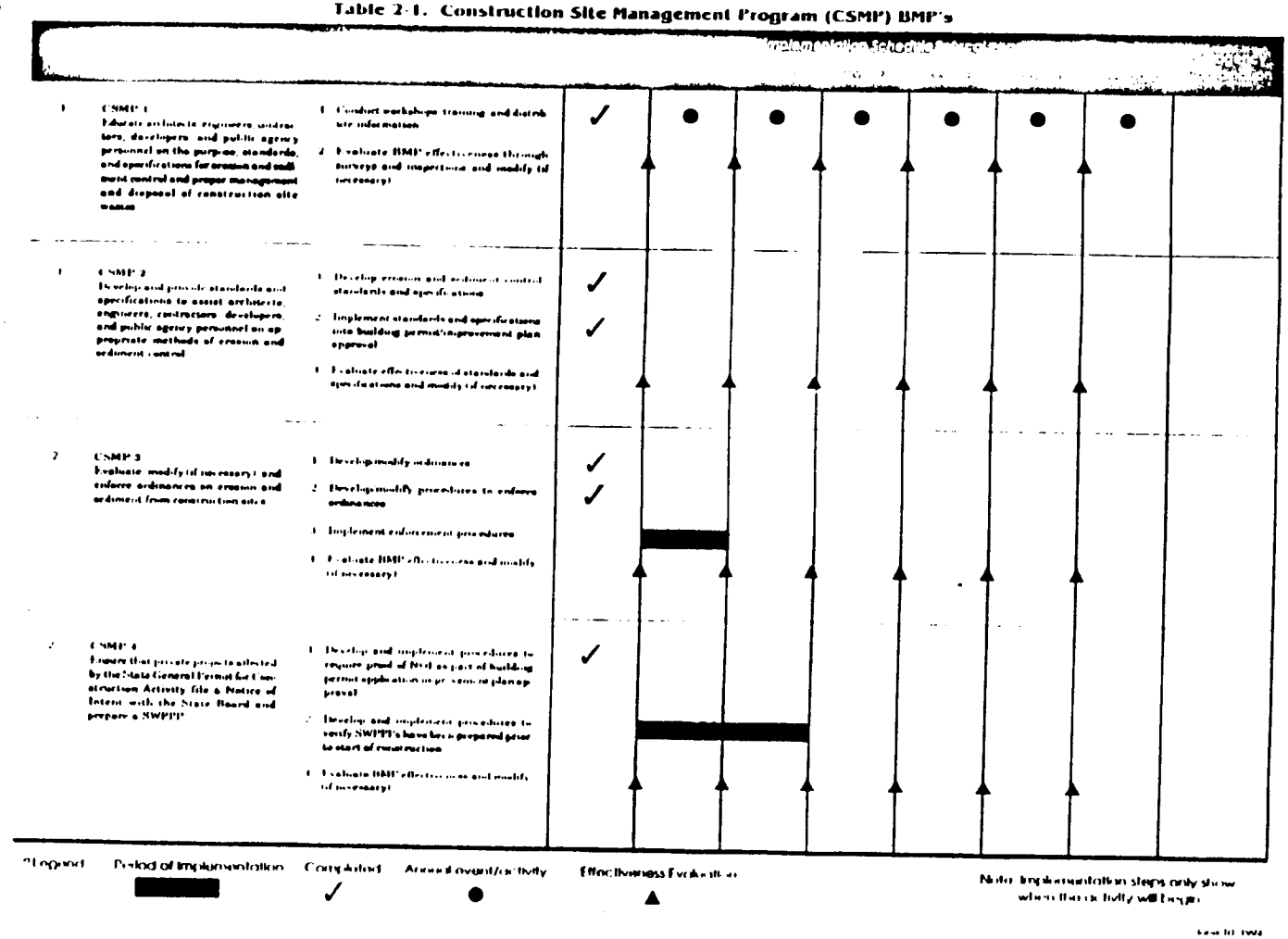

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Table 2-1. Construction Site Management Program (CSMP) BMP's. continued

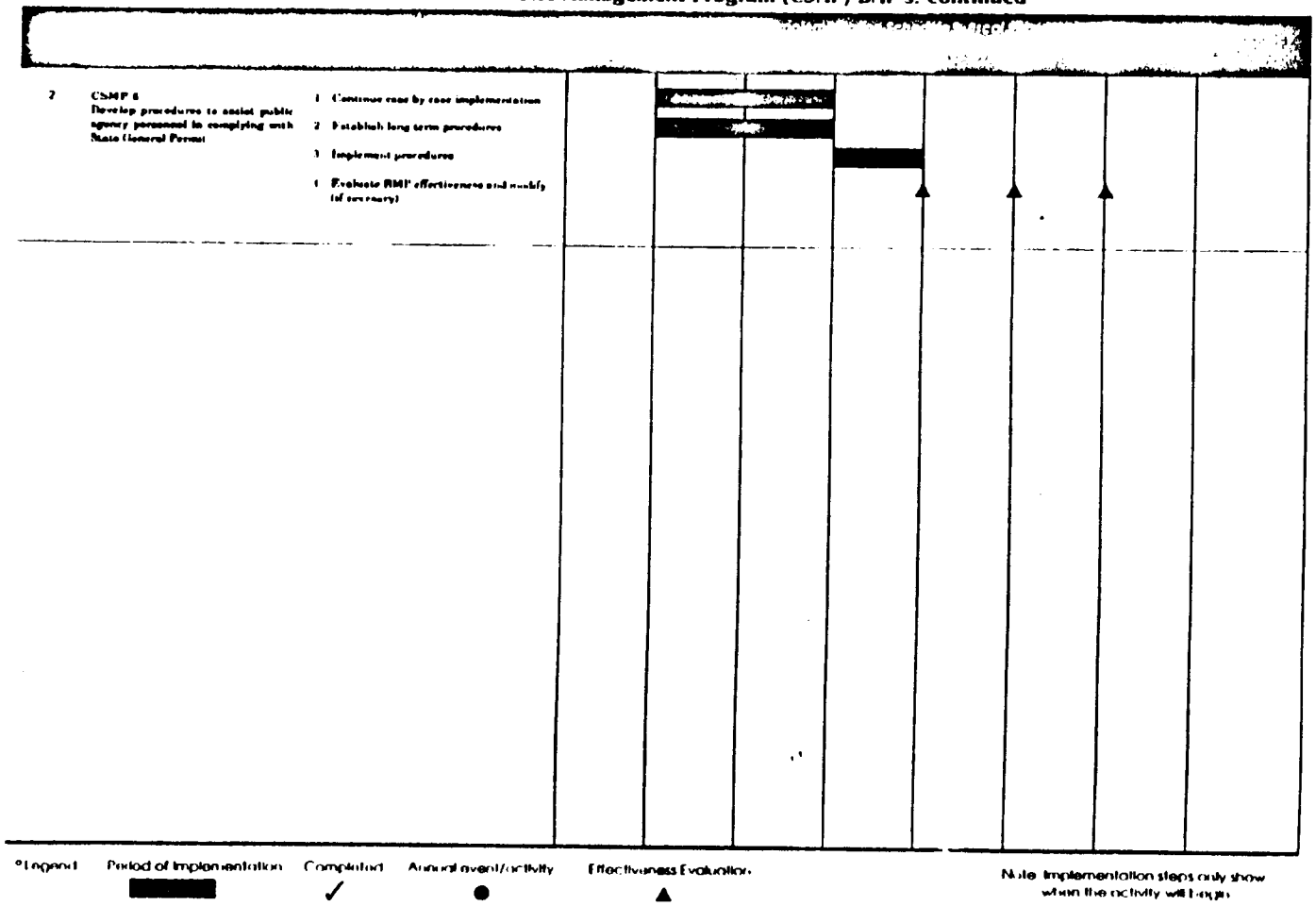




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Table 2-2. New Development Management Program (NDMP) BMP's

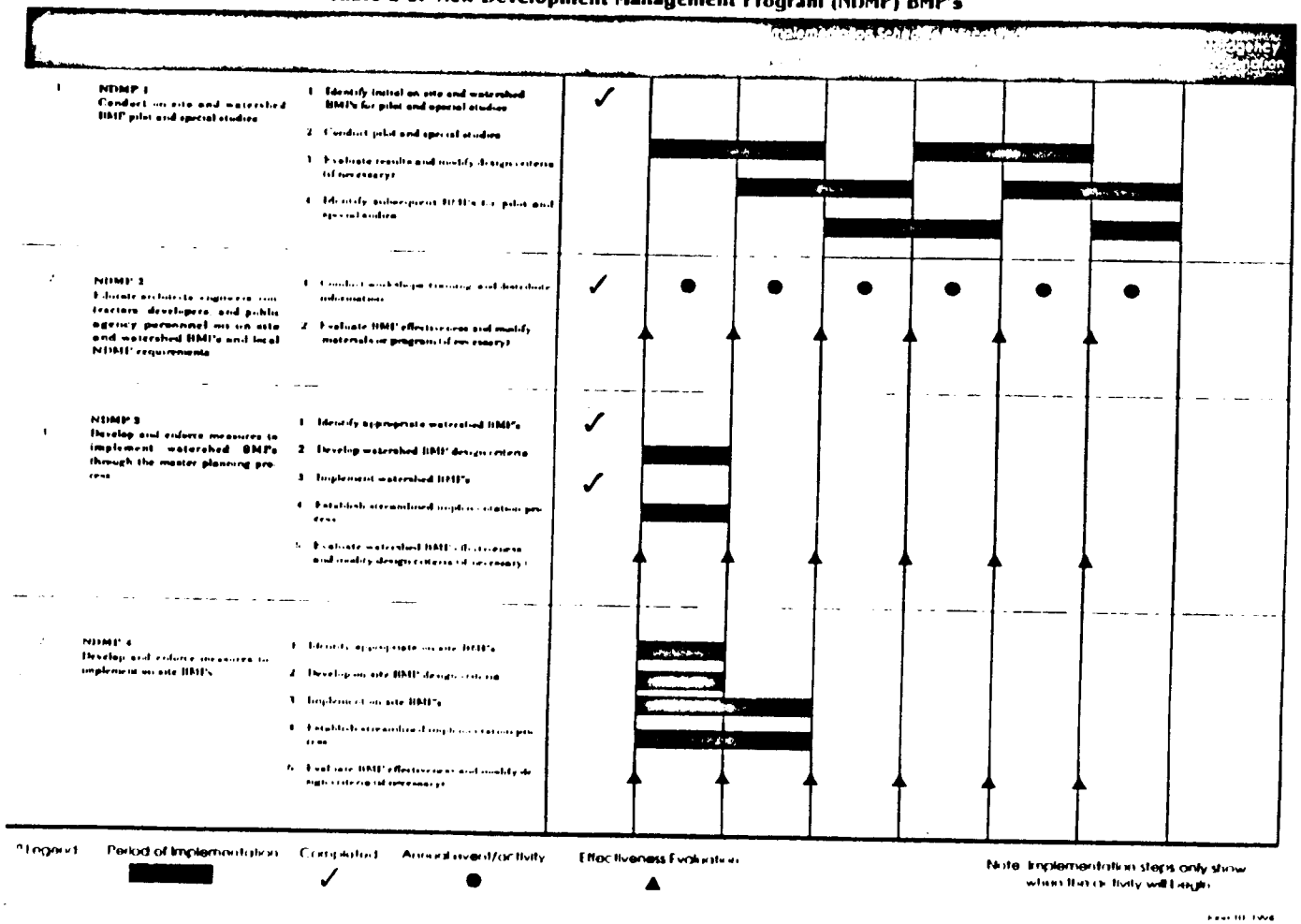


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**Table 2-3. Public Education and Awareness Program (PEAP) BMP's**

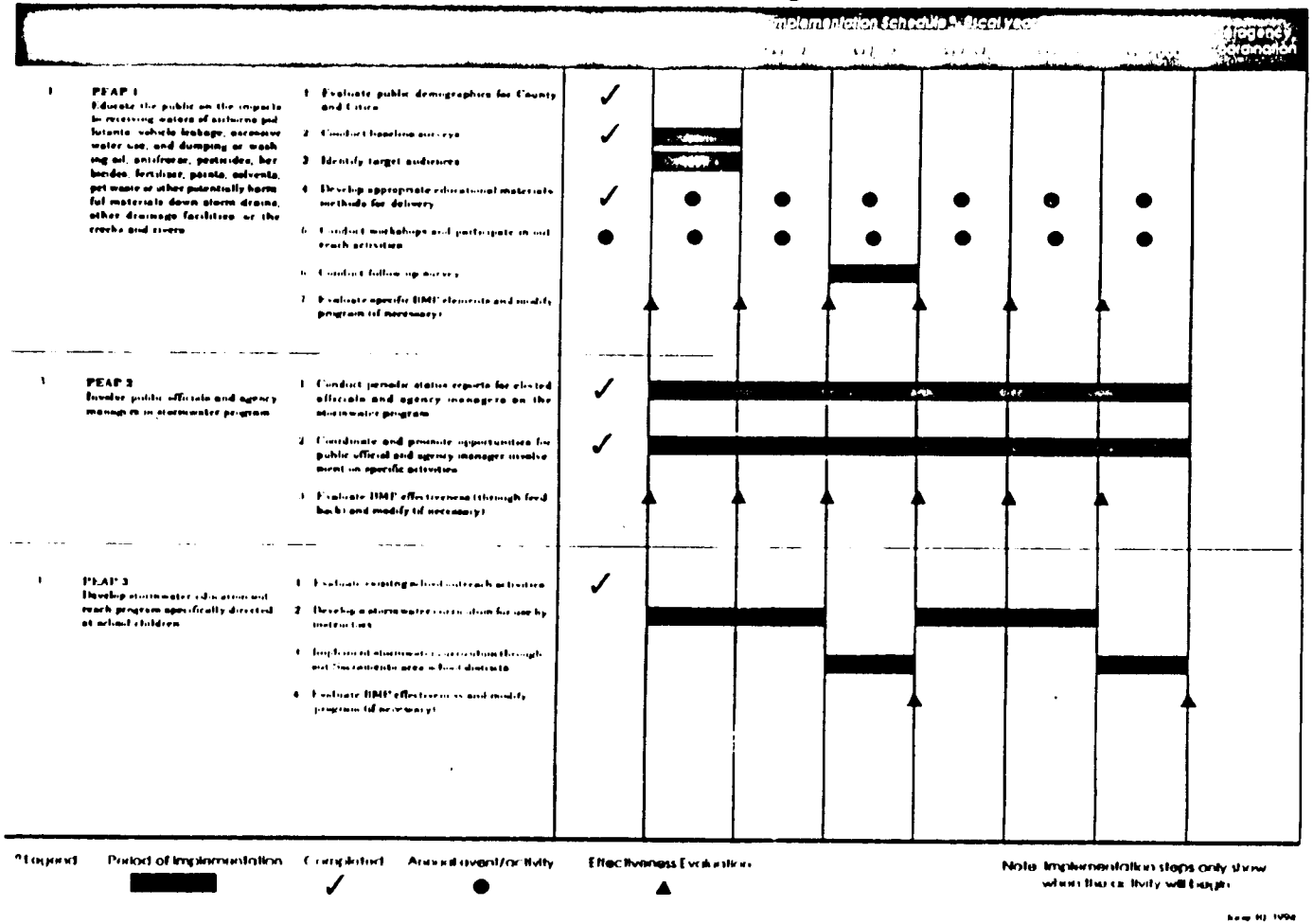


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**Table 2-3. Public Education and Awareness Program (PEAP) BMP's, continued**

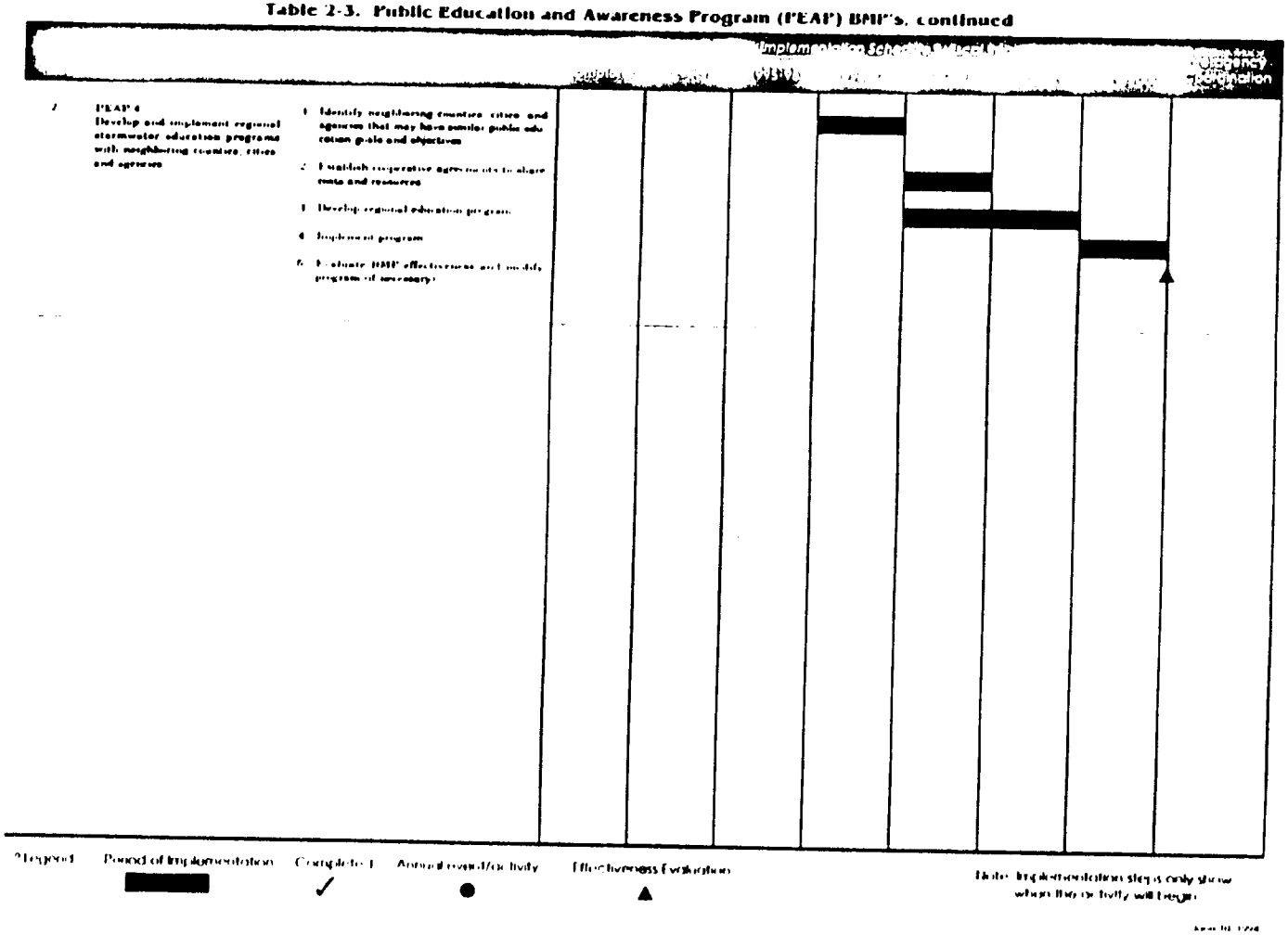




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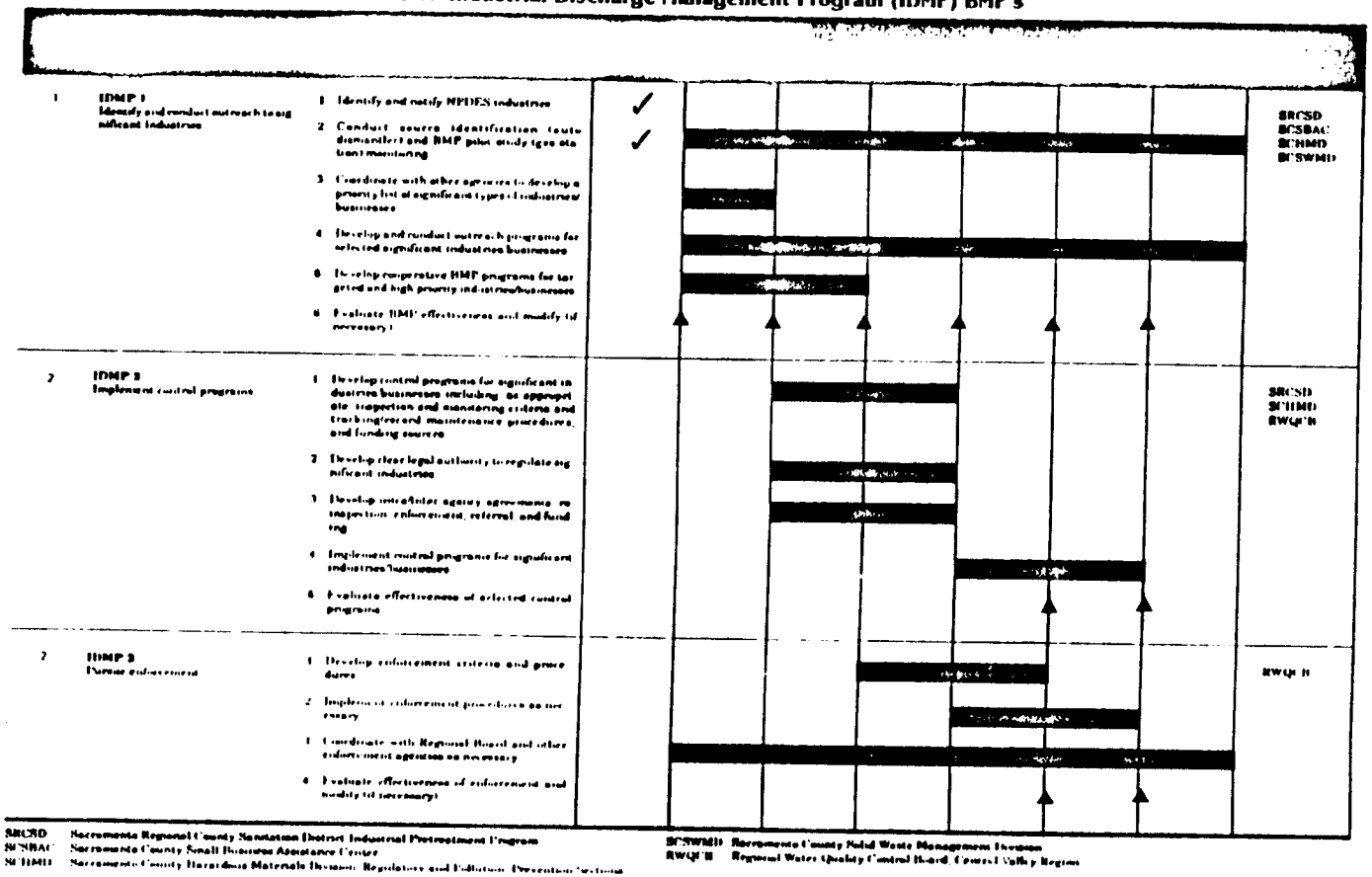
Table 2-4. Industrial Discharge Management Program (IDMP) BMP's

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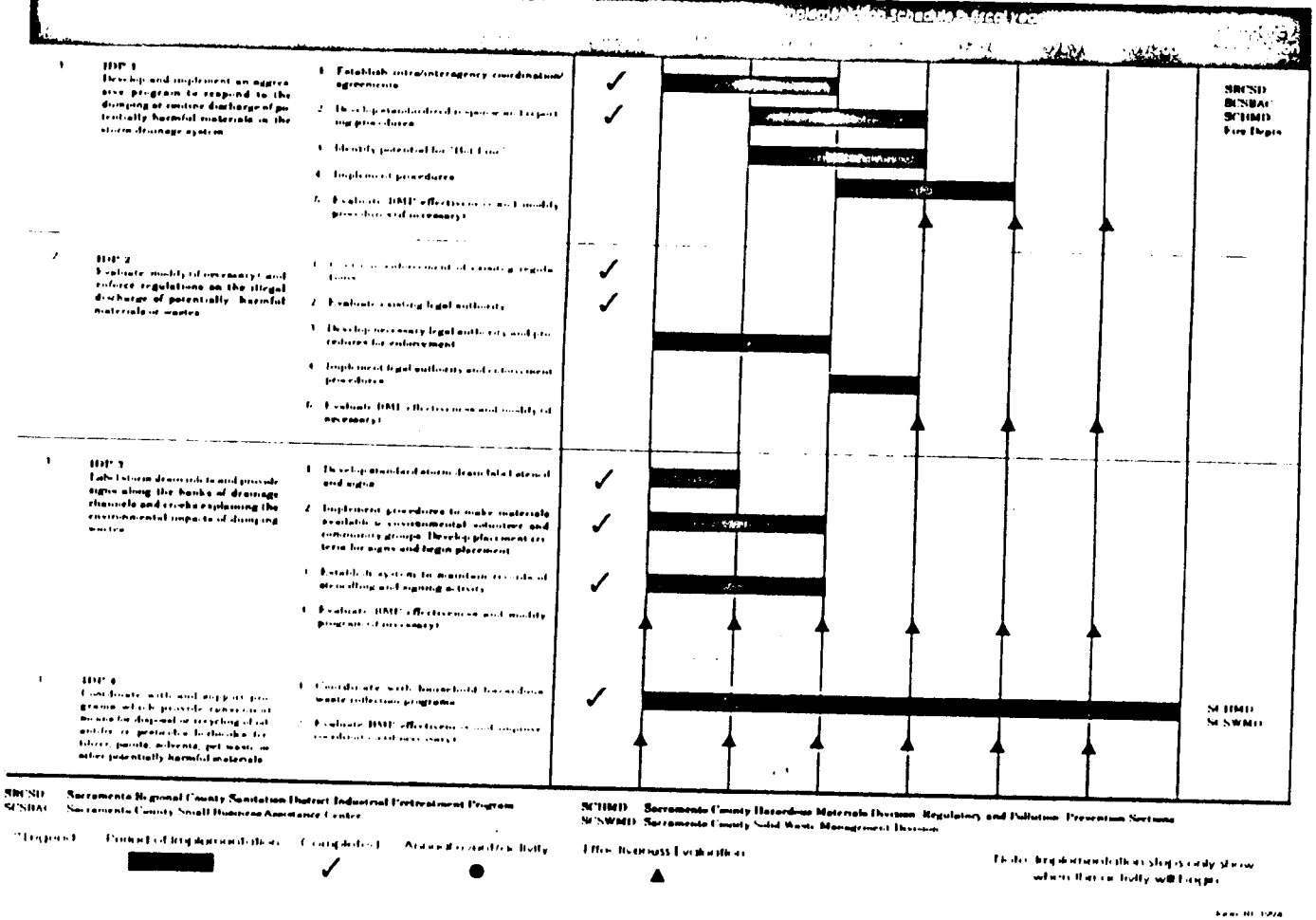
## Table 2-5. Illegal Discharge Program (IDP) BMP's



| | | | | | |
|---|---|---|---|---|---|
| 1 | IDP 1<br>Develop and implement an aggressive program to respond to the dumping or routine discharge of potentially harmful materials in the storm drainage system | 1. Establish intra/interagency coordination/agreements | ✓ | | SRCSD<br>SCSBAC<br>SCHMD<br>Fire Depts |
| | | 2. Develop standardized response and reporting procedures | ✓ | | |
| | | 3. Identify potential for "Hot Line" | | | |
| | | 4. Implement procedures | | | |
| | | 5. Evaluate BMP effectiveness and modify procedures (if necessary) | | | |
| 2 | IDP 2<br>Evaluate modify (if necessary) and enforce regulations on the illegal discharge of potentially harmful materials or wastes | 1. Continue enforcement of existing regulations | ✓ | | |
| | | 2. Evaluate existing legal authority | ✓ | | |
| | | 3. Develop necessary legal authority and procedures for enforcement | | | |
| | | 4. Implement legal authority and enforcement procedures | | | |
| | | 5. Evaluate BMP effectiveness and modify (if necessary) | | | |
| 3 | IDP 3<br>Label storm drain inlets and provide signs along the banks of drainage channels and creeks explaining the environmental impacts of dumping wastes | 1. Develop standard storm drain labels/stencil and signs | ✓ | | |
| | | 2. Implement procedures to make materials available to environmental volunteer and community groups. Develop placement criteria for signs and begin placement | ✓ | | |
| | | 3. Establish system to maintain records of stenciling and signing activity | ✓ | | |
| | | 4. Evaluate BMP effectiveness and modify program (if necessary) | | | |
| 4 | IDP 4<br>Coordinate with and support programs which provide convenient means for disposal or recycling of [illegible] or pesticides/herbicides, fertilizer, paints, solvents, pet waste or other potentially harmful materials | 1. Coordinate with household hazardous waste collection programs | ✓ | | SCHMD<br>SCSWMD |
| | | 2. Evaluate BMP effectiveness and improve coordination (if necessary) | | | |

SRCSD Sacramento Regional County Sanitation District Industrial Pretreatment Program
SCSBAC Sacramento County Small Business Assistance Center
SCHMD Sacramento County Hazardous Materials Division, Regulatory and Pollution Prevention Sections
SCSWMD Sacramento County Solid Waste Management Division

Legend: Period of Implementation ■ Completed ✓ Annual Report/Activity ● Effectiveness Evaluation ▲

Note: Implementation shops only show when the activity will begin.

Form RI-1994



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**Table 2-6. Illicit Connection Program (ICP) BMP's**

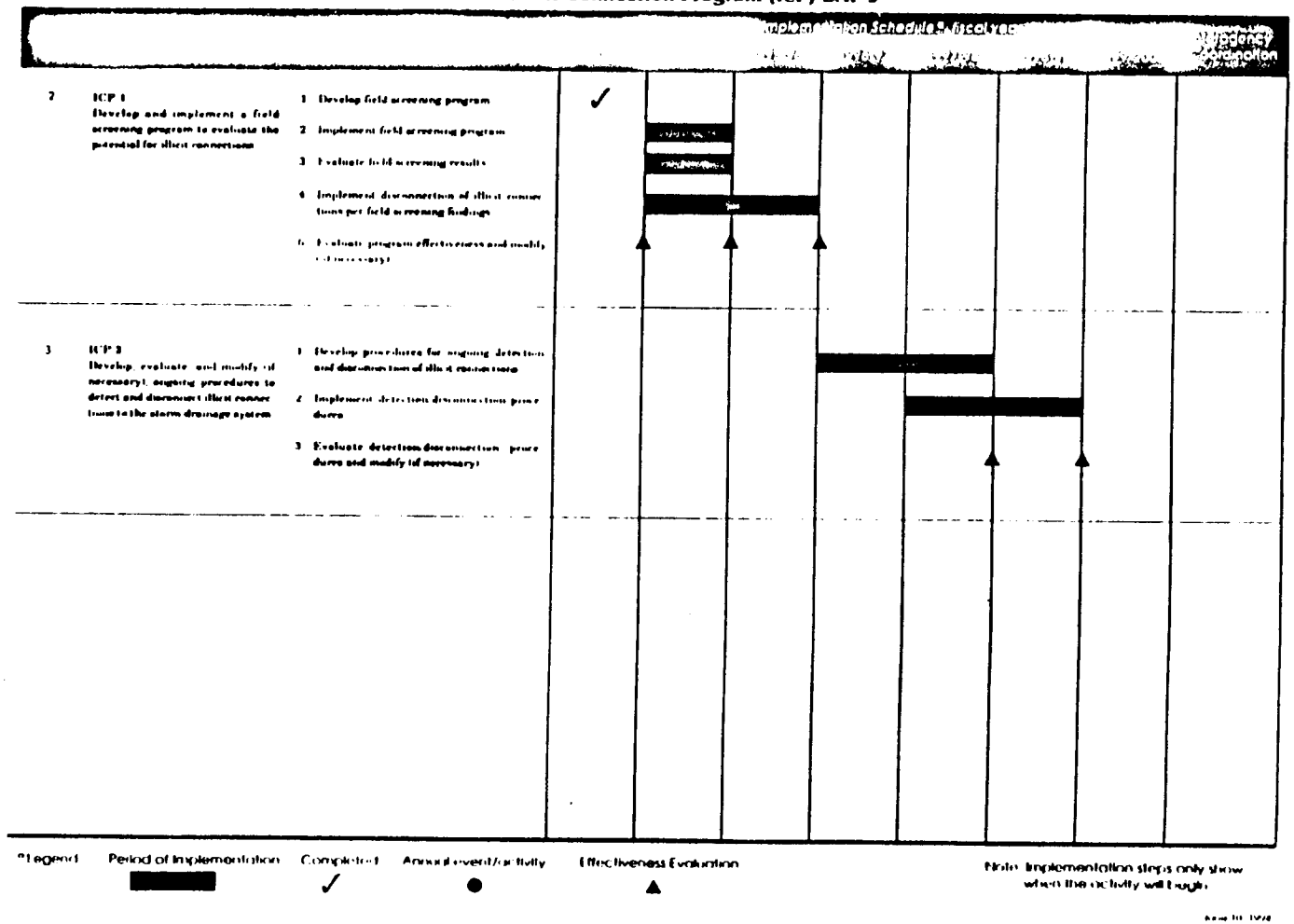


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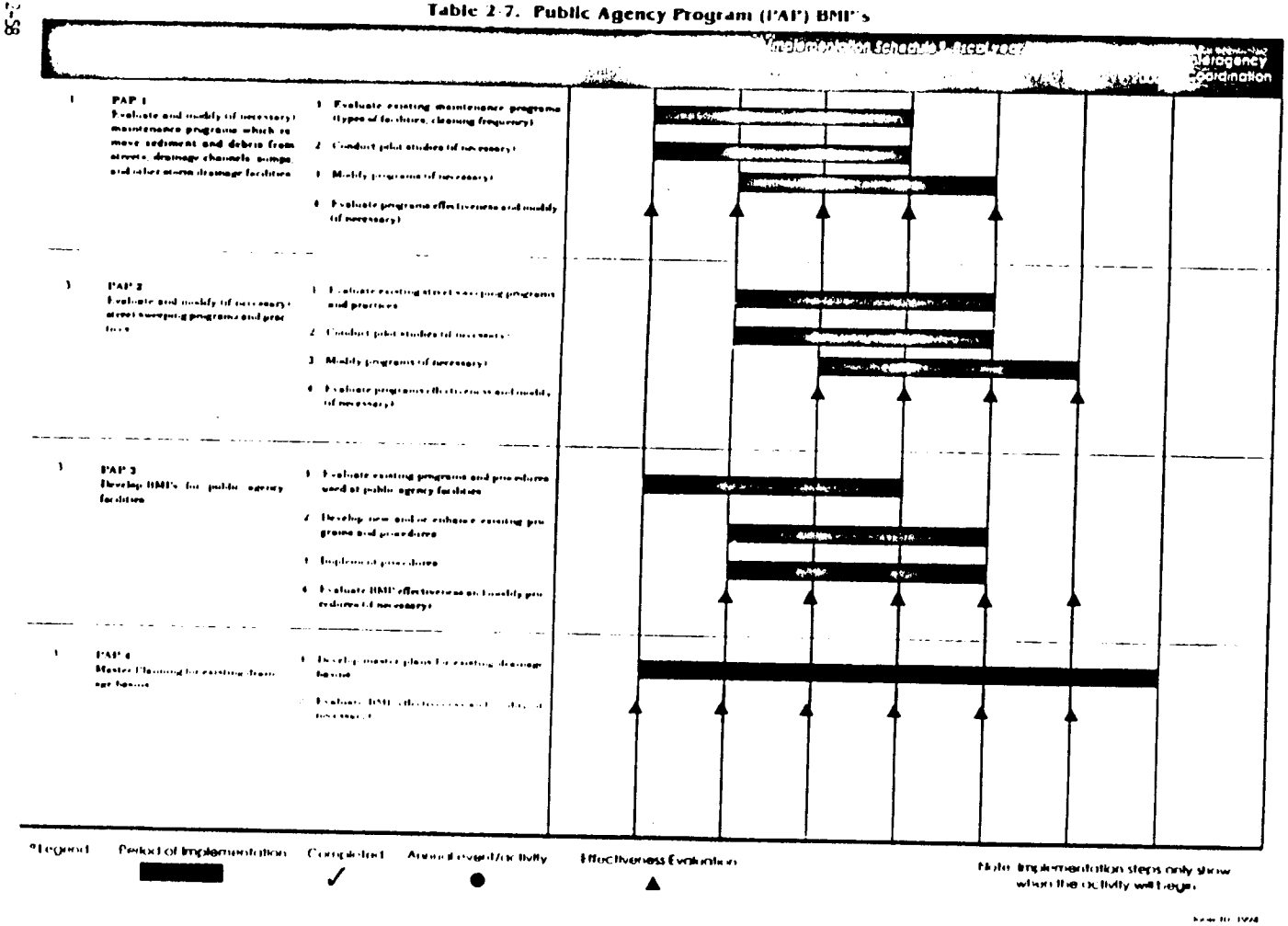
Table 2-7. Public Agency Program (PAP) BMP's



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## CONSTRUCTION PROJECT
## STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

1. **Objectives:** The Storm Water Pollution Prevention Plan (SWPPP) shall be developed and amended, when necessary, to meet the following objectives:

   a. To identify pollutant sources that may affect the quality of discharges of storm water associated with construction activity (storm water discharges) from the construction sites, and

   b. To identify, construct, and implement storm water pollution prevention measures (control practices) to reduce pollutants in storm water discharges to the extent practicable and reasonable from the construction site both during construction and after construction is completed.

2. **Availability.** The SWPPP shall be kept on site during construction activity and made available upon request of a representative of the Regional Water Board and/or local agency.

3. **Required Changes:**

   a. The discharger shall amend the SWPPP whenever there is a change in construction or operations which may affect the discharge of significant quantities of pollutants to surface waters, ground waters, or a municipal separate storm sewer system. The SWPPP should also be amended if it is in violation of any condition of this general permit or has not achieved the general objective of reducing pollutants in storm water discharges.

   b. The Regional Water Board may require the discharger to amend the SWPPP.

4. **Project Description:** The SWPPP shall provide a description of potential sources which are likely to add significant quantities of pollutants to storm water discharges or which may result in non-storm water discharges from the construction site. The SWPPP shall include, at a minimum, the following items:

   a. A map extending approximately one-quarter mile beyond the property boundaries of the construction site showing: the construction site, surface water bodies (including known springs and wetlands[1]), known wells, an outline of off-site drainage areas that discharge into the construction site, general topography, and the anticipated discharge location(s) where the construction site's storm water discharges to a municipal storm sewer system

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[1] The determination of whether wetlands exist shall be made by the person who prepares the SWPPP and shall not be binding upon any other person.

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or other water body. The requirements of this paragraph may be included in the site map required under the following paragraph if appropriate.

b. A site map(s) showing:

i. Location of control practices used during construction:
ii. Areas used to store soils and wastes:
iii. Areas of cut and fill:
iv. Drainage patterns and slopes anticipated after major grading activities are completed:
v. Areas of soil disturbance:
vi. Surface water locations:
vii. Areas of potential soil erosion where control practices will be used during construction:
viii. Existing and planned paved areas and buildings:
ix. Locations of post-construction control practices;
x. An outline of the drainage area for each on-site storm water discharge point:
xi. Vehicle storage and service areas; and
xii. Areas of existing vegetation.

c. A narrative description of the following:

i. Toxic materials that are known to have been treated, stored, disposed, spilled, or leaked in significant quantities onto the construction site:

ii. Practices to minimize contact of construction materials, equipment, and vehicles with storm water:

iii. Construction material loading, unloading, and access areas:

iv. Preconstruction control practices (if any) to reduce sediment and other pollutants in storm water discharges:

v. Equipment storage, cleaning, and maintenance areas;

vi. Methods of on-site storage and disposal of construction materials; and

vii. The nature of fill material and existing data describing the soil on the construction site.

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## CONSTRUCTION PROJECT
## STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

d. A list of pollutants (other than sediment) that are likely to be present in storm water discharges in significant quantities. Describe the control practices (if different from Item b below) appropriate to reduce these pollutants in the storm water discharges.

e. An estimate of the size of the construction site (in acres or square feet), an estimate of the runoff coefficient of the construction site before and after construction, and an estimate of the percentage of the area of the construction site that is impervious (e.g., pavement, buildings, etc.) before and after construction.

5. **Erosion and Sediment Control:** The SWPPP shall include:

a. A description of soil stabilization practices. These practices shall be designed to preserve existing vegetation where feasible and to revegetate open areas as soon as feasible after grading or construction. In developing these practices, the discharger shall consider: temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffer strips, protection of trees, or other soil stabilization practices. At a minimum, the operator must implement these practices on all disturbed areas during the rainy season.

b. A description or illustration of control practices which, to the extent feasible, will prevent a net increase of sediment load in storm water discharge. In developing control practices, the discharger shall consider a full range of erosion and sediment controls such as detention basins, straw bale dikes, silt fences, earth dikes, brush barriers, velocity dissipation devices, drainage swales, check dams, subsurface drain, pipe slope drain, level spreaders, storm drain inlet protection, rock outlet protection, sediment traps, temporary sediment basins, or other controls. At a minimum, sandbag dikes, silt fences, straw bale dikes, or equivalent controls practices are required for all significant sideslope and downslope boundaries of the construction area. The discharger must consider site-specific and seasonal conditions when designing the control practices.

c. Control practices to reduce the tracking of sediment onto public or private roads. These public and private roads shall be inspected and cleaned as necessary.

d. Control practices to reduce wind erosion.

6. **Non-Storm Water Management** Non-storm water discharges are allowed only when necessary and where they do not cause or contribute to a violation of any water quality standard. Such discharges must be described in the SWPPP. Whenever feasible, alternatives which do not result in the discharger of non-storm water shall be implemented.

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## APPENDIX 1

## CONSTRUCTION PROJECT
## STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

7. **Post-Construction Storm Water Management** The SWPPP shall describe the control practices to reduce pollutants in storm water discharges after all construction phases have been completed at the site. These must be consistent with all local post-construction storm water management requirements, policies, and guidelines. The discharger must consider site-specific and seasonal conditions when designing the control practices. Operation and maintenance of control practices after construction is completed shall be addressed, including short- and long-term funding sources and the responsible party.

8. **Waste Management and Disposal** All wastes (including equipment maintenance waste) disposed at the site or removed from the site for disposal shall be disposed of in compliance with Federal, State, and local laws, regulations, and ordinances.

9. **Maintenance, Inspection, and Repair**: The SWPPP shall include maintenance, inspections, and repair procedures to ensure that all grade surfaces, walls, dams and structures, vegetation, erosion and sediment control measures, and other protective devices identified in the site plan are maintained in good and effective condition and are promptly repaired or restored.

10. **Monitoring:** The SWPPP shall describe procedures for conducting inspections of the construction site prior to anticipated storm events and after actual storm events to identify areas contributing to a discharge associated with construction activity. These inspections shall evaluate whether control measures to reduce to pollutants in discharges are effective and properly implemented or whether additional control measures are needed. A record of the inspections must include the date of the inspection, the individual(s) who performed the inspection, inspection observations, and inspection evaluation. The record, and certification that the site is in compliance shall be submitted annual with the Annual Report.

    If certification of compliance is not possible, then the report shall identify the type(s) of non-compliance, describe actions necessary to achieve compliance, and include a time schedule, acceptable to the Executive Officer, for achieving compliance.

11. **Training:** The SWPPP shall include procedures to ensure that all inspections required in Section B.4 of the Monitoring Program and Reporting Requirements of this general permit and maintenance and repair required in Paragraph 10 of this Section are done by trained personnel.

12. **List of Contractors/Subcontractors:** The SWPPP shall include a list of all contractors (or subcontractors) responsible for implementing the SWPPP.

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## CONSTRUCTION PROJECT
## STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

13. **Other Plans:** This SWPPP may incorporate, by reference, the appropriate elements of other plans required by local, State, or Federal agencies. A copy of any requirements incorporated by reference shall be kept at the construction site.

14. **Public Access:** The SWPPP is considered a report that shall be available to the public under Section 308(b) of the CWA. Upon request by members of the public, the discharger shall make available for review a copy of the SWPPP either to the Regional Water Board or directly to the requester.

15. **Preparer:** The SWPPP shall include the signature and title of the person responsible for preparation of the SWPPP and include the date of initial preparation and each amendment thereto.

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## APPENDIX 2

## INDUSTRIAL FACILITY
## (EXCLUDING CONSTRUCTION SITES)
## STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

1. **Objective:** A storm water pollution prevention plan (SWPPP) shall be developed and implemented, and amend when necessary, to meet the following objectives:

   a. to identify pollutant sources that may affect the quality of industrial storm water discharges; and

   b. to identify, assign, and implement control measures and management practices to reduce pollutants in industrial storm water discharges.

2. **Availability:** The SWPPP shall be kept at the facility and made available upon request o a representative of the Regional Board.

3. **Required changes.**

   a. The Dischargers shall amend the SWPPP whenever there is a change in design, construction, operation, or maintenance which may effect the discharge of significant quantities of pollutants to surface water, ground waters, or municipal separate storm sewer system. The SWPPP should also be amended if it is in violation of any conditions of this permit, or has not achieved the general objectives of reducing pollutants in storm water discharges.

   b. The Regional Board may require the Dischargers to amend the SWPPP.

4. **Source Identification:** The SWPPP shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The SWPPP shall include, at a minimum, the following items:

   a. A topography map extending approximately one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies (including known springs and wells), and the discharge point where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included in the site map required under the following paragraph if appropriate.

   b. A site map showing:

      i. Storm water conveyance, drainage, and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas of pollutant contact with storm water or release of storm water, actual or potential, including but not limited to outdoor storage, manufacturing, and process areas,

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## INDUSTRIAL FACILITY
## (EXCLUDING CONSTRUCTION SITES)
## STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

material loading, unloading, storage, and access areas, and waste treatment, storage, and disposal areas:

v. Location of existing storm water structural control measures (i.e., berms, coverings, etc.);

vi. Surface water locations, including springs and wetlands;

vii. Areas of existing and potential soil erosion; and

viii. Vehicle service areas.

ix. Location of each well where fluids from the facility are injected underground.

c. A narrative description of the following:

i. Significant materials that have been treated, stored, disposed, spilled, or leaked in significant quantities in storm water discharge after November 19, 1988;

ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharge;

iii. Loading, unloading, and access areas;

iv. Existing structural and non-structural control measures (if any) to reduce pollutants in storm water discharge;

v. Industrial storm water discharge treatment facilities (if any);

vi. Methods of on-site storage and disposal of significant materials; and

vii. Outdoor storage, manufacturing, and processing activities including activities that generate significant quantities of dust or particulates.

d. A list of pollutants that have a reasonable potential to be present in storm water discharge in significant quantities, and an estimate of the annual quantities of these pollutants in storm water discharge.

e. An estimate of the size of the facility (in acres or square feet), and the percent of the facility that has impervious areas (i.e., pavement, buildings, etc.).

f. A list of significant spills or leaks of toxic or hazardous pollutants to storm water that have occurred after November 19, 1988. This shall include:

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## INDUSTRIAL FACILITY
## (EXCLUDING CONSTRUCTION SITES)
## STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

i. Toxic chemicals (listed in 40 CFR Part 372) that have been discharged to storm water as reported on USEPA Form R.

ii. Oil or hazardous substances in excess of reportable quantities (see 40 CFR Part 110, 117 or 302).

g. A summary of existing sampling data (if any) describing pollutants in storm water discharge.

5. **Storm Water Management Controls:** The SWPPP shall describe the storm water management controls appropriate for the facility and a time schedule for fully implementing such controls. The appropriateness and priorities of controls in the SWPPP shall reflect identified potential sources of pollutants. The description of the storm water management controls shall include, as appropriate:

a. Storm Water Pollution Prevention Personnel. Identify specific individuals (and job titles) who are responsible for developing, implementing, and revising the SWPPP.

b. Preventive Maintenance. Preventive maintenance involves inspection and maintenance of storm water conveyance system devices (i.e., oil/water separators, catch basins, etc.) and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

c. Good Housekeeping. Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response. Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, and clean-up equipment and procedures should be identified, as appropriate. Internal reporting procedures for spills of significant materials shall be established.

e. Storm Water Management Practices. Storm water management practices are practices other than those which control the source of pollutants. They include treatment/conveyance structures such as drop inlets, channels, retention/detention basins, treatment vaults, infiltration galleries, filters, oil/water separators, etc. Based on assessment of the potential of various sources to contribute pollutants to storm water discharges in significant quantities, additional storm water management practices to remove pollutants from storm water discharge shall be implemented, and design criteria shall be described.

f. Source Control. Source controls, such as elimination or reduction of the use of toxic pollutants, covering of pollutant areas, sweeping of paved areas, containment of potential pollutants, labelling all storm drain inlets with "No Dumping" signs, isolation/separation of industrial from non-industrial pollutant sources so that runoff from these areas do not mix, etc.

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## APPENDIX 2

## INDUSTRIAL FACILITY
## (EXCLUDING CONSTRUCTION SITES)
## STORM WATER POLLUTION PREVENTION PLAN PROVISIONS

g. Erosion and Sediment Controls/ Prevention. Measures such as riprap, revegetation, slope stabilization, etc. to limit erosion and reduce sediment in storm water discharges shall be described and implemented.

h. Employee Training. Employee training programs shall inform all personnel responsible for implementing the SWPPP. Training should address spill response, good housekeeping, and material management practices. Periodic dates for training should be identified.

i. Inspections. All inspections, visual observations and sampling as required by Section B. shall be done by trained personnel. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to these activities.

j. Records. A tracking and follow up procedure shall be described to ensure that adequate response and corrective actions have been taken in response to inspections. Records of inspections shall be maintained. Establishment of internal record keeping and internal reporting procedures of inspections and spill incidents.

6. **Non-Storm Water Discharges**: Non-storm water discharges are allowed only when necessary and where they do not cause or contribute to a violation of any water quality standard. Such discharges must be described in the SWPPP. Whenever feasible, alternatives which do not result in the discharger of non-storm water shall be implemented.

7. **Annual Inspection:** An annual facility inspection shall be conducted to verify that all elements of the SWPPP (i.e., site map, potential pollutant sources, structural and non-structural controls to reduce pollutants in industrial storm water discharge, etc.) are accurate. A report of the annual inspection and observations that require a response (and appropriate response to the observations) shall be retained as part of the SWPPP, and submitted as part of the Annual Report.

8. **Other Plans:** The SWPPP may incorporate, by reference, the appropriate elements of other program requirements (i.e., Spill Prevention Control and Countermeasures (SPCC) plans under Section 311 of the CWA, Best Management Programs under 40 CFR 125.100, etc.).

9. **Public Access:** The SWPPP is considered a report that shall be available to the public under Section 308(b) of the CWA.

10. **Preparer:** The SWPPP shall include the signature and title of the person responsible for preparation of the SWPPP and include the date of initial preparation and each amendment, thereto.

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WASTE DISCHARGE REQUIREMENTS
AREA-WIDE STORM WATER DISCHARGES FROM
MUNICIPAL SEPARATE STORM SEWER SYSTEMS
SACRAMENTO COUNTY WATER AGENCY,
CITIES OF SACRAMENTO, FOLSOM, AND GALT

INFORMATION SHEET

The 1972 Amendments to the Federal Clean Water Act (CWA) prohibited the discharge of any pollutants from a point source into waters of the U.S. unless permitted under the National Pollutant Discharge Elimination System (NPDES). Storm water and urban runoff discharges that occur through discreet conveyance systems are considered point sources subject to NPDES requirements. The 1987 amendments to the CWA mandated the USEPA to publish regulations establishing permit requirements for storm water discharges associated with industrial activities, and large and medium municipal storm sewer systems that service an urbanized area with a population greater than 100,000. On 16 November 1990, USEPA published these Regulations which were codified in the Federal Code of Regulations (40CFR) within Part 122.

Appendices to Part 122 of the Regulations, provide a listing of the cities and counties throughout the United States that meet threshold urbanized population criteria that requires a municipality to obtain a NPDES storm water permit. Appendix H of the Regulations lists Sacramento County (County) as a county with an unincorporated urbanized area population greater than 250,000, and Appendix F lists the City of Sacramento with an incorporated urbanized population greater than 250,000. In listing the County, and the City of Sacramento, the Regulations have identified them as a large municipalities that are required to obtain a municipal NPDES storm water permit.

The Regulations allow the Board to designate owners or operators of municipal separate storm sewers, not meeting the population threshold established in the Regulations, and that are in the boundaries of a municipality that is required by the Regulations, as a medium or large municipal separate storm sewer system. This has resulted in many cities throughout California, with populations less than 100,000, or government entities, such as flood control districts or transportation districts, being required to obtain storm water permits.

There are four incorporated cities in the County of Sacramento, the Cities of Sacramento, Folsom, Galt, and Isleton. The Cities of Folsom, Galt, and Isleton have populations less than 100,000. The Cities of Folsom, and Galt are designated as urbanized areas that are subject to the storm water regulations. Designation is based on the location of each city's storm water discharges relative to storm water discharges for the County and City of Sacramento, and the nature of development and urbanization of the cities.

The City of Isleton has a population less than 1000, and is situated such that its developed area is not a continguous, intergral part of the uranized area of the County and its incorporated cities. Therefore, it is not required to obtain a storm water permit at this time.



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WASTE DISCHARGE REQUIREMENTS
AREA-WIDE STORM WATER DISCHARGES FROM
MUNICIPAL SEPARATE STORM SEWER SYSTEMS
SACRAMENTO COUNTY WATER AGENCY,
CITIES OF SACRAMENTO, FOLSOM, AND GALT

The Regulations allow for the issuance of area-wide municipal NPDES storm water permits. Under the area-wide approach, various municipalities and entities can be named as permittees to one NPDES permit. The Regulations recognize the differences between the permittees in regards to its responsibilities for discharges from its municipal storm sewer system, and allows permittees to develop site-specific storm water programs.

The County, and the Cities of Sacramento, Folsom, and Galt together applied for an NPDES area-wide municipal storm water permit in February 1990. Order No. 90-158 (NPDES No. CA 0082597) was subsequently adopted by the Regional Board on 22 June 1990. Order No. 90-158 expired on 1 June 1995. However, due to no fault by the Dischargers, the Regional Board did not issue a new permit prior to that date resulting in the conditions of Order No. 90-158 continuing in full force until the new order is adopted.

On 3 March 1995, the Dischargers submitted the final segment of their renewal application. The application package included U.S. EPA General Information, Form 1, the State of California Form 200, a Comprehensive Stormwater Management Program (CSMP), and an Effectiveness Evaluation Report (EER). The CSMP and EER provide the Dischargers' management plan to evaluate and reduce the discharge of pollutants in storm water discharges from the urbanized areas covered by this Order.

The CSMP is a comprehensive document that describes the framework for management of storm water discharges during the term of this Order. It defines the priorities in development and implementation of best management practices (BMPs), and provides an implementation program which summarizes the major activities to be accomplished over and beyond the five-year term of this Order. Annually the Dischargers will submit a work plan, with a schedule, that provides the specific activities to be conducted by the Dischargers.

The EER reports the Dischargers' evaluation of the effectiveness of the CSMP during the current Order, and provides methodologies the Dischargers intend to implement to determine BMP, and overall CSMP effectiveness over the term of the new order. The proposed methodologies are detailed in the Effectiveness Evaluation Plan (EEP). The primary methods provided in the EEP for evaluation of program performance and estimated water quality improvements will be special studies for structural and non-structural BMPs, sub-watershed pilot studies for COC reduction programs, and statistical methods and water quality models for predicting the effectiveness of the CSMP.

This Order requires the permittees to implement various technologies to control the discharge of pollutants in storm water discharges from municipal separate storm sewer systems to the Maximum Extent Practicable (MEP), and to control the discharge of pollutants through implementation of Best Available Technologies Economically Achievable (BAT), and Best Conventional Control Technologies (BCT) for storm water discharges associated with industrial activities, as defined by the Federal Storm Water Regulations, and in non-storm water discharges from facilities that are owned and operated by the



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Dischargers. In accordance with the storm water Regulations, implementation of structural and non-structural BMPs are acceptable control technologies to meet MEP, BAT, and BCT standards. Timely and adequate implementation of BMPs and other program elements outlined in the CSMP and EEP will constitute compliance with MEP, BAT, and BCT standards.

Annually, the Dischargers are required to submit an Annual Report. The Annual Report is a tool for the Dischargers to establish that, through implementing their CSMP, they have reduced the discharge of pollutants in storm water discharges from storm sewer systems, and non-storm water discharges from facilities owned and operated by the Dischargers, and have effectively prohibited the discharge of non-storm water discharges to storm sewer systems from various land uses under the jurisdiction of the Dischargers. The report is to be formatted such that it provides both the Dischargers and Regional Board staff an opportunity to adequately evaluate: 1) implementation progress of the CSMP; 2) monitoring program analytical results, and how these results relate to the CSMP's priorities and direction; 3) dischargers' fiscal and manpower resources, and legal authority to implement an effective CSMP; and, 4) evaluate overall effectiveness of the CSMP and its control measures both qualitatively and quantitatively.



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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

**TENTATIVE ORDER**
**NPDES PERMIT NO. CAS029718**

**REISSUING WASTE DISCHARGE REQUIREMENTS FOR:**

SANTA CLARA VALLEY WATER DISTRICT, COUNTY OF SANTA CLARA, CITY OF CAMPBELL, CITY OF CUPERTINO, CITY OF LOS ALTOS, TOWN OF LOS ALTOS HILLS, TOWN OF LOS GATOS, CITY OF MILPITAS, CITY OF MONTE SERENO, CITY OF MOUNTAIN VIEW, CITY OF PALO ALTO, CITY OF SAN JOSE, CITY OF SANTA CLARA, CITY OF SARATOGA, AND CITY OF SUNNYVALE, which have joined together to form the SANTA CLARA VALLEY NONPOINT SOURCE POLLUTION CONTROL PROGRAM

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter referred to as the Regional Board) finds that:

1. The Santa Clara Valley Water District (hereinafter District), County of Santa Clara, City of Campbell, City of Cupertino, City of Los Altos, Town of Los Altos Hills, Town of Los Gatos, City of Milpitas, City of Monte Sereno, City of Mountain View, City of Palo Alto, City of San Jose, City of Santa Clara, City of Saratoga, and City of Sunnyvale (hereinafter referred to as the Dischargers) have joined together to form the Santa Clara Valley Nonpoint Source Pollution Control Program (hereinafter referred to as the Program) and have submitted a permit application (Report of Waste Discharge), dated December 20, 1994, for re-issuance of waste discharge requirements under the National Pollutant Discharge Elimination System (NPDES) to discharge storm water runoff from storm drains and watercourses within the Dischargers' jurisdictions.

2. The Dischargers are currently subject to NPDES Permit No.CA0029718 issued by Order No. 90-094 on June 20, 1990, and amended by Order No. 92-021 on February 19, 1992.

3. The Dischargers each have jurisdiction over and/or maintenance responsibility for certain municipal separate storm drain systems and/or watercourses in the Santa Clara Valley basin. (See attached location and political jurisdiction map.) The basin can be divided into eleven subbasins or watersheds including the Coyote Creek watershed on the east side of the valley, the Guadalupe River watershed which drains the south-central portion of the valley, and a series of small, relatively urbanized watersheds that drain the west side of the valley. (See attached basin watersheds map.) Discharge consists of the surface runoff generated from various land uses in all the hydrologic subbasins in the basin which discharge into watercourses which in turn flow into South San Francisco Bay. The quality and quantity of these discharges varies considerably and is affected by hydrologic, geologic, land use, season, and sequence and duration of hydrologic event. Pollutants of concern in these discharges are certain heavy metals, sediment from erosion due to anthropogenic activities, petroleum hydrocarbons from sources such as used motor oil, certain pesticides associated with in stream acute toxicity, and other pollutants which may cause aquatic toxicity in the receiving waters.

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4. The permit application submitted by the Dischargers includes the Program's Storm Water Management Plan, which describes a framework for management of stormwater discharges during the term of this permit. The title page and table of contents of the Storm Water Management Plan are included in Attachment C of this Order. The Storm Water Management Plan describes the Program's Goals and Objectives, Legal Authorities, Institutional Arrangements and Funding, the Annual Reporting and Program Evaluation Process, Monitoring Strategy, an Implementation Plan which summarizes major activities to be accomplished during the five-year term of this permit, and detailed Workplans of activities to be implemented by the Program and each of the Dischargers during Fiscal Year 1995-1996. Workplans for subsequent fiscal years will be prepared by the Program and each of the Dischargers and submitted to the Regional Board by the Program as part of the Annual Reporting and Program Evaluation Process.

   The Implementation Plan chapter of the Storm Water Management Plan consists of the following elements:

   - Program Management
   - Annual Reporting and Evaluation
   - Monitoring
   - Public Agency Activities
   - Public Information and Participation
   - Metals Control Measures
   - Watershed Management Measures
   - Illicit Connection / Illegal Dumping Elimination
   - Industrial and Commercial Discharges
   - New Development and Construction

5. The Storm Water Management Plan (Plan) and modifications or revisions to the Plan that are approved in accordance with Provision C.3 of this Order, and future fiscal year Workplans to be submitted in accordance with the Plan and Provision C.3 of this Order are incorporated into this Order by reference and are an integral and enforceable component of this Order.

6. The Program is organized, coordinated, and implemented based upon a Memorandum of Agreement signed by the Dischargers, which defines roles and responsibilities of the Dischargers. The roles and responsibilities of the Dischargers are, in part, as follows:

   a. The Management Committee, which includes representatives from all of the Dischargers, is the decision making body of the Program. It operates within the budget and policies established by the Dischargers' governing boards and councils to decide matters of budget and policy necessary to implement the Storm Water Management Plan, and provides direction to the Program Manager and staff. The Management Committee has established subcommittees to assist in planning and implementation of the Storm Water Management Plan, and may add, modify, or delete subcommittees as deemed necessary.

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b. The District's representative serves as the Chair of the Management Committee and is responsible for implementation of the Program's self-monitoring activities and preparation and submittal of Program components of the Annual Report and Workplans. In acting as the Program's NPDES Permit coordinator, the District does not assume responsibility for the obligations assigned to other Dischargers by this Order.

c. Each of the Dischargers is individually responsible for adoption and enforcement of ordinances, implementation of assigned control measures needed to prevent or reduce pollutants in stormwater, and providing funds for the capital, operation, and maintenance expenditures necessary to implement such control measures within their jurisdiction. The Regional Board in exercising its enforcement discretion will, wherever possible, take action only against the individual Discharger(s) responsible for specific violations of this Order.

7. Section 402(p) of the federal Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires NPDES permits for storm water discharges from separate municipal storm drain systems, storm water discharges associated with industrial activity (including construction activities), and designated storm water discharges which are considered significant contributors of pollutants to waters of the United States. On November 16, 1990, the United States Environmental Protection Agency (hereinafter US EPA) published regulations (40 CFR Part 122) which prescribe permit application requirements for municipal storm water discharges pursuant to Section 402(p) of the CWA. The application requirements include submittal of a proposed storm water management plan to reduce the discharge of pollutants in storm water to the maximum extent practicable and to effectively prohibit non-storm water discharges into municipal storm drain systems. The Program's Storm Water Management Plan fulfills these permit application requirements. The implementation of the Implementation Plan and related Workplans of the Storm Water Management Plan should achieve pollutant reduction and pollution prevention to the maximum extent practicable.

8. The Regional Board amended its Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region on September 16, 1992. The State Water Resources Control Board (hereinafter the State Board) approved the Basin Plan on April 27, 1993. The provisions of this permit are consistent with the amended Basin Plan.

9. The beneficial uses of South San Francisco Bay, its tributary streams and contiguous water bodies, and other water bodies within the drainage basin are listed in the Basin Plan.

10. The Regional Board considers storm water discharges from the urban and developing areas in the San Francisco Bay Region, such as the Santa Clara Valley basin, to be significant sources of pollutants in waters of the Region that may be causing or threatening to cause or contribute to water quality impairment.

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11. The San Francisco Estuary Project, established pursuant to CWA Section 320, culminated in June of 1993 with completion of its Comprehensive Conservation and Management Plan (CCMP) for the preservation, restoration, and enhancement of the San Francisco Bay-Delta Estuary. The CCMP includes recommended actions in the areas of aquatic resources, wildlife, wetlands, water use, pollution prevention and reduction, dredging and waterway modification, land use, public involvement and education, and research and monitoring. Recommended actions which may, in part, be addressed through implementation of the Dischargers' Storm Water Management Plan include, but are not limited to, the following:

    a. Action PO-2.1: Pursue a mass emissions strategy to reduce pollutant discharges into the Estuary from point and nonpoint sources and to address the accumulation of pollutants in estuarine organisms and sediments.

    b. Action PO-2.4: Improve the management and control of urban runoff from public and private sources.

    c. Action PO-2.5: Develop control measures to reduce pollutant loadings from energy and transportation systems.

    d. Action LU-1.1: Local General Plans should incorporate watershed protection plans to protect wetlands and stream environments and reduce pollutants in runoff.

    e. Action LU-3.1: Prepare and implement Watershed Management Plans that include the following complementary elements: 1) wetlands protection; 2) stream environment protection; and 3) reduction of pollutants in runoff.

    f. Action LU-3.2: Develop and implement guidelines for site planning and Best Management Practices.

12. The Regional Board reviewed reports submitted by the Dischargers between June of 1990 and September of 1993 and Regional Monitoring Program data and found that the Dischargers have made considerable progress in reducing the discharge of pollutants, including pollutants of concern, but that the South Bay remained impaired and applicable water quality objectives had not been achieved. Consequently, on December 15, 1993, the Regional Board adopted Cease and Desist Order No. 93-164 which required the Dischargers to submit a plan identifying measures for further control of certain pollutants of concern and assigning responsibilities and time schedules for implementation of such control measures. *(Status of CDO and 304(l) and this finding to be determined)*

13. The Regional Board considers the Program's Storm Water Management Plan (Plan) an essential component of an urban watershed management plan for the Santa Clara Valley basin and its eleven subbasins or watersheds. The Plan is intended to provide a framework for protection and restoration of the Santa Clara Valley watersheds and the South Bay in part through effective and efficient implementation of appropriate control

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measures for the most important sources of pollutants within the watersheds.

14. The Regional Board has issued a NPDES general permit for the regulation of storm water discharges associated with industrial activities in the Santa Clara Valley basin, and the State Board has issued a NPDES general permit for the regulation of storm water discharges associated with construction activities throughout the entire state. To effectively implement the Industrial and Commercial Dischargers and New Development and Construction elements of the Plan, the Dischargers may conduct investigations and local regulatory activities at industries or construction sites covered by these general permits. However, under the CWA, the Regional Board cannot delegate to the Dischargers its own authority to enforce these general permits. Therefore, Regional Board staff intend to work cooperatively with the Dischargers to ensure that industries and construction sites within the Discharger's jurisdiction are in compliance with applicable general permit requirements but are not subject to uncoordinated storm water regulatory activities.

15. Federal, state, or regional entities within the Dischargers' boundaries, not currently named in this Order, operate storm drain facilities and/or discharge storm water to the storm drains and watercourses covered by this Order. The Dischargers may lack legal jurisdiction over these entities under the state and federal constitutions. Consequently, the Regional Board recognizes that the Dischargers should not be held responsible for such facilities and/or discharges. California Department of Transportation (Caltrans) is a state agency that is currently, among others, such an entity. The Regional Board issued a separate storm water permit (NPDES Permit No. CAS029998), to Caltrans in August of 1994, and will consider issuing separate NPDES permits for storm water discharges to other federal, state, or regional entities within the Dischargers' boundaries.

16. The action to adopt a NPDES permit is exempt from the provisions of the California Environmental Quality Act; Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code in accordance with Section 13389 of the California Water Code.

17. The Regional Board will notify interested agencies and interested persons of the availability of reports, plans, and schedules submitted in response to requirements of this Order and may provide them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations. The Regional Board will consider all comments and may modify the reports, plans, or schedules or may modify this Order accordingly.

18. The Regional Board has notified the Dischargers and interested agencies and interested persons of its intent to prescribe waste discharge requirements and an NPDES permit for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

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19. The Regional Board, at a properly noticed public meeting, heard and considered all comments pertaining to the discharge.

20. This Order supercedes Order Nos. 90-094 and 92-021 which are hereby rescinded.

21. This Order serves as a NPDES permit, pursuant to CWA Section 402, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator, US EPA, Region IX, has no objections.

**IT IS HEREBY ORDERED that the Dischargers, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder and the provisions of the Clean Water Act as amended and regulations and guidelines adopted thereunder, shall comply with the following:**

## A. DISCHARGE PROHIBITION

The Dischargers shall, within their respective jurisdictions, effectively prohibit the discharge of non-storm water (materials other than storm water) through their systems into waters of the United States. NPDES permitted discharges are exempt from this prohibition.

The following non-storm water discharges need not be prohibited provided such sources are identified and appropriate control measures to minimize the adverse impacts of such sources are developed and implemented under the Storm Water Management Plan in accordance with Provision C.5 of this Order.

a. water line and hydrant flushing;
b. landscape irrigation;
c. diverted stream flows;
d. rising ground waters;
e. uncontaminated groundwater infiltration;
f. uncontaminated pumped groundwater;
g. discharges from potable water sources;
h. foundation drains;
i. air conditioning condensate;
j. irrigation water;
k. springs;
l. water from crawl space pumps;
m. footing drains;
n. lawn or garden watering;
o. individual residential car washing;
p. flows from riparian habitats or wetlands;
q. dechlorinated swimming pool discharges; and
r. discharges or flows from emergency fire fighting activities;

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## B. RECEIVING WATER LIMITATIONS

1. The discharge shall not cause the following conditions to create a condition of nuisance or water quality impairment in waters of the State:
   a. Floating, suspended, or deposited macroscopic particulate matter, or foam;
   b. Bottom deposits or aquatic growths;
   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;
   d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and/or
   e. Toxic or deleterious substances present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge shall not cause a violation of any applicable water quality objective for receiving waters. If applicable water quality objectives are adopted and approved by the State Board after the date of the adoption of this Order, the Regional Board may revise and modify this Order as appropriate .

## C. PROVISIONS

1. The Dischargers shall demonstrate compliance with Discharge Prohibition A, and Receiving Water Limitations B.1 and B.2 through the timely implementation of their Storm Water Management Plan and any of its modifications, revisions, or amendments developed pursuant to this Order.

2. **Storm Water Management Plan and Performance Standards**

   a. The Dischargers shall begin implementing forthwith the Program's Storm Water Management Plan (Plan) as submitted on December 20, 1994, and shall subsequently demonstrate its effectiveness and provide for necessary and appropriate revisions, modifications, and improvements to it as required by Provision C.3 of this Order.

   b. The Storm Water Management Plan shall be revised to adopt and incorporate Performance Standards developed by the Dischargers. Performance Standards shall be established for implementing control measures and best management practices contained in the Implementation Plan chapter of the Storm Water Management Plan. Performance Standards should include appropriate criteria for the applicability, economic feasibility, design, operation, and maintenance or otherwise implementation of a control measure or best management practice so as to achieve pollutant reduction or pollution prevention benefits to the maximum extent practicable. Performance Standards may be based upon special studies or other activities conducted by the Dischargers, literature review, or special studies conducted by other programs or dischargers. Following the addition of a Performance Standard to the Storm Water

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Management Plan, all Dischargers for which the Performance Standard is applicable shall adhere to its implementation.

i. The following Performance Standards shall be the highest priority and shall be developed during Fiscal Year 1995-1996:

a) Industrial/Commercial Discharger Inspection Program -

A Performance Standard for conducting the Industrial/Commercial Inspection Program shall be developed and submitted to the Executive Officer by September 1, 1995. The Performance Standard shall include the baseline activities and items of an inspection check list. The "handbook of procedures for storm water inspections of industrial and commercial sources" to be developed by Alameda County will be used by the Dischargers as a basis for guidance to their activities.

b) Municipal Separate Storm Drain System Operations and Maintenance -

A Performance Standard for conducting routine operations and maintenance of the Dischargers' municipal storm drain systems shall be developed and submitted to the Executive Officer by March 1, 1996.

c) Water Utility Operations and Maintenance -

A Performance Standard for discharges associated with water utility operations shall be developed and submitted to the Executive Officer by July 1996. The State Board is considering issuing a NPDES General Permit for Discharges from Water Suppliers and Utility Companies (General Permit). The Performance Standard shall consider the control measures and best management practices defined in the General Permit.

Discharges associated with water utility operations owned or operated by the Dischargers are authorized and permitted by this Order, if they are in in accordance with the conditions of this provision and Provision C.5 of this Order and the Dischargers' Storm Water Management Plan.

ii. Beginning in September of 1996, the Dischargers shall incorporate newly developed or updated Performance Standards in each annual revision to the Storm Water Management Plan. The draft Annual Workplan required in Provision C.3 shall identify those Performance Standards which will be developed for the upcoming fiscal year.

3. **Annual Reports and Work Plans**

a. The Dischargers shall submit an Annual Report, by September 1 of each year,

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documenting the status of the Program's and the Dischargers' activities and tasks contained in the Storm Water Management Plan.

The Annual Report shall include a compilation of deliverables and milestones completed as described in the Storm Water Management Plan. As part of the Annual Report process, each of the Dischargers shall conduct an overall evaluation of the effectiveness of its applicable activities described in the Storm Water Management Plan. Measures of effectiveness may include, but are not limited to, conformance with established Performance Standards, quantitative monitoring to assess the effectiveness of control measures, detailed accounting of Program accomplishments, funds expended, or staff hours utilized. Methods to improve effectiveness in the implementation of tasks and activities including development of new, or modification of existing, Performance Standards, shall be identified where appropriate.

In each Annual Report, the Dischargers shall propose pertinent updates, improvements, or revisions to the Storm Water Management Plan, which shall be deemed to be incorporated into this Order unless disapproved of by the Executive Officer.

b. The Dischargers shall submit draft Workplans by March 1 of the following year which describes the proposed implementation of the Storm Water Management Plan for the next fiscal year.

The Workplans shall consider the status of implementation of current year activities and actions of the Dischargers, problems encountered, and proposed solutions, and shall address any comments received from the Executive Officer on their previous year Annual Report. The Workplans shall include clearly defined tasks, responsibilities, and schedules for implementation of Program and Discharger actions for the next fiscal year. The Workplans shall also include a proposal for development of new, or modification of existing, Performance Standards in accordance with Provision C.2.b and alternative monitoring activities as required in Provision C.4.

The Workplans shall be deemed to be incorporated into the Storm Water Management Plan and this Order as of July 1 unless determined to be unacceptable by the Executive Officer. The Dischargers shall address any comments received from the Executive Officer on their draft Workplans prior to the submission of their Annual Report on September 1, at which time the Workplans shall be deemed to be incorporated into the Storm Water Management Plan and this Order unless disapproved of by the Executive Officer.

4. **Monitoring Program**

The Dischargers shall submit by September 1 of each year, an Annual Monitoring Program Plan acceptable to the Executive Officer, that supports the development and implementation and demonstrates the effectiveness of the Storm Water Management Plan.

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The Monitoring Program Plan shall be designed to achieve the following objectives:

- Characterization of representative drainage areas and storm water discharges, including land use characteristics, pollutant concentrations, and mass loadings;
- Assessment of existing or potential adverse impacts on beneficial uses caused by pollutants of concern in storm water discharges, including an evaluation of representative receiving waters;
- Identification of potential sources of pollutants of concern found in storm water discharges; and
- Evaluation of effectiveness of representative storm water pollution prevention or control measures.

The Monitoring Program shall include the following:

a. Provisions for conducting and reporting the results of special studies conducted by the Program or Dischargers which are designed to determine effectiveness of best management practice or control measures, define a Performance Standard in accordance with Provision C.2, or assess the adverse impact of a pollutant or pollutants on beneficial uses.

b. Provisions for conducting watershed monitoring activities including; identification of major sources of pollutants of concern; and evaluation of the effectiveness of control measures and best management practices; and use of physical, chemical, and biological parameters and indicators as appropriate; and

c Identification and justification of representative sampling locations, frequencies and methods, suite of pollutants to be analyzed, analytical methods, and quality assurance procedures. Alternative monitoring methods in place of these (special projects, financial participation in regional, state, or national special projects or research, literature review, visual observations, use of indicator parameters, recognition and reliance on special studies conducted by other programs, etc.) may be proposed with justification. Such proposed alternative monitoring methods shall be included as a component of the Program draft Workplan as required in Provision C.3.

5. **Non-Storm Water Discharges**

The Dischargers shall identify and describe the categories of discharges of the non-prohibited types listed in Discharge Prohibition A. of this Order which they wish to exempt from the prohibition. For each such category, the Dischargers shall identify and describe as necessary and appropriate to the category, and incorporate into the Storm Water Management Plan, control measures to minimize the adverse impacts of such sources, procedures and Performance Standards for their implementation, procedures for

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notifying the Regional Board of these discharges, and procedures for monitoring and record management.

a. Discharges of non-storm water from sources owned or operated by the Discharges are authorized and permitted by this Order, if they are in in accordance with the conditions of this provision and the Dischargers' Storm Water Management Plan.

b. The Regional Board may require dischargers of non-storm water other than the Discharges to apply for and obtain coverage under a NPDES permit.

c. The Dischargers may propose, as part of their annual updates to the Storm Water Management Plan under Provision C.3 of this Order, additional categories of non-storm water discharges to be included in the exemption to Discharge Prohibition A.

6. **Watershed Management Measures**

The Dischargers shall develop and implement Watershed Management Measures defined in the Storm Water Management Plan and Workplans. Watershed Management Measures embrace many of the programmatic areas of activity within the Storm Water Management Plan, such as Metals Control Measures and New Development and Construction, and are designed to coordinate and integrate the goals and tasks of these activities in a way that recognizes that there may be unique values, problems, goals, and strategies specific to individual watersheds. Watershed Management Measures also seek to develop and implement the most cost effective approaches to solving identified problems and to coordinate these activities with other related programs. Examples of related goals and programs include: (1) protection of the San Francisco Bay-Delta Estuary under Section 320 of the Clean Water Act (San Francisco Estuary Project), (2) protection of coastal waters from nonpoint source pollution under the Coastal Zone Management Act, and (3) source water protection under the Safe Drinking Water Act.

7. **Storm Water Discharges Associated With Construction Activity**

Pursuant to Provisions C.2 and C.3 of this Order, the Dischargers may submit to the Executive Officer, proposed amendments to the Storm Water Management Plan which define Performance Standards and Best Management Practices and procedures for notifying the Regional Board for Construction Activities conducted by the Dischargers. Following incorporation into the Storm Water Management Plan, the applicable Dischargers shall implement such Construction Performance Standards and Best Management Practices pursuant to site specific Storm Water Pollution Prevention Plans to be developed pursuant to and accordance with Appendix B of this Order for all construction sites involving the disturbance of five or more acres of total land area.

Discharges of storm water from construction sites owned or operated by the Dischargers are authorized and permitted by this Order, if they are in in accordance with the conditions of this provision and the Dischargers' Storm Water Management Plan.

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8. It is anticipated that the Storm Water Management Plan may need to be modified, revised, or amended from time to time to respond to changed conditions and to incorporate more effective approaches to pollutant control. Requests for changes may be initiated by the Executive Officer or by the Dischargers. Minor changes may be made with the Executive Officer's approval and will be brought to the Regional Board as information items and the Dischargers and interested parties will be notified accordingly. If proposed changes imply a major revision in the overall scope of effort of the Program, the Executive Officer shall bring such changes before the Regional Board as permit amendments and notify the Dischargers and interested parties accordingly.

9. This Order may be modified, or alternatively, revoked or reissued, prior to the expiration date as follows:

   a. to address significant changed conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this Order;

   b. to incorporate applicable requirements of statewide water quality control plans adopted by the State Board or amendments to the Basin Plan approved by the State Board; or

   c. to comply with any applicable requirements, guidelines, or regulations issued or approved under Section 402(p) of the CWA, if the requirement, guideline, or regulation so issued or approved contains different conditions or additional requirements not provided for in this Order. The Order as modified or reissued under this paragraph shall also contain any other requirements of the CWA then applicable.

10. Each of the Dischargers shall comply with all parts of the Standard Provisions contained in Appendix A of this Order.

11. This Order expires on June 21, 2000. The Dischargers must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of such date as application for reissuance of waste discharge requirements.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on June 21, 1995.

ATTACHMENTS

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California Regional Water Quality Control Board
Santa Ana Region

PROPOSED BY RIVERSIDE COUNTY FLOOD

ORDER NO. 95-

NPDES NO. CA95

Waste Discharge Requirements
for the Riverside County Flood Control
and Water Conservation District,
the County of Riverside
and the Incorporated Cities of Riverside County
For Area-Wide Urban Stormwater Runoff
Within the Santa Ana Region of Riverside County

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter called Regional Board), finds that:

1. On January 3, 1995, the Riverside County Flood Control and Water Conservation District (RCFC&WCD) in cooperation with the County of Riverside and the Cities of Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside and San Jacinto (hereinafter collectively referred to as the Permittees), submitted National Pollutant Discharge Elimination System (NPDES) Application No. CA 95_____ for an area-wide stormwater discharge permit under the NPDES.

2. The 1972 Clean Water Act (CWA) recognized the need to prohibit the discharge of pollutants to surface water bodies from point sources such as industrial facilities and municipal sewage treatment plants. The discharge of pollutants from point sources is regulated by the NPDES permit system, which requires technology-based controls for treatment of wastewater. Stormwater point source discharges were exempt from the NPDES permitting requirements unless these discharges were contaminated by industrial/commercial activity. The Regional Board recognized the water quality problems associated with stormwater from industrial facilities and has issued a number of stormwater permits for such facilities in accordance with the United States Environmental Protection Agency (USEPA) regulations.

3. In 1976, the USEPA issued new regulations establishing a comprehensive permitting program for all stormwater discharges except for rural runoff uncontaminated by industrial/commercial activity. Channelized stormwater runoff continued to be defined as non-point source unless designated otherwise by the permitting authority.



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4. Since 1976, the USEPA has issued several revisions to the stormwater regulations. Section 405 of the Water Quality Act (WQA) of 1987 added Section 402(p) to the CWA. Pursuant to Section 402(p)(4) of the CWA, the USEPA was required to promulgate regulations for stormwater discharges associated with industrial activities and municipal separate storm drain systems serving a population of 100,000 or more, or area designated by the Director of the USEPA or permitting State agency.

5. On December 7, 1988, the USEPA published its proposed regulations for stormwater discharges in the Federal Register to solicit public comments. Final regulations were promulgated and published in the Federal Register on November 16, 1990.

6. The beneficial uses of a number of water bodies within Riverside County are threatened or impaired which may be in part due to urban stormwater runoff and non-stormwater flows from urbanized areas. These water bodies include the Santa Ana River, Reaches 3 and 4, Canyon Lake, Lake Elsinore, Lake Evans and Lake Mathews. A comprehensive stormwater and urban runoff management and regulatory program is essential for the protection of the water resources of the Region. The RCFC&WCD, the County of Riverside, the Cities in Riverside County, and the Regional Board have recognized this fact, and as a first step toward protecting water quality in the area, a comprehensive stormwater management program has been developed. This order outlines the existing programs and specifies additional requirements and/or modifications to achieve water quality objectives for the Riverside County drainage areas within the Santa Ana Region. The intent of this permit is to regulate pollutants associated with discharges of stormwater from municipal storm drain systems and improve water quality in the Region in a timely manner.

7. Within the Santa Ana Region, the RCFC&WCD serves a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The RCFC&WCD's storm drain system includes an estimated 200 miles of opened and closed storm drains, and the systems operated by the remaining Permittees include an estimated 57 miles of opened and closed storm drains.

8. The discharges from the municipal storm drain system consists of surface runoff generated from various land uses in all the hydrologic drainage areas which discharge into water bodies in Riverside County. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events and point source discharges permitted by the Regional Board under NPDES. The constituents of concern and significance in these discharges are: total and fecal coliform, enterococcus, total suspended solids, biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), oil and grease,



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heavy metals, nutrients, base/neutral and acid extractables, pesticides and herbicides, and petroleum hydrocarbon components.

9. There are several entities whose land/facilities drain into the Riverside County municipal storm drain systems operated by the Permittees. The RCFC&WCD operates approximately 85 percent of the storm drain systems within the Region, and has agreed to be the lead party in implementing the provisions of this order. The remaining storm drain systems are owned and operated by the County and Cities within the county and by the State Department of Transportation (Caltrans). The County of Riverside and the incorporated Cities within the county have agreed to cooperate with the RCFC&WCD in controlling and improving the quality of urban runoff from their respective areas. The RCFC&WCD has been named as the Principal Permittee and the County of Riverside and the incorporated Cities have been named as the Co-Permittees. Appendix B lists the incorporated Cities with their 1994 estimated populations. Of the eleven Cities, there are two Cities with an estimated 1994 population over 100,000. The Regional Board has issued a separate stormwater NPDES permit to Caltrans.

10. Due to the enormous variability in stormwater quality and the complexity of the urban runoff management program, this area-wide stormwater permit is categorized as a major NPDES permit. This area-wide stormwater permit requires all entities discharging stormwater/urban runoff into the storm drain systems or any surface water bodies to have appropriate controls for proper management of this runoff. The Regional Board has the discretion and authority to require non-cooperating entities to participate in this area-wide permit or obtain individual stormwater discharge permits, pursuant to 40 CFR 122.26(a). The entities listed in Appendix C are considered as potential permittees of stormwater to the Riverside County drainage areas. It is expected that these entities will also work cooperatively with RCFC&WCD, the County of Riverside and Cities to manage urban runoff.

11. The RCFC&WCD, as the Principal Permittee, will obtain (within its powers) the cooperation of all entities in implementing the provisions of this order. The Permittees have agreed upon the responsibilities as described in the November 19, 1991 Implementation Agreement. This agreement will be revised to reflect this order. In general, the RCFC&WCD, as the Principal Permittee, is responsible for the monitoring program, general overall education program, RCFC&WCD fiscal information, coordinating and submitting Permittee reports to the Regional Board and conducting inspections on RCFC&WCD's storm drain systems. The County of Riverside and the incorporated cities, as the Co-Permittees, will develop and implement site-specific compliance requirements, perform compliance monitoring and inspections, submit storm drain maps, fiscal and other information and compliance reports to the RCFC&WCD, exercise enforcement authority for achieving compliance with programs or BMPs, and review and implement



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stormwater management programs. The Regional Board will regulate stormwater discharges from state and federal facilities and activities, public utilities, and special districts and other stormwater discharges not under the jurisdiction of the Permittees.

12. The RCFC&WCD obtains its authority to control stormwater discharges, to prohibit discharges or connections to their facilities and to require compliance and carry out inspections of the storm drain systems within the District's boundaries from the RCFC&WCD Act. Various County and city ordinances which address industrial wastes and waste discharges, and land use within the unincorporated areas of Riverside County and Cities can be used by the Permittees to implement compliance activities. The Permittees have various forms of legal authority in place, such as charters, State Code Provisions for General Law Cities, city ordinances, and applicable portions of municipal codes and the State Water Code, to regulate stormwater/urban runoff discharges.

13. The RCFC&WCD has an active surface water quality monitoring program as described in detail in Appendix D of this Order. Initiatives to coordinate stormwater quality monitoring are being discussed at the federal, state and regional levels. These initiatives contemplate potential revisions in local stormwater monitoring programs including participation in special studies, increased data sharing, and modification of baseline data collection activities. It is anticipated that one or more of these initiatives may be implemented as early as fiscal year 1995/96. The Monitoring Program may be modified to reflect the participation of the Permittees in the coordinated monitoring programs or to reflect the findings of special studies.

14. A Water Quality Control Plan was adopted by the Regional Board on May 13, 1983. The Plan contains water quality objectives and beneficial uses of waters in the Santa Ana Region. On July 14, 1989, the Regional Board adopted a Basin Plan amendment, incorporating revised beneficial use designations for the ground and surface waters of the Region.

15. The requirements contained in this order are necessary to implement the Water Quality Control Plan.

16. An attempt has been made to incorporate all of the essential elements of the federal stormwater regulations in this permit.

17. Stormwater discharges to the storm drain systems in Riverside County within the Santa Ana Region are tributary to various water bodies of the State. The identified water bodies are as follows (only a portion of some of the water bodies



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listed below is within Riverside County):

A. Inland Surface Streams

a. Santa Ana River
Santa Ana River, Reaches 3 and 4

b. Tributary to South Bank Santa Ana River
Tequesquite Arroyo (Sycamore Creek)
Temescal Creek, Reaches 1, 2, 3, 4, 5 and 6
Temescal Tributaries
Coldwater Canyon Creek
Bedford Canyon Creek
Other tributaries to these creeks

c. Tributary to North Bank Santa Ana River
Day Creek
Sevaine Creek

d. San Jacinto River Basin
San Jacinto River, Reaches 1, 2, 3, 4, 5, 6 and 7
Bautista Creek - Headwaters to Debris Dam
Strawberry Creek
San Jacinto River, North Fork
Fuller Mill Creek
Stone Creek
Salt Creek
Other tributaries: Indian, Hurkey, Poppet and Potrero Creeks

e. San Timoteo Creek Area Streams
San Timoteo Creek, Reach 4
Little San Gorgonio Creek
Other Tributaries to these Creeks - Valley Reaches
Other Tributaries to these Creeks - Mountain Reaches

f. Reche Canyon
Reche Canyon

B. Lake and Reservoirs

a. Lake Evans
b. Lee Lake
c. Lake Mathews
d. Mockingbird Reservoir



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e. Canyon Lake
f. Lake Elsinore
g. Lake Fulmor
h. Lake Hemet
i. Lake Perris

The beneficial uses of these water bodies include municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PROC), groundwater recharge (GWR), water contact recreation (REC-1), non-contact water recreation (REC-2), warm freshwater habitat (WARM), cold freshwater habitat (COLD), wildlife habitat (WILD), and preservation of rare and endangered species (RARE). The beneficial uses of individual water bodies are shown on Appendix E.

18. Stormwater discharged from the storm drain systems operated by the County of San Bernardino drain into various water bodies in the project/permit area. These water bodies include the Santa Ana River and San Timoteo Creek and various mountain creeks. The County of San Bernardino has been issued an area-wide stormwater permit (Order No. 90- ) for effective control of the pollutants in the stormwater runoff discharged from its storm drain systems.

19. Numeric and narrative water quality standards exist (as found in the Basin Plan's Water Quality objectives) for the water bodies listed in Item No. 17 above. Currently, this Permit does not contain numeric limitations for any constituents because the impact of stormwater discharges on the water quality of the above named receiving waters has not been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. This order requires the Permittees to continue to monitor the stormwater discharges or begin monitoring as necessary, and to analyze the data. Additionally, since this order also requires development and implementation of BMPs by the Permittees, the pollutants in the stormwater runoff will be improved. The ultimate goal of the urban stormwater runoff management program is to attain water quality consistent with the water quality objectives for the receiving waters to protect the beneficial uses.

20. With respect to industrial activities, the Regional Board currently regulates discharges of point source process wastewater and non-process wastewater and stormwater discharges to storm drain systems through NPDES permits. Point source discharges other than stormwater will continue to be regulated by the Regional Board. Industrial stormwater dischargers are required to cooperate with the Permittees to control the discharge of pollutants in the stormwater runoff from individual facilities or to obtain individual industrial stormwater discharge or NPDES General Industrial or NPDES General Construction Permits from the Regional Board.



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21. Recognizing the need for public involvement and participation in the development and implementation of an effective stormwater/urban runoff management program, the Regional Board will conduct at least one workshop each year during the term of this permit. The purposes of the workshops will be to solicit comments and to inform the public of the progress of the program. Written comments submitted will be forwarded to the State Board, the USEPA, and the RCFC&WCD for their review and comments.

22. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act (CEQA) contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

23. The Regional Board has considered an antidegradation analysis, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the stormwater discharges are consistent with the Federal and State antidegradation requirements and a complete antidegradation analysis is not necessary.

24. The Regional Board has notified the Permittees and interested agencies and persons of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

25. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

IT IS HEREBY ORDERED that the Permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF PRINCIPAL PERMITTEE

The Principal Permittee shall be responsible to manage the program overall, including:

1. Conduct water quality and necessary hydrographic monitoring of the storm drain system as agreed to by the Executive Officer, as contained in the Consolidated Program for Water Quality Monitoring (Appendix D) and as noted in Section VI of this Order. Initiatives to coordinate stormwater quality monitoring are being discussed at the federal, state and regional levels. These initiatives contemplate potential revisions in local stormwater monitoring programs including participation in special studies, increased data sharing, and modification of baseline data collection activities. It is anticipated that one or more of these



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initiatives may be implemented as early as fiscal year 1995/96. The Monitoring Program may be modified to reflect the participation of the Permittees in the coordinated monitoring programs or to reflect the findings of special studies.

2. Implement uniform methods and criteria for storm drain system inspections by all Permittees as agreed to by the Executive Officer, as contained in the Reconnaissance Survey Implementation Plan (Appendix F) and as noted in Section IV of this Order.

3. Conduct inspections/surveillance for illegal discharges to the storm drain facilities within its jurisdiction (ownership) as noted in Section IV of this Order.

4. Implement management programs, and implementation plans within its jurisdiction and powers as required by this Order.

5. Prepare and submit to the Regional Board all the reports, plans and programs as required by this Order.

6. Monitor the implementation of the plans and programs to determine their effectiveness in attaining water quality objectives to the MEP (maximum extent practicable).

7. Coordinate all the activities with the Regional Board.

8. Enact legislation and ordinances as necessary to establish legal authority within the scope and powers of the RCFC & WCD Act.

9. Obtain public input for any proposed management and implementation plans.

10. Pursue enforcement actions as necessary to ensure compliance with stormwater management programs and implementation plans within the scope and powers of the RCFC & WCD Act.

11. Respond to or arrange for a response to emergency situations such as accidental spills, leaks, illegal discharges, illicit connections etc. to prevent or reduce the discharge of pollutants to storm drain systems and waters of the United States.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

The Co-Permittees shall be responsible to manage the program within their respective jurisdictions, including:

1. Conduct inspections/surveillance for illegal discharges to the storm drain facilities within their jurisdiction as noted in Section IV of this Order.



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2. Conduct and coordinate with the Principal Permittee any surveys and characterizations needed to identify pollutant sources and drainage areas

3. Review, comment and approve management programs, monitoring programs (not stormwater sampling), implementation plans and other elements of the overall program.

4. Implement management programs, monitoring programs (not stormwater sampling) implementation plans and other elements of the overall program within each respective jurisdiction as required by this Order.

5. Submit storm drain facility system maps with periodic revisions as necessary to the Principal Permittee.

6. Prepare and submit all reports and other information to the Principal Permittee in a timely manner with sufficient time for the group report to be submitted, in accordance with Section IX, to the Executive Officer.

7. Adopt resolutions and ordinances as necessary to establish legal controls required for direction of staff or to enable enforcement action to prevent or prosecute stormwater pollution violations.

8. Pursue enforcement actions as necessary to ensure compliance with the stormwater management programs and the implementation plans.

9. Respond to or arrange for a response to emergency situation(s) such as accidental spills, illegal discharges, illicit connections, etc. to prevent or reduce the discharge of pollutants to the storm drain facilities and waters of the United States.

## III. GENERAL REQUIREMENTS

1. The Permittees shall prohibit illegal discharges from entering into the municipal storm drain facilities. Discharges conditionally allowed to enter storm drain facilities are specified in Section IV.

2. The Permittees have developed and begun implementation of best management practices (BMPs) to control discharges of pollutants to the maximum extent practicable to the waters of the United States. The BMPs so developed, are found in the Santa Ana Drainage Area Management Plan (DAMP) (Appendix G). The DAMP shall be up-dated and revised, if necessary, in accordance with Section IX (REPORTING).



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## IV. ILLEGAL DISCHARGE CONTROL PROGRAM

1. The Permittees shall implement the Reconnaissance Survey Implementation Plan as developed by the Permittees, as the result of Order 90-104, and included in this Order as Appendix F. In addition or modification to said Plan the following shall apply:

   A. Storm drain systems not previously inspected must be inspected for illegal discharges and illicit connections during the first permit year. This applies to pipes 36 inches and larger built before June 1990 and channels with a bottom width larger than two feet or a depth greater than three feet.

   B. Underground storm drains previously inspected need not be inspected during this permit period.

   C. Channels will be inspected during the third year of the permit period for illegal discharges and illicit connections.

   D. All illicit connections identified shall be eliminated during this permit period.

   E. All illicit discharges identified shall be traced to their source and the source eliminated or permitted by the Regional Board.

   F. A yearly report shall be submitted to the Regional Board, by the month and day specified in Section IX (REPORTING), and shall include the following information:

      1. List of all drainage facilities inspected preformed during the year.

      2. List of all illegal and illicit connections and discharges found during the year and all previously found that have not been eliminated or permitted by the Regional Board.

      3. Information of all inspections, enforcement or other actions taken regarding illegal discharges, illicit connections, illegal disposal of wastes, etc. to public right of ways, public properties or receiving waters, that may or does cause water pollution.

      4. A description of how the Permittees preformed all the actions/duties listed above.

      5. A Reconnaissance Survey Implementation Plan updated from the



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previous permit period shall be submitted in the first permit year. The up-date shall be complete with reporting forms and how the forms are processed, public personnel/inspector training information or process, who the internal enforcement agency or personnel are and the legal authority used (i.e. laws, ordinance, etc.) for enforcement. If an outside agency preforms the enforcement (i.e. a city has the County Environmental Health Department for enforcement) the agreement needs to be cited and the enforcement process described.

6. The up-dated Reconnaissance Survey Implementation Plan shall be submitted in accordance with Section IX REPORTING. Previous reconnaissance plans and reports have been submitted and are accepted by the Board; no retroactive revisions will be made other than those noted herein.

## V. DRAINAGE AREA MANAGEMENT PLAN

Submittals made for the DAMP under order 90-104 have been accepted and no revisions are required unless stated in this Order.

1. The Permittees have developed and are implementing Santa Ana Regional DAMP which is included in this Order as Appendix G. This plan has been approved by the Executive Officer and will meet the requirements of this section if properly implemented. Appendixes H through L included with this Order and noted below are the result of development of different portions of the DAMP. These Appendixes H through L are hereby included in the DAMP as DAMP Supplements A through E ; as noted below.

| | |
|---|---|
| Appendix H | New Development Conditions Supplement "A" |
| Appendix I | Education Program Outline Supplement "B" |
| Appendix J | Stormwater Ordinance Supplement "C" |
| Appendix K | Soil Erosion Control Ordinance Supplement "D" |
| Appendix L | NPDES Reporting Forms Supplement "E" |

2. The DAMP shall be reviewed, evaluated and revised as needed by the Permittees and an updated DAMP shall be submitted in accordance with Section IX (REPORTING). The Permittees shall address all the best management practices (BMPs) in the DAMP and its Supplements as well as the following:

   A. Enforcement procedures/programs established by the cities and County for the enforcement of the Stormwater and the Soil Erosion Control ordinances.



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B. BMPs or stormwater pollution prevention plans (SWPPPs) used by the Co-Permittees at their facilities, buildings and yards.

C. Hazardous/toxic waste collection programs.

D. Hazardous/toxic spill response

E. Cooperative action taken with or for the state in conjunction with the state's NPDES Construction General Permit.

F. Cooperative actions taken with or for the state in conjunction with the state's NPDES Industrial General Permit.

G. A listing of all of the Permittees' facilities or projects that are permitted with the NPDES Industrial or Construction General Permits.

3. The Permittees shall submit a DAMP progress report, except during the second permit year, assessing the progress of implementation of the DAMP and evaluating the effectiveness of the BMPs developed for the stormwater discharges. The yearly progress report will also address all of the items A through G listed in Section V.2 DRAINAGE AREA MANAGEMENT PLAN. The DAMP progress report will be submitted in accordance with the schedule in Section IX (REPORTING).

## VI. WATER QUALITY MONITORING

1. The Principal Permittee shall implement the Consolidated Program for Water Quality Monitoring (CPWQM) included in this Order as Appendix D. The CPWQM was developed by the RCFC&WCD to address water quality monitoring in Regions 8 and 9 as a program for stormwater system monitoring, receiving water monitoring and data analysis of the monitoring. The CPWQM was written to also include monitoring in Region 7 once a permit is issued.

   The Board supports the concept of a consolidated monitoring program as long as the particular issues of concern of this Regional Board are addressed. In general, a study or pilot program in one Region will be acceptable by this Board as it is deemed to apply and need not be repeated in the Santa Ana River watershed.

2. In addition to implementing the CPWQM the Permittees shall include in their monitoring program the following:

   A. The CPWQM shall have the following purposes:

      1. To assess the quality of stormwater entering receiving waters.



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2. To assess water quality status or changes in the receiving waters.

3. To provide a basis for mass loading estimates.

4. To provide support to the Illegal Discharge Control Program for the investigation and discovery of illegal discharges or sources of stormwater pollutants.

5. To characterize pollutants 'produced' by different land uses.

6. To support the selection, modification, or evaluation of BMPs implemented from the DAMP.

B. In general the CPWQM shall be supportive of the other programs and activities of the overall NPDES Stormwater Program.

3. Data Analysis Report

A. The results of the chemical analysis and quantitative data (such as flow, precipitation, and discharge data) shall be compiled according to the drainage area and storm events monitored. The mass loading rates for the pollutant of concern shall be calculated.

B. An evaluation shall be performed for the calculated mass loading rates from the stormwater and receiving water monitoring. Any impact of the discharges from the storm drainage systems on the receiving waters shall be discussed, starting with the most significantly impacted receiving water bodies. The evaluation shall be concluded with recommendations and the corrective actions proposed for any resulting discrepancies.

4. The RCFC&WCD shall continue the implementation the CPWQM and shall submit a CPWQM progress report and Data Analysis report on the dates specified in Section IX (REPORTING).

## VII. FISCAL ANALYSIS

1. A Fiscal Analysis report shall be submitted to the Regional Board on the dates specified in Section IX (REPORTING). The report shall include information on or an analysis of the following:

A. Each Permittee's expenditures for the previous fiscal year.

B. Each Permittee's budget for the current fiscal year.



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C. A description of the source of funds for items 1 and 2

D. Contract services (relating to the NPDES Program) - describing the service provided and the amount charged for the service.

E. A list of staff, type of work, estimated time dedicated to the stormwater program and estimated cost.

## VIII. PROGRAM ANALYSIS

1. Each year the Principal Permittee shall conduct an analysis of the effectiveness of the overall stormwater management program. If the water quality objectives of the receiving waters are violated as a result of urban stormwater runoff discharges, the Principal Permittee shall identify proposed action(s) which intend to result in the attainment of the water quality objectives. The Principal Permittee shall also propose a time schedule to implement the new action(s).

2. The Program Analysis Report shall provide information explaining or showing the institutional arrangements of the Permittees as a group and individually and the legal authority each has to implement or enforce the various programs of this Order as follows:

   A. a macro flow chart showing all the Permittees and their relationship with each other and other key agencies;

   B. a micro flow chart showing the internal relationships between each Permittee's departments and any external agencies;

   C. a chart of all the BMPs, programs, and actions and the responsible party; and

   D. a copy of all agreements for the implementation or performance of services related to the NPDES Stormwater Program. Once submitted, such agreements need not be submitted the following years.

3. An evaluation of each BMP from the DAMP and other program elements prescribed in this Order implemented by each individual Permittee shall be included with the Program Analysis Report. The Principal Permittee shall develop standard reporting forms and methods for the evaluation. The proposed evaluation forms shall be submitted to the Regional Board for review and approval six months prior to submittal of the Program Analysis Report.

4. Existing data and information pertinent to this program shall be updated annually



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and submitted as part of the Program Analysis Report; unless covered elsewhere in this Order. The existing information and data to be updated shall include but not be limited to:

A. Any changes or additions in storm drainage facilities, new outfalls, or any new major structural controls.

B. Identification of land uses in each drainage area that is sampled during the previous year. The map shall show the storm drain system, drainage boundaries, sampling location and the following groups of land uses: commercial; industrial (including hospitals); parks, schools, and churches; residential; undeveloped and rural (less than one house per two-acres); and agriculture.

C. Any additional industries subject to the State's General Industrial Activities Stormwater Permit identified during the last year.

## IX. REPORTING

1. All reports shall be signed by the Principal Permittee or duly authorized representative of the Permittees and shall be submitted to the Regional Board under penalty of perjury.

2. The Permittees shall be responsible for the submittal of the needed information, forms, data, or other materials needed to meet the requirements of each and every submittal with or without request from the Principal Permittee or the Regional Board to the Principal Permittee. Said information, forms, data, or other material submitted for reporting to the Regional Board shall be signed by a duly authorized representative of that Permittee under penalty of perjury.

3. Reports or submittals required in the previous sections of this Order shall be submitted in accordance with the following schedule:

| | Submittal/Report | Frequency | Date |
|---|---|---|---|
| A. | Water Quality Monitoring<br>1. Stormwater<br>2. Receiving Waters<br>3. Data Analysis | Yearly | August 31 |



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| | | | |
|---|---|---|---|
| B. | Progress Report<br>1. Fiscal Analysis<br>2. Program Analysis<br>3. Existing Data Update<br>4. DAMP Progress<br>5. Program Management | Yearly | September 30 |
| C. | Illegal Discharge Control<br>1. Personnel Training/Reports<br>2. Facility/Channel Survey<br>3. Monitoring Investigations<br>4. Construction Controls<br>5. Illegal Reports & Actions<br>6. Enforcement Actions | Yearly | October 31 |
| D. | DAMP Revision | Once | July 31, 1997 |
| E. | Reconnaissance Survey Implementation Plan/ Illegal Discharge Control Program Revision | Once | June 30, 1996 |

X. EXPIRATION AND RENEWAL

1. This Order expires on July 1, 2000 and the Permittees must file a Permit Renewal Application in accordance with Title 23, Division 3, Chapter 9 of the California Code of Regulations as applicable not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. This Permit Renewal Application shall include, but not be limited to, the following:

   A. Summary of the results of the Monitoring Program.

   B. Summary of the DAMP BMPs implemented and evaluations of their effectiveness.

   C. Summary of the Illegal Discharge Control Program

   D. Evaluation of the need for additional BMPs, source control,and other control measures.

   E. Proposed plan of urban stormwater runoff quality management activities that will be undertaken during the term of the next Order.



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F. Any significant changes to the storm drain systems, outfall, detention or retention basins or dams, and other controls.

## XI. CERTIFICATION

This Order shall serve as a NPDES permit pursuant to Section 402(p) of the Clean Water Act, or amendments thereto, and shall become effective 10 days after date of its adoption, provided that the Regional Administrator of the Environmental Protection Agency has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Gerard J. Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Control Board, Santa Ana Region, on June 29, 1995.

Gerard J. Thibeault
Executive Officer



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I. GENERAL REQUIREMENTS

A. The following entities (permittees) are subject to the terms and conditions of this Order and shall cooperate in the development and implementation of a comprehensive county-wide storm water/urban runoff management program:

| Cities | County | Other |
|---|---|---|
| Carlsbad | San Diego | San Diego Unified Port District |
| Chula Vista | | |
| Coronado | | |
| Del Mar | | |
| El Cajon | | |
| Encinitas | | |
| Escondido | | |
| Imperial Beach | | |
| La Mesa | | |
| Lemon Grove | | |
| National City | | |
| Oceanside | | |
| Poway | | |
| San Diego | | |
| San Marcos | | |
| Santee | | |
| Solana Beach | | |
| Vista | | |

B. The permittees shall approve and sign the Memorandum of Understanding submitted as part of the Permit Application. The Permittees will submit a copy of the signed legally binding Memorandum of Understanding to the Regional Board within 30 days of the adoption of this Order. Any revisions to the Memorandum of Understanding shall be forwarded to the Executive Officer within 30 days of approval by all the permittees.

C. The permittees shall prohibit illicit/illegal discharges from entering into storm water conveyance systems. Discharges conditionally allowed to enter storm water conveyance systems are specified in Item No. VIII below.

D. As specified in Item No. IX, the permittees shall implement best management practices (BMPs) developed during the previous permit period. In addition, the permittees shall develop and implement additional BMPs according to the schedule specified in Item No.IX. Other BMPs that the Executive Officer determines appropriate to control or reduce the discharge of pollutants to waters of the United States to the maximum extent practicable will be developed as

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necessary. In developing the BMP practices, the permittees shall consider the water quality objectives of all the receiving waters and emphasize pollution prevention.

E. The permittees shall ensure that BMPs are implemented by entities discharging to the storm water conveyance systems within their area of jurisdiction.

II. RESPONSIBILITIES OF PRINCIPAL PERMITTEE

The principal permittee, as a minimum, shall be responsible for the overall program management or coordination as specified in the proposed Memorandum of Understanding.

III. RESPONSIBILITIES OF COPERMITTEES

The copermittee, as a minimum, shall be responsible for management of storm water and urban runoff management programs within their jurisdictions as specified in the proposed Memorandum of Understanding.

IV. RESPONSIBILITIES OF THE MANAGEMENT COMMITTEE

The Management Committee, as a minimum, shall be responsible for the tasks specified in the proposed Memorandum of Understanding.

V. FISCAL ANALYSIS

A. By January 15 of each year, a fiscal analysis of the capital and operation and maintenance expenditures necessary to accomplish the activities of the proposed plans and programs shall be performed by each permittee and the results submitted to the principal permittee. The principal permittee will submit a collated report to the Regional Board by January 31 of each year.

B. By July 15 of each year a fiscal analysis of the previous fiscal years expenditures shall be performed by each permittee and the results submitted to the principal permittee. The principal permittee will submit a collated report to the Regional Board by July 31 of each year.

C. The report will follow a format so that the following information can be determined from it:

Total Budget
Source of Funding

Budget Specifics:

| Program Element | Proposed | Previous |
|---|---|---|

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| | Expenditure | Year Expenditure |
|---|---|---|
| Program Management | | |
| Illicit Connection/ Illegal Discharge Program | | |
| Illicit Connections | | |
| Field Screening | | |
| Other (provide details as necessary) | | |
| BMP Program | | |
| Public Education | | |
| Other BMPs (provide details as necessary) | | |
| Monitoring | | |

D. At the time that the municipal budget is passed, the permittee must submit a copy of the portion showing the appropriations relevant to the storm water program. If the appropriation is significantly different than the proposed budget, the permittee must also submit a revised plan showing how the budget changes will be made.

VI. LEGAL AUTHORITY

A. Permittees who did not provide proof of adequate legal authority during the previous permit period will provide that proof within 30 days of the adoption of this order. For most permittees, adequate legal authority has taken the form of an ordinance passed by their governing body that follows the form of the model ordinance.

B. At any time that the legal counsel for the permittee finds that their legal authority is not sufficient to enforce the terms of the permit, they must seek additional authority.

C. At the time the Regional Board adopts a policy on Non-Storm Water Discharges, permittees will be required to obtain the legal authority to implement that policy.

VII. STORM WATER/RECEIVING WATER MONITORING PROGRAM

A. The permittees shall continue to implement the monitoring program currently in effect with the adjustments outlined in Attachment A. The permittees will review the monitoring program annually and suggest changes. Proposed changes to the monitoring program shall be subject to the approval of the Executive Officer.

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B. The Executive Officer of the Regional Board will review the monitoring program annually and make changes to it as necessary.

C. A report on the monitoring program will be submitted on July 31 of each year by the principal permittee, including recommendations for the following year.

VIII. ILLICIT CONNECTION/ILLEGAL DUMPING DETECTION PROGRAM

IX. BEST MANAGEMENT PRACTICES PROGRAM

A. The permittees will implement all of the following BMPs within 180 days of the adoption of this order:

1. Establish a public education program including the following elements:
   - A. Establish or improve an areawide catch basin stenciling program to discourage dumping, discarding, and/or discharge of pollutants or debris into storm water conveyance systems.
   - B. Develop programs to promote, publicize and facilitate public reporting of illegal discharges and/or dumping.
   - C. Develop/augment public education and outreach programs on the topic of catch basins and storm water conveyance systems and their intended purpose.
   - D. Encourage owners and occupants of homes or businesses to remove dirt, rubbish, and debris from their sidewalks and alleys which may contribute pollutants to urban runoff (i.e, sweep and discard in trash).
   - E. Encourage recycling of oil, antifreeze, glass, plastic, and other materials to prevent their improper disposal into the storm water conveyance system.
   - F. Encourage the proper disposal of household hazardous wastes to prevent the improper disposal of such materials to the storm water conveyance system.
   - G. Encourage the proper use and conservation of water to minimize runoff from landscaped areas, lawns, golf-courses, etc.
   - H. Educate all municipal departments and personnel on the requirements of the storm water program and on ways that the municipality can comply and encourage compliance with those requirements.
2. Provide catch basin and storm water channel cleaning when and where needed.

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3. Increase cleaning frequency and number of roadside and beach trash receptacles in areas where needed.

4. Increase street sweeping in areas where needed.

5. Create or augment a program to eliminate the improper disposal of litter, lawn/garden clippings, and pet feces into the street or areas where runoff may carry these pollutants to the storm drainage system.

6. Participate in recycling and Household Hazardous Waste programs.

7. Incorporate storm water quality BMPs into the requirements for all construction projects within the municipal jurisdiction.

B. During the first year of the five year permit period (FY 1995-96), in addition to the implementation of the baseline BMPs, permittees will also develop a Municipal Source Control Program. This program will focus on control of pollutants from all city activities and city facilities such as corporation yards, and city maintenance facilities. Tasks will include:

Identification of all municipal activities which can lead to storm water pollution. These can include, but are not limited to vehicle maintenance, painting, landscape maintenance and weed control, water body maintenance including swimming pool maintenance, construction and maintenance of streets and roads, construction and maintenance of flood control system and drinking water system activities;

Identification of pollutants and potential paths of pollution associated with these activities;

Development of SWPPP for municipal facilities such as corporation yards and vehicle maintenance facilities;

Development of a program for inspection of municipal facilities including methodology and schedule.

Development of a BMP program, stressing pollution prevention for all municipal activities. This should include a focused education program for city employees;

Development of a schedule for implementing the BMP and inspection programs, including activities that can be implemented immediately, activities that can be implemented in the short term, and activities that can be implemented over the long term.

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C. By July 15, 1996 permittees will provide the principal permittee with a report on their BMP program. This will include a report on their baseline program activities and a report on all of the tasks listed above. In addition, they will provide a schedule for implementation of the Municipal Source Control. Tasks that are identified for immediate implementation, including education programs should be implemented immediately without waiting for Regional Board approval.

D. During the second year of the five year permit period (FY 1996-97), permittees will continue to implement the seven baseline BMPs, the Municipal Source Control program and will evaluate the need for additional BMPs.

Permittees will also evaluate their program under baseline BMP Number Seven, and develop a more comprehensive Construction Source Control program for managing runoff from new development and redevelopment both for projects that are covered by the State Construction General Permit and projects that are under five acres. Tasks will include:

Evaluation of the current grading ordinance and planning department requirements;

Evaluation of construction site management;

Evaluation of training and outreach efforts;

Evaluation of required control measures;

Development of an inspection program or a program for integrating storm water inspection requirements into current inspection programs.

Development of a BMP program for new construction and redevelopment that addresses the deficiencies uncovered by this evaluation;

Development of a schedule for implementing the BMP program, including activities that can be implemented immediately, activities that can be implemented in the short term, and activities that can be implemented over the long term.

E. By July 15, 1997 permittees will provide the principal permittee with a report on their BMP program. This will include a report on their baseline program activities, the program for municipal facilities and a report on all of the

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tasks listed above. In addition, they will provide a schedule for implementation of their Construction Source Control program. Tasks that are identified for immediate implementation, including education programs should be implemented immediately without waiting for Regional Board approval. Permittees will also report on the adequacy of their grading ordinance and provide a plan and schedule for obtaining adequate legal authority if the current ordinance is not adequate.

F. During the third year of the five year permit period, permittees will continue to implement the seven baseline BMPs and the Municipal Source Control Program, and will evaluate the need for additional BMPs.

Permittees will also develop a Commercial Source Control program. Tasks will include:

Evaluation of existing program;

Identification of all commercial sources;

Identification and categorization of pollutants associated with these sources;

Development of a BMP program for commercial facilities including an education program targeting specific types of facilities;

Development of a schedule for implementing the BMP program, including activities that can be implemented immediately, activities that can be implemented in the short term, and activities that can be implemented over the long term;

Development of procedures and a schedule for inspecting commercial facilities or a program for integrating storm water inspection requirements into current inspection programs.

G. By July 15, 1998 permittees will provide the principal permittee with a report on their BMP program. This will include a report on their baseline program activities, their Municipal Source Control Program, their Construction Source Control Program, and a report on all of the tasks listed above. In addition, they will provide a schedule for implementation of their Construction Source Control program, including the inspection schedule. Tasks that are identified for immediate implementation, including education programs should be implemented immediately without waiting

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for Regional Board approval.

H. During the fourth year of the permit period (FY 1998-99) permittees will continue to implement the seven baseline BMPs, the existing source control programs, evaluate the need for additional BMPs and begin implementation the Commercial Source Control program.

Permittees will also develop an Industrial Source Control program to complement the State industrial program. The Regional Board will cooperate with this effort by providing information wherever possible. Tasks will include:

Evaluation of existing program;

Identification of all industrial sources;

Identification of pollutants associated with these sources;

Development of a BMP program for industrial facilities including an education program targeting specific types of facilities;

Development of a schedule for implementing the BMP program, including activities that can be implemented immediately, activities that can be implemented in the short term, and activities that can be implemented over the long term;

Development of procedures and a schedule for inspecting industrial facilities in cooperation with the State program or a program for integrating storm water inspection requirements into current inspection programs.

I. By July 15, 1999 permittees will provide the principal permittee with a report on their BMP program. This will include a report on their baseline program activities, all of their Source Control Programs, and a report on all of the tasks listed above. In addition, they will provide a schedule for implementation of their Industrial Source Control Program. Tasks that are identified for immediate implementation, including education programs should be implemented immediately without waiting for Regional Board approval.

J. During the fifth year of the permit period permittees will continue to implement the seven baseline BMPs and will evaluate the need for additional BMPs. Permittees will continue to implement their previously identified Source Control Programs and will begin implementation

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of the program for control of Industrial sources. In addition, permittees will do an internal audit on all of their BMPs and evaluate what changes need to be made. The results of this audit will be used to prepare the permit application for the next permit.

K. By July 15, 1999 permittees will provide the principal permittee with a report on their BMP program. This will include a report on their baseline program activities and on the implementation of all of their source control programs.

X. PROGRAM ANALYSIS

The permittees shall conduct an annual analysis of the effectiveness of the overall storm water pollution control management program in their areas of jurisdiction.

XI. REPORTING AND SCHEDULE

A. A summary of tasks to be completed and reports submitted is as follows:

**Within 30 days of the adoption of this order:**

The Memorandum of Understanding must be signed and submitted to the Regional Board.

Permittees who had not obtained adequate legal authority through passage of an ordinance during the first permit period must submit evidence of adequate legal authority.

**Within 180 days of the adoption of this order:**

Permittees who had not developed an adequate BMP program during the first permit period, which addresses all of the seven baseline BMPs must submit evidence of an adequate program.

**By January 31, 1996:**

A proposed storm water management program for FY 1996-97 including:

A Fiscal Analysis of the proposed program;

An illicit discharge program including field screening;

A proposed monitoring program;

A proposed BMP program.

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**By July 31, 1996:**

An analysis of the FY 1995-96 storm water management program with an explanation on significant changes to the proposed program including:

A Fiscal Analysis of the actual expenditures;

A report on the results of the illicit discharge and field screening programs;

A report on the results of the monitoring program;

A report on the existing BMP program;

A report on the tasks identified under the municipal source control program; and

An analysis of the overall program and program effectiveness.

**By January 31, 1997:**

A proposed storm water management program for FY 1997-98 including:

A Fiscal Analysis of the proposed program;

An illicit discharge program including field screening;

A proposed monitoring program;

A proposed BMP program.

**By July 31, 1997:**

An analysis of the FY 1996-97 storm water management program with an explanation on significant changes to the proposed program including:

A Fiscal Analysis of the actual expenditures;

A report on the results of the illicit discharge and field screening programs;

A report on the results of the monitoring program;

A report on the existing BMP program;

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A report on the Construction Source Control program with an implementation schedule;

A report on the grading ordinance; and

An analysis of the overall program and program effectiveness.

**By January 31, 1998:**

A proposed storm water management program for FY 1998-99 including:

A Fiscal Analysis of the proposed program;

An illicit discharge program including field screening;

A proposed monitoring program;

A proposed BMP program.

**By July 31, 1998:**

An analysis of the FY 1997-98 storm water management program with an explanation on significant changes to the proposed program including:

A Fiscal Analysis of the actual expenditures;

A report on the results of the illicit discharge and field screening programs;

A report on the results of the monitoring program;

A report on the existing BMP program;

A report on the Commercial Source Control program with an implementation schedule;

And an analysis of the overall program and program effectiveness.

**By January 31, 1999:**

A proposed storm water management program for FY 1999-2000 including:

A Fiscal Analysis of the proposed program;

An illicit discharge program including field screening;

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A proposed monitoring program;

A proposed BMP program.

**By July 31, 1999:**

An analysis of the FY 1998-99 storm water management program with an explanation on significant changes to the proposed program including:

A Fiscal Analysis of the actual expenditures;

A report on the results of the illicit discharge and field screening programs;

A report on the results of the monitoring program;

A report on the existing BMP program;

A report on the Industrial Source Control program with an implementation schedule; and

An analysis of the overall program and program effectiveness.

**By January 17, 2000:**

A permit application for the NPDES storm water permit to be adopted in July, 2000.

**By July 31, 2000:**

An analysis of the FY 1999-2000 storm water management program with an explanation on significant changes to the proposed program including:

A Fiscal Analysis of the actual expenditures;

A report on the results of the illicit discharge and field screening programs;

A report on the results of the monitoring program;

A report on the existing BMP program; and

An analysis of the overall program and program effectiveness.

B. All reports and information required herein shall be submitted to the Executive Officer of the Regional

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**DRAFT** April 13, 1995 11:59 am

California Regional Water Quality Control Board
San Diego Region
ORDER NO. 95-??
NPDES NO. CA
Waste Discharge Requirements
for Storm Water/Urban Runoff
from the County of San Diego
the
Incorporated Cities of San Diego County
and the San Diego Unified Port District

The California Regional Water Quality Control Board, San Diego Region (hereinafter RWQCB), finds that:

1. Section 405 of the Water Quality Act of 1987 added § 402(p) to the Clean Water Act (33 U.S.C. § 1251 et seq. (1977)) (hereafter CWA) requiring permits for storm water discharges from municipal separate storm water conveyance systems and prohibits non-storm water discharges into these systems. On November 16, 1990, the United States Environmental Protection Agency (EPA) published regulations for storm water discharges pursuant to § 402(p) of the CWA. This Order was prepared to meet the RWQCB Water Quality Control Plan, San Diego Basin (9), (September 8, 1994) (hereafter Basin Plan) requirements and to satisfy EPA's regulations on applying for a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharges from separate municipal storm water conveyance systems.

2. The following entities are currently permitted under Order No. 90-42 for storm water/urban runoff discharges. Order No. 90-42 expires July 16, 1995. The application for renewal of Order No. 90-42 was received on January 17, 1995.

| Cities | County | Other |
|---|---|---|
| Carlsbad | San Diego | San Diego Unified Port District |
| Chula Vista | | |
| Coronado | | |
| Del Mar | | |
| El Cajon | | |
| Encinitas | | |
| Escondido | | |
| Imperial Beach | | |
| La Mesa | | |
| Lemon Grove | | |
| National City | | |
| Oceanside | | |

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Poway
San Diego
San Marcos
Santee
Solana Beach
Vista

3. Each watershed in the permitted area has specific characteristics and water quality problems. A **watershed** is defined as a drainage area or basin in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower elevation. The tasks performed under this Order should include a consideration of all of the specific characteristics and problems of the watershed. Cities should work together to develop unified approaches in their shared watersheds.

4. Storm water/urban runoff from the County of San Diego, all cities in San Diego County and the area under the jurisdiction of the San Diego Unified Port District (SDUPD) contribute to violations of water quality standards and/or are significant contributors of pollutants to waters of the United States. Storm water as defined in 40 C.F.R. § 122.26(b)(13) means "storm water runoff, snow melt runoff, and surface runoff and drainage." **Table 1**, summarizes water quality standard violations to which storm water/urban runoff discharges from various entities in San Diego County contribute. Consequently, the County of San Diego, all the incorporated cities in the San Diego County, and SDUPD are named as Permittees in this Order.

5. Water quality studies have shown that urban runoff typically contains significant quantities of pollutants which adversely affect water quality in receiving waters. A comprehensive storm water/urban runoff management program is essential for the protection of the water resources of the region. To establish an effective county-wide storm water/urban runoff pollution control management program, it is necessary to name all incorporated cities in San Diego County, the SDUPD, and the County of San Diego as Permittees in this Order. In the County of San Diego, areas subject to the terms and conditions of this Order are those unincorporated areas within the County of San Diego's **Urban Limit Line** (define). The remaining areas subject to the terms and conditions of this Order are within the boundary lines of the incorporated cities, and the lands under the jurisdiction of the SDUPD.

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6. The discharges consist of surface runoff generated from various land uses and activities in hydrologic drainage areas which discharge into receiving waters in San Diego County. The quality and quantity of these discharges are affected by land use, basin hydrology and geology, season, the frequency and duration of storm events, the presence of illicit connections and illegal discharges, human activities, and waste management and disposal practices. The parameters and pollutants of potential concern and significance in these illegal discharges may include, but are not limited to pH, fecal coliform, total coliform, fecal streptococcus, enterococcus, volatile organic carbon (VOC), surfactants (MBAS), oil and grease, petroleum hydrocarbons, total suspended and settleable solids, total organic carbon, biochemical oxygen demand (BOD), chemical oxygen demand (COD), lead, copper, chromium, cadmium, silver, nickel, zinc, cyanides, phenols, nutrients (e.g., nitrogen, nitrate, phosphate, etc.), and biocides (e.g., pesticides). Since storm water contains "waste" as defined in California Water Code (CWC) § 13050, storm water discharges constitute discharges of waste. Consequently such discharges are subject to CWC § 13260 et seq., as well as CWA § 402 as amended.

7. This Order requires the Permittees to have legal authority to require the prevention and control of pollutants in storm water/urban runoff discharges, prohibit illegal discharges and control spills, and require compliance with storm water/urban runoff management programs and carry out inspections of the drainage facilities in their area of jurisdiction. Various forms of legal authority, such as charters, State Code provisions for General Law cities, city ordinances and applicable portions of Municipal Codes and the State Water Code may be used. Where an individual Permittee does not already have the legal authority to do so, the Permittee must establish the legal authority to control pollutants in storm water/urban runoff discharges to receiving waters of the United States.

8. This Order requires the Permittees to sign the Memorandum of Understanding (MOU) submitted with the permit application which defines the roles and responsibilities of each of the parties.

9. This Order requires the Permittees to develop a comprehensive county-wide storm water/urban runoff management program consisting of a management structure

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which allows implementation of all of the program elements; adequate legal authority; adequate fiscal resources; a program to find and eliminate illicit connection and illegal discharges to the storm water conveyance system; a program of Best Management Practices to eliminate pollutants from entering the storm water conveyance system that addresses Residential, Industrial, Commercial and Construction sources; and a monitoring and field screening program. Permittees will implement programs to ensure that entities discharging storm water into storm water conveyance systems take steps to prevent, control or reduce discharges of pollutants to waters of the United States. Storm water conveyance system as defined in 40 C.F.R. § 122.26(b)(8) means "a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

> (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
>
> (ii) Designated or used for collecting or conveying storm water;
>
> (iii) Which is not a combined sewer; and
>
> (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2."

The City of San Diego defines a SWCS as "those municipal and natural facilities within the City of San Diego by which storm water/urban runoff may be conveyed to waters of the United States, including any roads with drainage systems, municipal streets, catch basins, natural and artificial channels, aqueducts, canyons, stream beds, gullies, curbs, gutters, ditches, or storm drains."

The RWQCB has the discretion and authority to require non-cooperating entities to participate in this county-

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wide permit or obtain individual waste discharge requirements (WDRs).

10. The Basin Plan was adopted by the RWQCB on March 17, 1975 and subsequently approved by the State Water Resources Control Board (SWRCB). Subsequent revisions to the Basin Plan have also been adopted by the RWQCB and approved by the SWRCB, most recently December 8, 1994.

11. Storm water/urban runoff discharges in San Diego County are tributary to various receiving waters, including creeks, rivers, reservoirs, lakes, lagoons, estuaries, harbors, bays, and the Pacific Ocean. The receiving waters under the jurisdiction of the RWQCB are identified in the Basin Plan.

12. The Basin Plan identifies the following beneficial uses of state ocean waters to be protected:

a. Industrial service supply;
b. Navigation;
c. Contact water recreation;
d. Non-contact water recreation;
e. Commercial and sport fishing;
f. Preservation of biological habitats of special significance;
g. Rare, threatened, or endangered species;
h. Marine habitat;
i. Migration of aquatic organisms;
j. Aquaculture;
k. Spawning, reproduction, and/or early development;
l. Wildlife habitat; and
m. Shellfish harvesting.

The Basin Plan relies primarily on requirements of the Ocean Plan for protection of those beneficial uses. However, the Basin Plan establishes additional water quality objectives for dissolved oxygen and pH.

13. The SWRCB adopted a Water Quality Control Plan for Enclosed Bays and Estuaries of California (Bays and Estuaries Plan) on November 19, 1992. The Plan established water quality principles, guidelines, effluent quality requirements and prohibitions to govern the disposal of wastes in the enclosed bays and estuaries of California. The Bays and Estuaries Plan applies to the following receiving waters:

a. Tijuana River Estuary
b. San Diego Bay

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c. Mission Bay
d. Los Peñasquitos Lagoon
e. San Dieguito Lagoon
f. San Elijo Lagoon
g. Batiquitos Lagoon
h. Agua Hedionda Lagoon
i. Buena Vista Lagoon
j. Oceanside Harbor/Del Mar Boat Basin
k. Santa Margarita Lagoon

14. The Bays and Estuaries Plan contains the following prohibition specific to land runoff:

> "The direct or indirect discharge of silt, sand, soil, clay, or other earthen materials from onshore operations including mining, construction, agriculture, and lumbering, in quantities which unreasonably affect or threaten to affect beneficial uses shall be prohibited."

15. The SWRCB adopted a Water Quality Control Plan for Inland Surface Waters (Inland Surface Waters Plan) of California on April 11, 1991. The Plan established water quality principles, guidelines, effluent quality requirements and prohibitions to govern the discharges of wastes in inland surface waters. The Inland Surface Waters Plan contains the following prohibition to discharges:

> "In no case shall discharges to inland surface waters result in a violation of objectives for downstream water bodies. The water quality objectives of this plan apply throughout a water body outside mixing zones, except that no acute toxicity shall occur within mixing zones. The Regional Boards shall determine where, at the confluence of water bodies with different water quality objectives, the differing objectives apply. This determination may be reviewed by the State Board."

Inland surface waters means all surface waters of the State which do not include the ocean, enclosed bays, or estuaries. Mixing zone means a designated volume of a receiving water where wastewaters and receiving waters mix. Allocation of a mixing zone provides limited dilution of a wastewater discharge before certain water quality objectives must be met. Acute toxicity means less than ninety percent survival, fifty percent of the time, and less than seventy percent survival, ten percent of the time, of standard test organisms in undiluted effluent in a 96-hour static or continuous-flow test.

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16. The SWRCB approved an amendment to the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) on March 22, 1990. The Ocean Plan identifies the following beneficial uses of state ocean waters to be protected;

a. Industrial Water Supply;
b. Navigation;
c. Aesthetic Enjoyment;
d. Water Contact Recreation;
e. Non-contact Water Recreation;
f. Commercial and Sport Fishing;
g. Mariculture;
h. Preservation and enhancement of areas of special biological significance;
i. Preservation and enhancement of rare and endangered species;
j. Marine habitat;
k. Fish migration;
l. Fish spawning; and
m. Shellfish harvesting.

In order to protect the above beneficial uses, the Ocean Plan established water quality objectives (for bacteriological, physical, chemical, and biological characteristics, and for radioactivity), general requirements for management of waste discharged to the ocean, quality requirements for waste discharges, discharge prohibitions, and general provisions.

17. Although the Basin Plan relies primarily on the Ocean Plan for the protection of marine waters, the Basin Plan contains the following prohibitions, applicable to discharges, for waters subject to tidal action:

> "The dumping or deposition from shore or from vessels of oil, garbage, trash or other solid municipal, industrial or agricultural waste directly into waters subject to tidal action or adjacent to waters subject to tidal action in any manner which may permit it to be washed into the waters subject to tidal action is prohibited."
>
> "Discharge of industrial waste-waters exclusive of cooling water, clear brine or other waters which are essentially chemically unchanged, into waters subject to tidal action is prohibited."
>
> "The dumping or deposition of chemical wastes, chemical agents or explosives into waters subject to tidal action is prohibited."

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18. The Basin Plan identifies the following beneficial uses of inland surface waters in San Diego County:

a. Municipal and domestic supply;
b. Agricultural supply;
c. Industrial service supply;
d. Industrial process supply;
e. Ground water recharge;
f. Freshwater Replenishment;
g. Hydropower generation;
h. Contact water recreation;
i. Non-contact water recreation;
j. Preservation of biological habitats of special significance;
k. Warm freshwater habitat;
l. Cold freshwater habitat;
m. Rare, threatened, or endangered species; and
n. Wildlife habitat.

The Basin Plan also identifies groundwater recharge as a potential beneficial use for several surface waters within the region. Site-specific listings of beneficial uses are listed in the Basin Plan.

19. The Basin Plan contains the following prohibitions, applicable to discharges, for inland surface waters:

> "Discharge of treated or untreated sewage or industrial wastes to a natural watercourse upstream of surface storage or diversion facilities used for municipal supply is prohibited."
>
> "Discharge of treated or untreated sewage or industrial wastewater, exclusive of cooling water or other waters which are chemically unchanged, to watercourse, is prohibited except in cases where the quality of said discharges complies with the receiving body's water quality objectives."
>
> "The dumping or deposition of oil, garbage, trash, or other solid municipal, industrial, or agricultural waste directly into inland waters or watercourses or adjacent to the water courses in any manner which may permit its being washed into the watercourse is prohibited."
>
> "Land grading and similar operations causing soil disturbance which do not contain provisions to minimize soil erosion and limit suspended matter in area runoff are prohibited."

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20. The requirements contained in this Order are necessary to implement the objectives of the Ocean Plan, Bays and Estuaries Plan, Inland Surface Waters Plan, and the Basin Plan for receiving waters within the region.

21. Numerical and narrative water quality standards exist for the receiving waters in the region. Due to the enormous variability in storm water/urban runoff quality and quantity and the complexity of urban runoff, this Order does not contain numerical limitations for any constituent. The impact of storm water/urban runoff discharges on water quality of receiving waters has not been fully determined. Extensive water quality monitoring and analysis are essential to make that determination. This Order requires the Permittees to monitor their discharges and to analyze the data obtained. This Order also requires the development and implementation of best management practices (BMPs). BMPs are defined as "schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States" (40 C.F.R. § 122.2). BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. For purposes of this Order, BMPs for the prevention and control of pollutants in storm water/urban runoff may include the use of non-structural (e.g., public education, regulatory powers, urban planning, etc.) and structural (e.g., detention basins, grass swales, runoff infiltration devices, etc.) controls which may be applied to a particular site or throughout a region (e.g., a city or throughout an area served by a storm water conveyance system). Pollution prevention is the best approach for a BMP program.

22. Pursuant to 40 C.F.R. § 131.12 and SWRCB Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California (collectively "antidegradation policies"), the RWQCB shall ensure that any increase in pollutant loading to a receiving water meets the requirements stated in the foregoing policies. At a minimum, permitting actions shall be consistent with the following:

    a. Existing instream water uses and the level of water quality necessary to protect existing beneficial uses shall be maintained and protected;

    b. Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, the quality shall be maintained and protected unless the State finds,

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after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located;

c. Where high quality waters constitute an outstanding national resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected; and

d. In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with CWA § 316.

23. The RWQCB, in establishing the requirements contained herein, has taken into consideration the requirements of the State and Federal antidegradation policies and has determined that:

a. The conditions and requirements established in this Order for discharges of storm water/urban runoff to waters of the United States ensure that the existing beneficial uses and quality of receiving Bay waters will be protected and improved through the implementation of BMPs for the prevention and control of pollutants in storm water/urban runoff;

b. Discharges of storm water/urban runoff to waters of the United States will continue regardless of the issuance of this Order. The issuance of this Order is necessary to ensure achievement and maintenance of the goals and objectives of the water quality control plans adopted by the State;

c. Thermal discharges potentially impairing water quality are not authorized under the terms and conditions of this Order, thus, CWA § 316 is not applicable.

24. Pursuant to CWA § 402, and amendments thereto, and pursuant to CWC § 13260 et seq., this Order shall serve as an NPDES permit and waste discharge requirements for the discharge of storm water/urban runoff to surface waters of San Diego County.

25. Pollution should be prevented or reduced at the source, whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever

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feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner, whenever feasible; and disposal or other releases into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

Pollution prevention is the first step in reducing pollution in any pollution reduction program, including nonpoint source pollution prevention and control programs. Pollution prevention is the utilization of techniques, material substitutions and policies that eliminate or reduce the generation of pollutants, and is often the most cost effective option to reduce pollution because it may:

a. reduce material loss;

b. reduce the need for expensive "end of pipe" treatment and other pollution control technologies;

c. reduce on site and off site waste disposal costs;

d. reduce costs by conserving energy, water, chemicals, and other inputs;

e. reduce production costs through better management;

f. reduce costs associated with accidental releases;

g. reduce the potential long term liability associated with waste generation; and

h. avoid costs associated with cleanups.

i. reduce health risks associated with exposure to pollutants.

After pollution prevention, source control of the pollutants that are generated is the next step in reducing nonpoint source pollution. Examples of source control include:

a. Reducing or eliminating the introduction of pollutants to a land area (reduced nutrient and pesticide application).

b. Preventing pollutants from leaving the site during land-disturbing activities (erosion control measures on construction sites).

c. Preventing interaction between precipitation and introduced pollutants (cover materials stored outside).

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d. Protecting riparian habitat and other sensitive areas (shorelines and wetlands).

e. Protecting natural hydrology (maintenance of pervious surfaces in developing areas and water conservation).

26. The RWQCB, in establishing the requirements contained herein, considered factors including, but not limited to, the following:

a. Beneficial uses to be protected and the water quality objectives reasonably required for that purpose;

b. Other waste discharges;

c. The need to prevent nuisance;

d. Past, present, and probable future beneficial uses of the waters under consideration;

e. Environmental characteristics of the waters under consideration:

f. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;

g. Economic considerations; and

h. The need for developing housing within the region.

27. The issuance of this Order for the discharge of storm water/urban runoff is exempt from the requirement for preparation of environmental documents under the California Environmental Quality Act (Pub. Resources Code, div. 13, ch. 3, § 21000 et seq.) in accordance with the CWC § 13389.

28. The RWQCB has considered all water resource related environmental factors associated with the discharge of storm water/urban runoff.

29. The RWQCB has notified all known interested parties of its intent to issue an NPDES permit for the discharge of storm water/urban runoff.

30. The RWQCB has, at a public meeting, heard and considered all comments pertaining to the discharge of storm water/urban runoff.

IT IS HEREBY ORDERED that the Permittees, in order to meet the provisions contained in Division 7 of the California Water Code

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and regulations adopted thereunder, and the provisions of the Clean Water Act as amended and regulations and guidelines adopted thereunder, shall comply with the following:

I. GENERAL REQUIREMENTS

A. The following entities (Permittees) are subject to the terms and conditions of this Order and shall cooperate in the development and implementation of a comprehensive county-wide storm water/urban runoff management program:

| Cities | County | Other |
|---|---|---|
| Carlsbad | San Diego | San Diego Unified Port District |
| Chula Vista | | |
| Coronado | | |
| Del Mar | | |
| El Cajon | | |
| Encinitas | | |
| Escondido | | |
| Imperial Beach | | |
| La Mesa | | |
| Lemon Grove | | |
| National City | | |
| Oceanside | | |
| Poway | | |
| San Diego | | |
| San Marcos | | |
| Santee | | |
| Solana Beach | | |
| Vista | | |

The comprehensive county-wide storm water/urban runoff management program will consist of the following elements:

1. A management structure which allows implementation of all of the program elements;

2. Adequate legal authority;

3. Adequate fiscal resources;

4. A program to find and eliminate illicit connection and illegal discharges to the storm water conveyance system;

5. A program of Best Management Practices to eliminate pollutants from entering the storm water conveyance system that addresses

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Residential, Industrial, Commercial and Construction sources;

6. A monitoring and field screening program.

B. **Task I.B.** - The Permittees shall approve and sign the Memorandum of Understanding (MOU) submitted as part of the Permit Application. The Permittees will submit a copy of the signed, legally binding MOU to the RWQCB within 90 days of the adoption of this Order. Any revisions to the MOU shall be forwarded to the Executive Officer within 30 days of approval by all Permittees.

C. The Permittees shall prohibit illicit connections and illegal discharges from entering into storm water conveyance systems. Discharges conditionally allowed to enter storm water conveyance systems are specified Attachment B.

D. As specified in Item No. IX, the Permittees shall implement the best management practices developed under Order No. 90-42, as adopted on July 16, 1990. In addition, the Permittees shall develop and implement additional BMPs according to the schedule specified in Item No.IX. Other BMPs that the Executive Officer determines appropriate to prevent, control or reduce the discharge of pollutants to waters of the United States to the maximum extent practicable (MEP) will be developed as necessary. In developing BMPs, the Permittees shall consider the water quality objectives of all the receiving waters and emphasize pollution prevention. BMP programs should be watershed based. Watershed based water quality protection is defined by the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) Urban Technical Advisory Committee (UTAC) as the prevention/control of pollution and management of human activities in a geographically or other defined drainage area to protect, restore, and/or enhance the natural resources and beneficial uses within the watershed. Watershed may be defined on a variety of levels - such as different geographic scales relative to drainage areas and affected municipalities (CZARA UTAC report November, 1994, p.6).

E. The Permittees shall ensure that BMPs are implemented by entities discharging to the storm water conveyance systems within their jurisdiction.

II. RESPONSIBILITIES OF PRINCIPAL PERMITTEE

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The Principal Permittee, at a minimum, shall be responsible for the overall program management or coordination as specified in the proposed MOU and this Order.

III. RESPONSIBILITIES OF PERMITTEES

A. The Permittees, at a minimum, shall be responsible for management of storm water/urban runoff management programs within their jurisdictions as specified in the proposed MOU and this Order.

B. This Order is issued to each City, the County, and the Port District as a whole, not to a department within their jurisdiction. Each Permittee is responsible for ensuring that every department within its jurisdiction is aware of the requirements of this Order and comply with the requirements where it is appropriate.

C. **Interdepartmental responsibilities.**

IV. RESPONSIBILITIES OF THE MANAGEMENT COMMITTEE

The Management Committee, at a minimum, shall be responsible for the tasks specified in the proposed MOU.

V. FISCAL ANALYSIS

The purpose of the fiscal analysis is to provide the RWQCB with a clear delineation of all expenditures for activities that achieve the requirements of this Order. A complete fiscal analysis is required for programs and expenses directly related to the NPDES program. This should include all costs including personnel and non-personnel expenses, overhead, benefits, etc. Activities that are not carried out by the NPDES program, but that are related such as street sweeping, flood control and recycling, should be discussed. The discussion should include a chart showing the responsible department, as well as an analysis, not necessarily a fiscal analysis, that shows the level of program effort.

A. **Task V.A.** - By January 15 of each year, a fiscal analysis of all the expenditures (including the capital, operation, and maintenance costs) projected to be necessary to accomplish the activities of the proposed plans and programs shall be performed by each Permittee and the results submitted to the Principal Permittee. The Principal Permittee will submit a collated report to the RWQCB by January 31 of each year.

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B. **Task V.B.** - By July 15 of each year an analysis of the previous fiscal year's expenditures shall be performed by each Permittee and the results submitted to the Principal Permittee. The Principal Permittee will submit a collated report to the RWQCB by July 31 of each year.

C. Both reports will follow a format which allows the following information to be determined from them:

Total NPDES Storm Water Program Budget

Source of Funding

Budget Specifics:

For **Task V.A.** show proposed expenditures for next fiscal year and previous year's proposed expenditures. For **Task V.B.** show proposed expenditures for previous fiscal year and actual expenditures for the fiscal year which ended June 30th.

| PROGRAM ELEMENTS | PROPOSED EXPENDITURE | PREVIOUS YEAR EXPENDITURE | IF DIFFERENT, EXPLAIN |
|---|---|---|---|
| PROGRAM MANAGEMENT | | | |
| ILLICIT CONNECTION/ILLEGAL DISCHARGE PROGRAM<br>Field Screening<br>Other (provide details as necessary) | | | |
| BMP PROGRAM<br>Public Education<br>Other BMPs (provide details as necessary) | | | |
| MONITORING | | | |

D. **Task V.D.** - At the time that the Permittee budget is adopted, the Permittee must submit a copy of the portion showing the appropriations relevant to the storm water/urban runoff program. If the appropriation is significantly different than the amount shown in the proposed budget, the Permittee must also submit a revised plan showing how the program will be changed to reflect the difference in the appropriation.

VI. LEGAL AUTHORITY

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A. **Task VI.A.** - Permittees who did not provide proof of adequate legal authority under Order No. 90-42, as adopted on July 16, 1990, will be subject to a RWQCB enforcement action. For most Permittees, adequate legal authority has taken the form of an ordinance passed by their governing body that follows the form of the model ordinance.

B. At any time that the legal counsel to the RWQCB or the Permittee finds that their legal authority is not sufficient to enforce the terms of the permit, the Permittee must adopt additional authority within 180 days of the finding.

C. At the time the RWQCB adopts a policy on Non-Storm Water Discharges, Permittees will be required to obtain the legal authority to implement that policy within one year of adoption.

VII. STORM WATER/URBAN RUNOFF-RECEIVING WATER MONITORING PROGRAM

A. **Task VII.A.** - The Permittees shall implement a cooperative wet weather monitoring program. The wet weather monitoring program for 1995-96 is outlined in Attachment A. A report on **Task VII.A.** (report of results of monitoring) will be submitted on July 31 of each year by the Principal Permittee.

B. **Task VII.B.** - The Permittees will submit a revised monitoring program by July 31 based on the results prepared under **Task VII.A.** for the wet season in the next fiscal year. Note that the proposed program will not be implemented for a year and a half. Any monitoring program proposed shall be subject to the approval of the Executive Officer.

C. The Executive Officer of the RWQCB will review the monitoring program annually and make changes to it as necessary.

VIII. ILLICIT CONNECTION/ILLEGAL DISCHARGE DETECTION PROGRAM

A. **Task VIII.A.** - Permittees will implement a program for detecting illicit connections and illegal discharges (IC/ID). The requirements for the IC/ID program are given in Attachment B. Permittees will report on **Task VIII.A.** (report of field screening and other IC/ID activities) by January 31 of each year.

B. **Task VIII.B.** - Within 60 days of the adoption of this Order, Permittees will submit evidence that they have

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developed the procedures necessary to implement **Task VIII.A.** The individual tasks include:

1. **Task VIII.B.1.** - Submit a report on Attachment B, Section I Storm Water Conveyance System Survey. If an adequate, up to date map was submitted under Order No. 90-42, Permittees can refer to that map and the date of submittal rather than submitting a new map.

2. **Task VIII.B.2.** - Submit a report detailing field procedures to be used in the dry weather field screening program.

3. **Task VIII.B.3.** - Submit a list of equipment to be used for the dry weather field screening program.

4. **Task VIII.B.4.** - Submit a report on the citizen complaint hot line required in Attachment B.

5. **Task VIII.B.5.** - Submit a report on the follow-up procedures to be used in the event of :
   Citizen Complaints
   Permittee staff detection of spills or IC/ID
   Field Screening detection of non-storm water discharges.

C. **Task VIII.C.** - The Permittees will analyze the field screening report submitted under **Task VIII.A.** by January 31 of each year and propose a monitoring program based on the results of that report for the dry season in the next fiscal year. Note that the proposed program will not be implemented for a year and a half. Any field screening program proposed shall be subject to the approval of the Executive Officer.

D. The Executive Officer of the RWQCB will review the field screening program annually and make changes to it as necessary.

## IX. BEST MANAGEMENT PRACTICES PROGRAM

A. The Permittees will implement all of the following BMPs within 60 days of the adoption of this Order:

1. **Task IX.A.1.** - Establish a Public Education Program. Include the following elements:

   a. **Task IX.A.1.a.** - Establish or improve an areawide catch basin stenciling program to discourage dumping, discarding, and/or

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discharge of pollutants or debris into storm water conveyance systems.

b. **Task IX.A.1.b.** - Develop programs to promote, publicize and facilitate public reporting of illicit connections and illegal discharges.

c. **Task IX.A.1.c.** - Develop/augment public education and outreach programs (inter-departmental, construction, media, community, school, commercial, industrial, and decision makers/elected officials) on the topic of catch basins and storm water conveyance systems and their intended purpose.

d. **Task IX.A.1.d.** - Encourage all residents, owners, renters, managers of multi-family dwellings, and businesses to remove and properly dispose of dirt, rubbish, and debris from their sidewalks and alleys which may contribute pollutants to urban runoff (i.e, sweep and discard in trash).

e. **Task IX.A.1.e.** - Encourage recycling of oil, antifreeze, batteries, tires, glass, plastic, and other materials to prevent their improper disposal into the storm water conveyance system.

f. **Task IX.A.1.f.** - Encourage the proper disposal of household hazardous wastes to prevent the improper disposal of such materials to the storm water conveyance system.

g. **Task IX.A.1.g.** - Encourage the proper use and conservation of water to minimize runoff from landscaped areas, lawns, golf-courses, etc.

h. **Task IX.A.1.h.** - Educate all Permittee departments and personnel on the requirements of the storm water/urban runoff program and on ways that the departments and personnel can comply and encourage compliance with those requirements. Include compliance with the State Industrial and Construction General NPDES Storm Water Permits in the permitting requirements of the departments and personnel.

i. **Task IX.A.1.i.** - Provide input to SANDAG

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representatives to ensure that water quality considerations are included in Congestion Management activities.

2. **Task IX.A.2.** - Provide catch basin and storm water channel cleaning when and where needed.

3. **Task IX.A.3.** - Increase cleaning frequency and number of roadside and beach trash receptacles in areas where needed.

4. **Task IX.A.4.** - Perform street sweeping in a manner which improves the quality of urban runoff, and which is consistent with the current findings on methodology.

5. **Task IX.A.5.** - Create or augment a program to eliminate the improper disposal of solid waste, including but not limited to such things as litter, lawn/garden clippings, and pet feces into the street or areas where runoff may carry these pollutants to the storm water conveyance system.

6. **Task IX.A.6.** - Participate in recycling and Household Hazardous Waste programs.

7. **Task IX.A.7.** - Municipal Source Control Program: Focus on prevention and control of pollutants from all Permittee activities and Permittee facilities such as corporation yards, and Permittee maintenance facilities. This program must include:

   **Task IX.A.7.a.** - Storm Water Pollution Prevention Plans (SWPPP) for Permittee facilities such as corporation yards and vehicle maintenance facilities.

   **Task IX.A.7.b.** - A program for inspection of Permittee facilities.

   **Task IX.A.7.c.** - BMP program, stressing pollution prevention for all Permittee activities. This should include a focused education program for Permittee employees involved in outdoor operation or maintenance activities anywhere in a Permittee's jurisdiction. Specifically, Permittees must minimally develop a timeline and a program for the adoption and implementation of an Integrated Pest Management (IPM) program for

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all public parks, golf courses, landscaping around public schools, buildings and cemeteries. The IPM program is to be fully implemented within two years of the issuance of this Order.

**Task IX.A.7.d.** - A program for prevention of sewage spills into the storm water conveyance system to the extent practicable.

**Task IX.A.7.e.** - A program for prevention and control of pollutants from:

Storm water conveyance system operation and management,

Streets and roads,

Flood control activities,

Public facilities,

Maintenance of public facilities including but not limited to streets and roads, parking lots, public water bodies and municipal buildings.

B. **Task IX.B.** - Public Education Program - Establishment of a public education program will be an ongoing task over the life of the permit. Tasks for the 1995-96 permit year include:

**Task IX.B.1.** - Establish a Public Education Subcommittee which reports to the management committee made up of at least five Permittees and representatives of the larger community. The community should be represented by at least one representative from each of the eight outreach groups: interdepartmental, construction, media, community, school, commercial, industrial, and decision makers/elected officials. This subcommittee shall establish a public education program addressing municipal, residential, commercial, industrial and construction sources. Note that residential includes all residents, both owners and renters, as well as managers of multifamily dwellings and permanent and temporary residents of boats in marinas. The goal of the subcommittee is to develop cooperative watershed based public education programs aimed at pollution prevention. Those programs that cannot be done cooperatively should be developed to be

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consistent county-wide. Public education programs should seek to address all members of the outreach group and be written in both English and Spanish.

**Task IX.B.2** - Evaluate **Task IX.A.1.a-i**, and determine which areas need augmentation. Develop a list of products to be developed during the next fiscal year and a schedule for their development. This will be done each fiscal year. The development of products schedules and programs under **Task IX.B** will be reported under **Task IX.B.2.** The implementation of these products and programs will be reported under **Task IX.A.1.a-i.**

**Task IX.B.3** - Develop Public Education Programs and products according to the schedule developed under **Task IX.B.2.**

C. **Task IX.C.** - Construction Source Control Program: Incorporate storm water quality BMPs into the requirements for all construction projects within the Permittee's jurisdiction. Within 60 days of the adoption of this Order report on the existing Construction Source Control Program.

A comprehensive Construction Source Control program will be developed during the first year of the permit period (1995-96) for managing runoff from new development and redevelopment both for projects that are covered by the State Construction General Permit and projects that are under five acres. Tasks will include:

**Task IX.C.1.** - Evaluation of the current grading ordinance and planning department requirements must be completed within one year from the issuance of this Order. If the grading ordinance is not adequate, develop a schedule for developing and adopting a new ordinance within one and a half years from the issuance of this Order;

**Task IX.C.2.** - Evaluation of construction site management requirements;

**Task IX.C.3.** - Evaluation of training and outreach efforts;

**Task IX.C.4.** - Evaluation of required control measures;

**Task IX.C.5.** - Development of an inspection program or a program for integrating storm water inspection

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requirements into current inspection programs.

**Task IX.C.6.** - Development of a BMP program for new construction and redevelopment that addresses the deficiencies uncovered by this evaluation. BMP programs that are appropriate for a variety of projects should be developed. Size of project as well as watershed and site specific considerations should be included;

**Task IX.C.7.** - Development of a schedule for implementing the BMP program, including activities that can be implemented immediately, activities that can be implemented in the short term (within years one and two), and activities that can be implemented over the long term (beginning year three and beyond).

D. By July 31, 1996 Permittees will report on **Tasks IX.A.1-7.**, **Task IX.B.**, and **Task IX.C.** Tasks that are identified for immediate implementation, including education programs, should be implemented immediately without waiting for RWQCB approval. Permittees will also report on the adequacy of their grading ordinance and provide a plan and schedule for obtaining adequate legal authority if the current ordinance is not adequate.

E. During the second year of the five year permit period (FY 1996-97), Permittees will continue to implement **Tasks IX.A.1-7 and IX.B.** and evaluate the need for additional BMPs in these areas. Permittees will begin implementation of their augmented Construction Source Control Program. This Construction Source Control Program will be reported as **Task IX.C.**

F. **Task IX.F.** - Commercial Source Control Program: Implement a program of Water Quality BMPs for Commercial Sources. Within 60 days of the adoption of this Order report on the existing Commercial Source Control Program.

A comprehensive Commercial Source Control program will be developed during the second year of the permit (1996-97). Permittees should develop an incentive program for businesses to encourage utilization of nonpoint source pollution prevention and control strategies. Tasks include:

**Task IX.F.1.** - Evaluation of existing program;

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**Task IX.F.2.** - Identification of all commercial sources by a list categorized by business type. Prioritize commercial sources based on potential threat to water quality;

**Task IX.F.3.** - Identification and categorization of pollutants associated with these sources;

**Task IX.F.4.** - Development of a BMP program for commercial facilities including an education program targeting specific types of facilities. Implementation of this program should be based on the priority of sources developed under Task IX.F.2;

**Task IX.F.5.** - Development of a schedule for implementing the BMP program, including activities that can be implemented immediately, activities that can be implemented in the short term, and activities that can be implemented over the long term;

**Task IX.F.6.** - Development of procedures and a schedule for inspecting commercial facilities or a program for integrating storm water/urban runoff inspection requirements into current inspection programs. This schedule should include consideration of the priorities developed under Task IX.F.2.

G. By July 15, 1997 Permittees will provide the Principal Permittee with a report on the previous year's implementation of **Tasks IX.A.1-7, IX.B., and IX.C.** and **Task IX.F.1-6.** In addition, they will provide a schedule for implementation of their Commercial Source Control program, including the inspection schedule. Tasks that are identified for immediate implementation, including education programs, should be implemented immediately without waiting for RWQCB approval.

H. During the third year of the five year permit period, (1997-98) Permittees will continue to implement **Tasks IX.A.1-7, IX.B., and IX.C.**, and will evaluate the need for additional BMPs in these areas. They will begin implementation of their augmented Commercial Source Control program which will be reported under **Task IX.F.**

I. **Task IX.I.** - Industrial Source Control Program: Implement a program of Water Quality BMPs for Industrial Sources. Within 60 days of the adoption of this Order report on the existing Industrial Source Control Program.

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A comprehensive Industrial Source Control program will be developed during the third year of the permit (1997-98). Permittees should develop an incentive program for businesses to encourage utilization of nonpoint source pollution prevention and control strategies. This program should complement the State Industrial program. The RWQCB will cooperate with this effort by providing information wherever possible. Tasks include:

**Task IX.I.1.** - Evaluation of existing program;

**Task IX.I.2.** - Identification of all industrial sources, categorized by industry type or Standard Industrial Classification (SIC) code; Prioritize industrial sources based on potential threat to water quality;

**Task IX.I.3.** - Identification of pollutants associated with these sources;

**Task IX.I.4.** - Development of a Permittee BMP program for Permittee control of industrial facilities including an education program targeting specific types of facilities. This program will include activities to be undertaken by the Permittee to control the introduction/flow of pollutants into the storm water conveyance system from industrial facilities. It can include incentive programs, outreach programs, and development of a schedule of minimum BMPs emphasizing pollution prevention that the Permittee wants facilities to implement;

**Task IX.I.5.** - Development of a schedule for implementing the BMP program, including activities that can be implemented immediately, activities that can be implemented in the short term, and activities that can be implemented over the long term. This schedule should include consideration of the priorities developed under Task IX.I.2.;

**Task IX.I.6.** - Development of procedures and a schedule for inspecting industrial facilities in cooperation with the State program or a program for integrating storm water/urban runoff inspection requirements into current inspection programs. This schedule should include consideration of the priorities developed under Task IX.I.2.

J. By July 15, 1998 Permittees will provide the Principal Permittee with a report on the previous

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year's implementation of **Tasks IX.A.1-7, IX.B., IX.C.,** and **IX.F.** and on **Task IX.I.1-6.** In addition, they will provide a schedule for implementation of their Industrial Source Control Program. Tasks that are identified for immediate implementation, including education programs should be implemented immediately without waiting for RWQCB approval.

K. During the fourth year of the permit period (FY 1998-99) Permittees will continue to implement **Tasks IX.A.1-7, IX.B., IX.C.,** and **IX.F.**, and evaluate the need for additional BMPs in these areas. They will begin implementation of their augmented Industrial Source Control program which will be reported under **Task IX.I.**

L. **Task IX.L.** - Permittees will do an internal audit on the effectiveness and adequacy of all of their BMPs and source control programs. The results of this audit will be used to prepare the permit application for the next permit.

L. By July 15, 1999 Permittees will provide the Principal Permittee with a report on the previous year's implementation of **Tasks IX.A.1-7, IX.B., IX.C., IX.F., and IX.I.** and **Task IX.K.**

M. During the fifth year of the permit period Permittees will continue to implement **Tasks IX.A.1-7, IX.B., IX.C., IX.F., and IX.I.** In addition, Permittees will examine the results of **Task IX.K.** and update each of the Task areas based on the results. These updated Tasks will be submitted as part of the application for the new permit.

N. By July 15, 2000 Permittees will provide the Principal Permittee with a report on the previous year's implementation of **Tasks IX.A.1-7, IX.B., IX.C., IX.F., and IX.I.**

## X. PROGRAM ANALYSIS

**Task X.** - The Permittees shall conduct an annual analysis of the effectiveness of the overall storm water/urban runoff pollution control management program in their areas of jurisdiction.

## XI. REPORTING AND SCHEDULE

A. A summary of tasks to be completed and reports

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submitted is as follows:

**Within 30 days of the adoption of this Order:**

**Task V.A.** - Permittees who had not submitted a detailed budget for the first year permit period must submit a budget.

**Task VI.A.** - Permittees who had not obtained adequate legal authority through passage of an ordinance during the first permit period must submit evidence of adequate legal authority.

**Within 60 days of the adoption of this order:**

**Task VIII.B.1-5.** - Permittees will show that they have all of the elements of an Illicit Connection and Illegal Discharge Detection program.

**Task IX.A.1-7** - Permittees must demonstrate that they have all of the elements of a Best Management Practices program.

**Task IX.C.** - Permittees will submit current Construction Source Control Program information.

**Task IX.F.** - Permittees will submit current Commercial Source Control Program information.

**Task IX.I.** - Permittees will submit current Industrial Source Control Program information.

**Within 90 days of the adoption of this order:**

**Task I.B.** - The MOU must be signed and submitted to the RWQCB.

**By July 31, 1995:**

**Task VII.B.** for the 1996-97 wet weather season.

**By January 31, 1996:**

A proposed comprehensive storm water/urban runoff management program for FY 1996-97 including:
**Task V.A.** Fiscal Analysis.

A proposed program and schedule for:
**Task IX.A.1-7.**
**Task IX.B.**
**Task IX.E.1-6.**

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**Task VIII.A.** for the 1995 dry weather season

**Task VIII.B.** for the 1997 dry weather season

**By July 31, 1996:**

An analysis of the FY 1995-96 Comprehensive storm water/urban runoff management program with an explanation on significant changes to the proposed program including:

**Task V.B.**
**Task VII.A.**
**Task IX.A.1-7.**
**Task IX.B.1-7.**
**Task IX.C**
**Task X.**

**Task VII.A.** for the 1995-96 wet weather season
**Task VII.B.** for the 1997-98 wet weather season

**By January 31, 1997:**

A proposed comprehensive storm water/urban runoff management program for FY 1997-98 including:

**Task V.A.**
A proposed program and schedule for:
**Task IX.A.1-7.**
**Task IX.B.**
**Task IX.H.1-6.**

**Task VIII.A.** for the 1996 season
**Task VIII.C.** for the 1998 season

**By July 31, 1997:**

An analysis of the FY 1996-97 comprehensive storm water/urban runoff management program with an explanation on significant changes to the proposed program including:

**Task V.B.**
**Task VII.A.**
**Task IX.A.1-7.**
**Task IX.B.**
**Task IX.E.1-6**
**Task X.**

**Task VII.A.** for the 1996-97 wet weather season
**Task VII.B.** for the 1998-99 wet weather season

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**By January 31, 1998:**

A proposed storm water/urban runoff management program for FY 1998-99 including:

**Task V.A.**
A proposed program for:
**Task IX.A.1-7.**
**Task IX.K.**

**Task VIII.A.** for the 1997 dry weather season
**Task VIII.C.** for the 1999 dry weather season

**By July 31, 1998:**

An analysis of the FY 1997-98 storm water/urban runoff management program with an explanation on significant changes to the proposed program including:

**Task V.B.**
**Task VII.A.**
**Task IX.A.1-7.**
**Task IX.H.1-6.**
**Task X.**

**Task VII.A.** for the 1997-98 wet weather season
**Task VII.B.** for the 1999-2000 wet weather season

**By January 31, 1999:**

A proposed storm water/urban runoff management program for FY 1999-2000 including:

**Task V.A.**
A proposed program for:
**Task IX.A.1-7.**
**Task IX.B.**

**Task VIII.A.** for the 1998 dry weather season
**Task VIII.C.** for the 2000 dry weather season

**By July 31, 1999:**

An analysis of the FY 1998-99 comprehensive storm water/urban runoff management program with an explanation on significant changes to the proposed program including:

**Task V.B.**
**Task VII.A.**

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**Task IX.A.1-7.**
**Task IX.K.**
**Task X.**

**Task VII.A.** for the 1998-99 wet weather season
**Task VII.B.** for the 2000-2001 wet weather season (to be done under the next permit period)

**By January ??, 2000:**

A permit application for the NPDES storm water permit to be adopted in July, 2000.

**By January 31, 2000:**

**Task VIII.A.** for the 1999 dry weather season
**Task VIII.B.** for the 2001 dry weather season

**By July 31, 2000:**

An analysis of the FY 1999-2000 storm water/urban runoff management program with an explanation on significant changes to the proposed program including:

**Task V.B.**
**Task VII.A.**
**Task IX.A.1-7.**
**Task X.**

**Task VII.B.** for the 2000-2001 wet weather season

B. All reports and information required herein shall be submitted to the Executive Officer of the RWQCB and the Regional Director of the Environmental Protection Agency, Region IX, at the following addresses:

Executive Officer
California Regional Water Quality Control Board
San Diego Region
9771 Clairemont Mesa Blvd. Suite B
San Diego, California 92124-1331

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Environmental Protection Agency
Region IX
Permits and Compliance Branch
San Francisco, California

XIII. PROVISIONS

A. Neither the treatment nor the discharge of pollutants

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shall create a pollution, contamination, or nuisance as defined by California Water Code § 13050.

B. The Permittees must comply with all conditions of this Order. Any permit noncompliance constitutes a violation of the Clean Water Act and the California Water Code and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; the issuance of an individual permit; or for denial of a renewal application.

C. The Permittees shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncomplying discharge.

D. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this Order;

2. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts; or

3. A change in any condition that requires either a temporary or permanent reduction or elimination of the discharge.

The filing of a request by a Permittee for modification, revocation and reissuance, or termination of this Order or a notification of planned change in or anticipated noncompliance with this Order does not stay any condition of this Order.

E. In addition to any other grounds specified herein, this Order shall be modified or revoked at any time if, on the basis of any new data, the Executive Officer determines that continued discharges may cause unreasonable degradation of the aquatic environment.

F. This Order is not transferable to any person except after notice to the Executive Officer of this RWQCB. The RWQCB may require a new report of waste discharge to change the name of a Permittee and incorporate such other requirements as may be necessary under the California Water Code and the Clean Water Act. A Permittee shall submit notice of any transfer of this

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Order's responsibility and coverage to a new Permittee as described under Standard Reporting Requirement XIV.C.

G. This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property of another, including property damage caused as a result of the discharge, nor protect the Permittee from his liabilities under federal, state, or local laws, nor create a vested right for the Permittee to continue his discharge.

H. Permittees shall allow the RWQCB, or an authorized representative or any representative of the United States Environmental Protection Agency upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order:

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2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operation regulated or required under this Order; and

4. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the Clean Water Act or the California Water Code, any substances or parameters at any location.

5. This does not preclude unannounced and unscheduled entry/inspections/sampling.

I. Permittees shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by a Permittee to achieve compliance with the conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Order.

J. In an enforcement action, it shall not be a defense for a Permittee that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the Permittee shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of the treatment facility fails, is reduced or is lost.

K. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.

XIV. STANDARD REPORTING REQUIREMENTS

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A. A new Report of Waste Discharge shall be filed with the RWQCB not less than 180 days prior to the following:

1. Significant change in disposal method (e.g., change in the method of treatment which would significantly alter the nature of the waste).

2. Significant change in disposal area (e.g., moving the discharge to a disposal area significantly removed from the original area, potentially causing different water quality or nuisance problems).

3. Other circumstances which result in a material change in character, amount, or location of the waste discharge.

B. A Permittee shall give advance notice to the Executive Officer of any planned changes in a permitted facility or activity which may result in noncompliance with the requirements of this Order.

C. A Permittee must notify the Executive Officer, in writing, at least 30 days in advance of any proposed transfer of this Order's responsibility and coverage to a new Permittee. The notice must include a written agreement between the existing and new Permittee containing a specific date for the transfer of this Order's responsibility and coverage between the current Permittee and the new Permittee. This agreement shall include an acknowledgement that the existing Permittee is liable for violations up to the transfer date and that the new Permittee is liable from the transfer date on.

D. The Permittees shall comply with any monitoring and reporting requirements contained in this Order and any additional monitoring requirements specified by the Executive Officer.

E. A Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally to the Executive Officer within 24 hours from the time the Permittee becomes aware of the circumstances. A written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

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The Executive Officer, or an authorized representative may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

F. A Permittee shall notify the Executive Officer as soon as it is known or there is reason to believe:

1. That any activity has occurred or which will occur which would result in the discharge of any toxic pollutant which is not limited in this Order, if that discharge will exceed the highest of the following notification levels-:

   a. One hundred micrograms per liter (100 ug/L);

   b. Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2.4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony.

G. A Permittee shall furnish to the Executive Officer, within a reasonable time, any information which the Executive Officer may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order or other requirements established by the Executive Officer. A Permittee shall also furnish to the Executive Officer, upon request, copies of records required to be kept by this Order.

H. A Permittee shall provide adequate notice to the Executive Officer of the following:

1. Any new introduction of pollutants to the discharge.

2. Any substantial change in the volume or character of pollutants being introduced into the discharge.

3. For the purpose of this provision, adequate notice shall include information on (a) the quality and quantity of waste introduced into the discharge, and (2) any anticipated impact of the change on the quantity or quality of runoff to be discharged to surface waters.

I. Where a Permittee becomes aware that he failed to submit any relevant facts in a Report of Waste Discharge, or submitted incorrect information in a

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Report of Waste Discharge, or in any report to the RWQCB, he shall promptly submit such facts or information.

J. This Order expires on July 16, 2000. The Permittees must jointly file a Report of Waste Discharge in accordance with Title 23, Chapter 3, Subchapter g of the California Code of Regulations not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. This report of waste discharge shall include as a minimum, the following:

1. Summary of the results of the monitoring program.

2. Summary of BMPs implemented and evaluations of their effectiveness.

3. Summary of procedures implemented to detect illicit connections and illegal discharges and an evaluation of their effectiveness.

4. Summary of measures implemented to control pollutants in surface runoff from construction sites and an evaluation of their effectiveness.

5. Evaluation of the need for additional BMPs, source control, and/or structural control measures.

6. Proposed plan of storm water/urban runoff quality management activities that will be undertaken during the term of the next permit.

L. All applications, reports, or information submitted to the Executive Officer of this RWQCB shall be signed and certified.

1. The Report of Waste Discharge shall be signed as follows:

   a. **For a corporation** - by a principal executive officer of at least the level of vice president.

   b. **For a partnership or sole proprietorship** - by a general partner or the proprietor, respectively.

   c. **For a municipality, state, federal or other public agency** - by either a principal executive officer or ranking elected

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official.

2. All other reports required by this Order and other information requested by the Executive Officer shall be signed by a person designated in paragraph (1) of this provision, or by a duly authorized representative of that person. An individual is a duly authorized representative only if:

a. The authorization is made in writing by a person described in paragraph (1) of this provision;

b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the portion of plant manager, operator of a well or well field, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and

c. The written authorization is submitted to the Executive Officer.

3. Any person signing a document under this Section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

M. Except for data determined to be confidential under 40 C.F.R. § 2, all reports prepared in accordance with the terms of this Order Shall be available for public inspection at the offices of the California Regional Water Quality Control Board, San Diego Region and the United States Environmental Protection Agency, Region IX. As required by the Clean Water Act, Reports of Waste Discharge, this Order, and effluent data shall not be considered confidential.

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XV. NOTIFICATIONS

A. California Water Code § 13263(g) states:

> "No discharge of waste into the waters of the state, whether or not such discharge is made pursuant to waste discharge requirements, shall create a vested right to continue such discharge. All discharges of waste into waters of the state are privileges, not rights."

B. The Clean Water Act provides that any person who violates a condition of this Order implementing sections 301, 302, 306, 307, 308, 318 or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violations. Any person who willfully or negligently violates conditions of this Order implementing section 301, 302, 306, 307 or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.

C. The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Order, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Nothing in this Order shall be construed to relieve a Permittee from civil or criminal penalties for noncompliance.

E. Nothing in this Order shall be construed to preclude the institution of any legal action or relieve a Permittee from any responsibilities, liabilities, or penalties to which a Permittee is or may be subject to under Clean Water Act § 311.

F. Nothing in this Order shall be construed to preclude institution of any legal action or relieve a Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Clean Water Act § 510.

G. This Order shall become effective ten days after the

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date of its adoption, provided the Regional Administrator or Director, United States Environmental Protection Agency, has no objection. If the Regional Administrator objects to its issuance, this Order shall not become effective until such objection is withdrawn.

Tasks will include:

Identification of all Permittee activities which can lead to storm water/urban runoff pollution. These can include, but are not limited to vehicle maintenance, painting, landscape maintenance and weed control, water body maintenance including swimming pool maintenance, construction and maintenance of streets and roads, construction and maintenance of flood control system and drinking water system activities;

Identification of pollutants and potential paths of pollution associated with these activities;

Development of SWPPP for Permittee facilities such as corporation yards and vehicle maintenance facilities;

Development of a program for inspection of Permittee facilities including methodology and schedule.

Development of a BMP program, stressing pollution prevention for all Permittee activities. This should include a focused education program for Permittee employees;

Development of a schedule for implementing the BMP and inspection programs, including activities that can be implemented immediately, activities that can be implemented in the short term, and activities that can be implemented over the long term.

I, Arthur L. Coe, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on July ??, 1995.

ARTHUR L. COE

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Executive Officer

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STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
9771 CLAIREMONT MESA BOULEVARD, SUITE B
SAN DIEGO, CA 92124-1331
TELEPHONE: (619) 467-2952
FAX: (619) 571-6972

VOL 22

May 19, 1995

**SENT BY CERTIFIED MAIL**
**RETURN RECEIPT REQUESTED (LIST ATTACHED)**

Dear San Diego Municipal Copermittee or Interested Party:
(Distribution list attached)

**TENTATIVE ORDER NO. 95-76 (NPDES PERMIT NO. CA0108758), "WASTE DISCHARGE REQUIREMENTS FOR STORM WATER AND URBAN RUNOFF FROM THE COUNTY OF SAN DIEGO, THE INCORPORATED CITIES OF SAN DIEGO COUNTY, AND THE SAN DIEGO UNIFIED PORT DISTRICT."**

Enclosed for your review is a copy of the subject Tentative Order. The California Regional Water Quality Control Board, San Diego Region (SDRWQCB), will conduct a hearing to consider adoption of Tentative Order No. 95-76 at its meeting on **August 10, 1995**. The August 10, 1995 SDRWQCB meeting is open to public participation and will be held at the following location beginning at 9:00 a.m.:

**San Diego Wastewater Management**
**District Board Room**
**600 B Street, 3rd Floor**
**San Diego, CA**

The enclosed version of Tentative Order No. 95-76 is the official 45 day draft of the renewal municipal storm water permit. The official 45 day public review and comment period will begin on Wednesday, **May 24, 1995** and close on Friday, **July 7, 1995**. Written comments or testimony should be submitted to the SDRWQCB as soon as possible, but no later than **July 7, 1995**. All written comments or testimony received by July 7, 1995, will be reviewed by the SDRWQCB members prior to the August 10 hearing. The SDRWQCB will consider oral statements at the August 10 hearing, but, for the accuracy of the record, all important comments or testimony should be submitted in writing by July 7, 1995.

If you have questions concerning Tentative Order No. 95-76, please call Frank Melbourn of my staff at (619) 467-2973.

Sincerely,

ARTHUR L. COE
Executive Officer

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enclosure: Distribution List
Notice of Public Hearing
Tentative Order No. 95-76
Compliance and Reporting Schedule for Order No. 95-76
Attachment A
Attachment B
Attachment C

File: San Diego Municipal Storm Water Permit, 10-0510.01

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Robert A. Summers, City of Santee, ATTN: Cary Stewart
Z 359 024 025
Chandra Collure, City of Solana Beach
Z 359 024 026
Bill Basham, City of Vista, ATTN: Norm Ginsberg
Z 359 024 027

**First Class Mail (with permit and permit attachments)**

Bruce Fujimoto, State Water Resources Control Board, Division of Water Quality, Regulatory
Archie Matthews, State Water Resources Control Board, Division of Water Quality, Regulatory
John Richards, State Water Resources Control Board, Office of the Chief Counsel, Regional Board Services
Nathan Quaries, California Regional Water Quality Control Board, North Coast Region
Tom Mumley, California Regional Water Quality Control Board, San Francisco Bay Region
Adam White, California Regional Water Quality Control Board, Central Coast Region
Mark Pumford, California Regional Water Quality Control Board, Los Angeles Region
Carole Crowe, California Regional Water Quality Control Board, Central Valley Region, Redding Branch Office
Pamala Barksdale, California Regional Water Quality Control Board, Central Valley Region, Sacramento Office
Darrel Evensan, California Regional Water Quality Control Board, Central Valley Region, Fresno Branch Office
John Short, California Regional Water Quality Control Board, Lahontan Region, South Lake Tahoe Office
Tom Rheiner, California Regional Water Quality Control Board, Lahontan Region, Victorville Office
Orlando Gonzalez, California Regional Water Quality Control Board, Colorado River Basin Region
Pavlova Vitale, California Regional Water Quality Control Board, Santa Ana Region
Eugene Bromley, US Environmental Protection Agency, Region IX
Steve Fuller, US Environmental Protection Agency, Region IX
Robert Cain, City of San Diego, Engineering Department
Chris Gonaver, County of San Diego, Environmental Health Services
Elizabeth Fleschar, Kinnetic Laboratories, Inc.
Libby Lucas, Environmental Health Coalition
Nick Diley, MEC Analytical Systems Inc
Ken Moser, San Diego Bay Keeper
Richard Boon, Orange Co. Stormwater Program
Jason Christie, Riverside Flood Control District
Surf Rider Foundation, San Diego County Chapter
Ruth J. Schneider, Otay Mesa-Nestor Community Council
Bob Wheeler, Elsinore-Murrieta-Anza Resource Conservation District

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**Cooperating Agencies (with permit and permit attachments)**

Jewel Bennett, US Fish and Wildlife Service, Ecological Services
Catherine Kuhlman, US Environmental Protection Agency-Region IX, Water Management Division, Permits and Compliance Branch
John Youngerman, NPDES-Non 15 Program Manager, State Water Resources Control Board, Division of Water Quality
Bill Paznokas, California Dept. of Fish and Game
Toby Roy, State Dept. of Health Services, Office of Drinking Water
Ralph Hicks, San Diego Unified Port District, Environmental Management

**Cooperating Agencies (without permit and permit attachments)**

Bob Hoffman, US Dept of Commerce, National Oceanic and Atmospheric Association, National Marine Fisheries Service
David Zoutendyk, US Army Corps of Engineers, Field Office
Lisa Babcock, Chapter 15 Program Manager, State Water Resources Control Board, Division of Water Quality
Al Quintana, State Dept of Health Services, Environmental Management Branch (Regional office)
Mike Kiado, State Dept. of Health Services, Environmental Management Branch (State office)
Fred A. Worthley Jr., California Dept. of Fish and Game, Region 5
Rick Klingbeil, California Dept. of Fish and Game, Marine Resources Division
Boyd Gibbons, California Dept. of Fish and Game
Ahmad Hassan, California Dept. of Water Resources, Southern District
Martha Vasquez, California Integrated Waste Management Board, Permitting and Compliance Division
Trevor Anderson, California Integrated Waste Management Board Permitting and Compliance Division
James W. Burns, California Coastal Commission
Deborah Lee, California Coastal Commission
Peter Grenell, State Coastal Conservancy
Director, California Environmental Protection Agency
John Hinton, Department of Toxic Control
James Wells, Department of Pesticide Regulation, Environmental\ Monitoring and Pesticide Management
Kenneth Jones, Department of Parks and Recreation, Resource Protection Division, Southern Region
Dwight Sanders, State Lands Commission, Environmental Planning and Management Division
William Shafroth, Assist. Sec. of Land and Coastal Resources, Resources Agency
Gary Stephany, Deputy Director, County of San Diego Department of Health Services, Environmental Health Services
Haz. Mat. Duty Specialist, County of San Diego Department of Health Services, Hazardous Materials Management
Ruth Potter, Water Quality, San Diego Association of Governments
Steve Sachs, Waste Management, San Diego Association of Governments

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STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**
**SAN DIEGO REGION**
9771 CLAIREMONT MESA BOULEVARD, SUITE B
SAN DIEGO, CA 92124-1331
TELEPHONE: (619) 467-2952
FAX: (619) 571-6972



**NOTICE OF PUBLIC HEARING**

The California Regional Water Quality Water Board, San Diego Region (SDRWQCB), intends to hold a public hearing on **August 10, 1995**, to take testimony and comments regarding reissuance of National Pollutant Discharge Elimination System (NPDES) permits for the following discharges of pollutants from point sources to surface waters in the San Diego Region:

1. Waste Discharge Requirements for Storm Water and Urban Runoff from the County of San Diego, the Incorporated Cities of San Diego County, and the San Diego Unified Port District (Tentative Order No. 95-76) (NPDES Permit No. CA0108758).

2. Waste Discharge Requirements for Storm Water and Urban Runoff from the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the Incorporated Cities of Riverside County Within the San Diego Region (Tentative Order No. 95-77) (NPDES Permit No. CA0108766).

3. Waste Discharge Requirements for Storm Water and Urban Runoff from the County of Orange, the Orange County Flood Control District, and the Incorporated Cities of Orange County Within the San Diego Region (Tentative Order No. 95-78) (NPDES Permit No. CA0108740).

**TIME AND PLACE OF PUBLIC HEARING:**

**August 10, 1995, at 9:00 a.m.**

San Diego Wastewater Management
District Board Room
600 B Street, 3rd Floor
San Diego, CA

Interested persons are invited to attend to express their views on issues relating to the waste discharges and the requirements and permit conditions needed to regulate the discharges under state and federal laws. Oral statements will be heard, but for the accuracy of the record, all important testimony should be in writing. Written testimony should be submitted to the SDRWQCB office as soon as possible and preferably no later than Friday, **July 7, 1995**. Presentations should be brief to allow all interested persons time to be heard.

SDRWQCB staff has prepared tentative orders containing waste discharge requirements that implement the federal regulations for NPDES permits for storm water discharges. The tentative orders, permit applications, fact sheets, comments received, and other

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information are on file and may be inspected in the office of the SDRWQCB at 9771 Clairemont Mesa Boulevard, Suite B, San Diego, phone (619) 467-2952, Monday through Friday between the hours of 8:00 a.m. and 5:00 p.m.. Copies of the tentative orders may be obtained from the SDRWQCB by contacting John Phillips at (619) 627-3928, Frank Melbourn at (619) 467-2973, or at the address shown above.

Please bring the foregoing to the attention of any persons known to you who would be interested in this matter.

Arthur L. Coe
Executive Officer

Dated: May 24, 1995

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May 19, 1995

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**
**SAN DIEGO REGION**

**ORDER NO. 95-76**
**NPDES NO. CA0108758**

# WASTE DISCHARGE REQUIREMENTS FOR STORM WATER AND URBAN RUNOFF FROM THE COUNTY OF SAN DIEGO, THE INCORPORATED CITIES OF SAN DIEGO COUNTY, AND THE SAN DIEGO UNIFIED PORT DISTRICT

The California Regional Water Quality Control Board, San Diego Region (hereinafter SDRWQCB), finds that:

1. On July 16, 1990, the SDRWQCB issued Order No. 90-42, NPDES NO. CA0108758, **WASTE DISCHARGE REQUIREMENTS FOR STORM WATER AND URBAN RUNOFF FROM THE COUNTY OF SAN DIEGO THE INCORPORATED CITIES OF SAN DIEGO COUNTY AND THE SAN DIEGO UNIFIED PORT DISTRICT**. Order No. 90-42 established waste discharge requirements for the discharge of storm water[1] and urban runoff to waters of the United States from storm water conveyance systems[2] owned and operated by the County of San Diego, the San Diego Unified Port District and the incorporated cities of San Diego County. Order No. 90-42 expires on July 16, 1995.

2. On January 17, 1995 the SDRWQCB received a joint National Pollutant Discharge Elimination System (NPDES) permit renewal application from the following entities:

   a. the County of San Diego;

   b. the incorporated cities of San Diego County:

| | | |
|---|---|---|
| Carlsbad | Escondido | Poway |
| Chula Vista | Imperial Beach | San Diego |
| Coronado | La Mesa | San Marcos |
| Del Mar | Lemon Grove | Santee |
| El Cajon | National City | Solana Beach |
| Encinitas | Oceanside | Vista; and |

   c. the San Diego Unified Port District.

3. The above entities are hereinafter referred to in this Order as copermittees or dischargers. The City of San Diego is also referred to in this Order as principal copermittee. The terms and conditions of this Order are applicable to all lands within:

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a. the unincorporated urban areas of San Diego County within the boundaries of the San Diego Region;

b. the above incorporated cities of San Diego County; and

c. the jurisdiction of the San Diego Unified Port District.

4. Clean Water Act (CWA) Section 402(a)(l) provides that any person discharging, or proposing to discharge, pollutants from any point source to waters of the United States must apply for and obtain an NPDES Permit. Applicable United States Environmental Protection Agency (USEPA) regulations are contained in Title 40 Code of Federal Regulations (CFR) Part 122.

5. Storm water discharges are point source discharges of pollutants and as such they are also discharges of waste that could affect the quality of the waters of the state. California Water Code (CWC) Section 13376 provides that any person discharging or proposing to discharge pollutants to waters of the United States must apply for and obtain waste discharge requirements. (The term waste discharge requirements is equivalent to the term NPDES permits as used in the Clean Water Act). Furthermore, California Water Code Section 13260 provides that persons discharging waste that could affect the quality of waters of the state must file a report of waste discharge in application for waste discharge requirements. Applicable State of California regulations are contained in Title 23, Division 3, Chapter 9, Articles 3 and 9.

6. All storm water conveyance systems discharge into waters of the United States or tributaries thereto. Each copermittee owns and operates a storm water conveyance system which discharges into one or more surface water bodies in the San Diego Region including creeks, rivers, reservoirs, lakes, lagoons, estuaries, harbors, bays, the Pacific Ocean and tributaries thereto. These surface waters are waters of the United States as defined in 40 CFR 122.2.

7. Urban storm water runoff has two major components: (1) storm water (wet weather flows) and (2) non-storm water illicit discharges (dry weather flows).

8. Storm water (wet weather flows) consists of precipitation only and is defined in 40 CFR 122.26(b)(13) as storm water runoff, snow melt runoff, and surface runoff and drainage. During storm events in urban areas, rain water picks up and transports pollutants through storm water conveyance systems to waters of the United States.

9. Non-storm water (dry weather flows) is defined in 40 CFR 122.26(b)(2) as illicit discharges consisting of any discharge to a storm water conveyance system that is not composed entirely of storm water. The definition specifically excludes discharges pursuant to an NPDES permit and discharges resulting from fire fighting activities.

10. Pollutants occur in both storm water and non-storm water runoff. The sources of these pollutants occur primarily in commercial, industrial, and residential urban land use areas. The most important pollutant sources include motor vehicles; construction site runoff; industrial site runoff; sewage spills; illegal dumping; illicit connections or improper plumbing of sewage; commercial and industrial discharges; paved surfaces; animal waste; and home and garden care. The most important pollutant categories include metals (copper, lead and zinc), pathogens (bacteria and viruses), synthetic organics (petroleum products,

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pesticides, PCBs and PAHs), sediment; nutrients (nitrogen and phosphorus fertilizers), and oxygen demanding substances (decaying vegetation, animal waste, and other organic matter).

11. Clean Water Act Section 402(p) provides, in part, that the following categories of municipal storm water discharges are required to obtain an NPDES permit:

a. A discharge from a municipal separate storm water conveyance system serving a population of 250,000 or more (large system);

b. A discharge from a municipal separate storm water conveyance system serving a population of 100,000 or more but less than 250,000 (medium system); and

c. A discharge from a municipal storm water conveyance system which contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

Applicable USEPA regulations are contained in Title 40 Code of Federal Regulations Part 122.26.

12. The unincorporated areas of the County of San Diego, the Cities of Chula Vista, Escondido, Oceanside and San Diego each have a current population in excess of 100,000. These copermittees operate large or medium storm water conveyance systems as defined by 40 CFR 122.26(b)(4) and (7).

13. The Cities of Carlsbad, Coronado, Del Mar, El Cajon, Encinitas, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Marcos, Santee, Solana Beach and Vista have populations of less than 100,000 and operate small storm water conveyance systems.

14. All copermittees with populations less than 100,000 (small systems) are part of large or medium separate storm water conveyance systems. This is because discharges from the small systems are "interrelated" to discharges from the large or medium systems as provided in 40 CFR 122.26(b)(4)(iii). The determination of "interrelation" is based on the following factors:

a. physical interconnections between the municipal storm water conveyance systems of some copermittees;

b. the nature of the pollutants discharged to waters of the United States as described in previous findings;

c. the nature of the receiving waters as described in findings 15 and 16 below; and

d. the location of discharges from the smaller municipal systems relative to discharges from the large or medium systems. The following copermittees jointly and cumulatively discharge storm water pollutants into the same water body:

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i. The County of San Diego; the Cities of San Diego, Coronado, National City, Chula Vista, Imperial Beach, La Mesa, Lemon Grove; and the San Diego Unified Port District jointly and cumulatively discharge storm water pollutants into San Diego Bay;

ii. The County of San Diego and the Cities of Oceanside, Vista, and Carlsbad jointly and cumulatively discharge storm water pollutants into Buena Vista Lagoon;

iii. The Cities of Carlsbad and San Marcos jointly and cumulatively discharge storm water pollutants into Agua Hedionda Lagoon;

iv. The County of San Diego; the Cities of Carlsbad, Encinitas, and San Marcos jointly and cumulatively discharge storm water pollutants into Batiquitos Lagoon;

v. The County of San Diego; the Cities of Encinitas, Escondido, and Solana Beach jointly and cumulatively discharge storm water pollutants into San Elijo Lagoon;

vi. The County of San Diego, the Cities of San Diego, Del Mar, Solana Beach, and Escondido jointly and cumulatively discharge storm water pollutants into Los Penasquitos Lagoon;

vii. The Cities of San Diego and Imperial Beach jointly and cumulatively discharge storm water pollutants into the Tijuana River Estuary;

viii. The County of San Diego; the Cities of San Diego, La Mesa, El Cajon, and Santee jointly and cumulatively discharge storm water pollutants into the San Diego River;

ix. The Cities of El Cajon and Santee jointly and cumulatively discharge storm water pollutants into Forester Creek; and

x. The Cities of San Diego, Escondido, and Poway jointly and cumulatively discharge storm water pollutants into Lake Hodges;

15. Certain water bodies receiving storm water discharges are designated by the State Water Resources Control Board (SWRCB) and USEPA as Clean Water Act Section 303(d) water bodies. A "Section 303(d) water body" is an impaired water body in which water quality does not meet applicable water quality standards and/or is not expected to meet water quality standards, even after the application of technology based pollution controls required by the Clean Water Act. The discharge of storm water pollutants by the copermittees are significant because these discharges contribute to violations of applicable water quality standards as summarized in Table 1 below:

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**TABLE 1**
**COPERMITTEES DISCHARGING TO CWA SECTION 303(D) WATER BODIES**

| Clean Water Act Section 303(d) Impaired Water Body | Pollutants Causing Impairment | Copermittee Discharging Storm Water |
|---|---|---|
| San Diego Bay | Synthetic organics, metals | County of San Diego; Cities of San Diego, Coronado, National City, Chula Vista, Imperial Beach, La Mesa, Lemon Grove; and San Diego Unified Port District |
| Mission Bay | Metals, pathogens, nutrients | City of San Diego |
| Santa Margarita Lagoon | Nutrients | County of San Diego |
| Agua Hedionda Lagoon | Pathogens | Cities of Carlsbad and San Marcos |
| Batiquitos Lagoon | Nutrients, sediment | County of San Diego; Cities of Carlsbad, Encinitas, and San Marcos |
| San Elijo Lagoon | Nutrients | County of San Diego, Cities of Encinitas, Escondido, and Solana Beach |
| Los Penasquitos Lagoon | Nutrients, sediment | County of San Diego; Cities of San Diego, Del Mar and Poway |
| Tijuana River Estuary | Pathogens, synthetic organics, metals | Cities of San Diego and Imperial Beach |
| Tijuana River | Pathogens, nutrients, synthetic organics, metals | City of San Diego |
| Oceanside Harbor | Metals | City of Oceanside |

16. Each of the copermittees are significant contributors of pollutants to waters of the United States in the San Diego Region based on the following considerations:

a. Limited wet weather monitoring data collected by the San Diego copermittees indicate that storm water discharges in San Diego County contain metals, pathogens, sediment, and nutrients in concentrations that could adversely affect receiving waters.

b. Because the semiarid San Diego Region has an extended dry season, pollutant loads during the first several storms of the wet season may be significantly higher than pollutant loads from storms later in the season.

c. In the semiarid San Diego Region, most receiving water streams are essentially ephemeral in nature. Non-storm water flows containing pollutants discharge into these streams during dry weather conditions. During the dry weather season these streams have no reliable dilution waters available to aid in protection of the public health and wildlife and to provide sufficient assimilative capacity to ensure that

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discharges do not contribute to violations of receiving water quality objectives. Accordingly, non-storm water flows to these streams during dry weather periods can cause pollution and nuisance conditions.

d. All watercourses in the San Diego Region terminate in bays, estuaries, or lagoons, most of which have poor flushing characteristics and little assimilative capacity.

17. Based on the foregoing findings, as summarized below, each copermittee is required to obtain an NPDES Permit for the discharge of storm water runoff to waters of the United States.

a. Each copermittee owns and operates a storm water conveyance system which conveys storm water and non-storm water flows containing pollutants to waters of the United States.

b. Five copermittees (the County of San Diego; the Cities of Chula Vista, Escondido, Oceanside, and San Diego) have a current population exceeding 100,000.

c. Each small copermittee (having a population of less than 100,000), owns and operates a storm water conveyance system whose discharges are "interrelated" to discharges from large or medium size storm water conveyance systems within the meaning of 40 CFR 122.26(b)(iii). Accordingly, small storm water conveyance systems are part of large or medium size conveyance systems.

d. Each copermittee, except the Cities of El Cajon, Santee, and Vista, discharge storm water and non-storm water flows to a Clean Water Act Section 303(d) impaired water body and thus are contributing to a violation of a water quality standard.

e. Each copermittee is a significant contributor of pollutants to waters of the United States within the meaning of 40 CFR 122.26(a)(1)(v).

18. The copermittees have requested that the SDRWQCB regulate them under a single NPDES permit. The SDRWQCB believes that issuance of a single NPDES permit to the copermittees will:

a. provide for a unified regional approach to storm water management in contiguous urban areas and shared watersheds;

b. reduce copermittee costs and administrative burden associated with storm water NPDES permit fees, applications, monitoring and reporting, implementation of required best management practices plans, and other activities; and

c. reduce the Regional Board's administrative burden of issuing individual NPDES permits to each copermittee.

Therefore, each copermittee is named as a discharger in this Order.

19. The copermittees have entered into a memorandum of understanding (MOU) in order to establish the joint and separate responsibilities of the copermittees with respect to compliance with this Order. The MOU provides that certain programs (e.g., wet weather

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monitoring and reporting, public education) required under this Order be conducted jointly by the copermittees. The conduct of a joint wet weather monitoring program will facilitate the collection and analysis of storm water samples in a uniform and cost effective manner.

20. USEPA regulations contained in 40 CFR 122.26(d)(2)(i)(A)-(F) provide that the copermittees must demonstrate adequate legal authority, through ordinance or other means, to control discharges of pollutants to their storm water conveyance system.

21. Order No. 90-42 required the copermittees to demonstrate adequate legal authority to control discharges of pollutants to their storm water conveyance system in conformance with 40 CFR 122.26(d)(2)(i)(A)-(F). As of August 10, 1995, all copermittees, except the Cities of Carlsbad, Oceanside, and Santee have adopted storm water ordinances.

22. Clean Water Act Section 402(p)(3)(B)(iii) requires that NPDES permits for discharges from municipal storm water conveyance systems ".....shall include a requirement to effectively prohibit non-storm water discharges into storm water conveyance systems." USEPA regulations implementing Section 402 recognize that certain classes of non-storm water discharges, on a case by case basis, may not be sources of pollutants to waters of the United States. These special classes of non-storm water discharges are listed in 40 CFR 122.26(d)(2)(iv)(B)(1).

23. Clean Water Act Section 402(p)(3)(B)(ii) requires that NPDES permits for discharges from municipal storm water conveyance systems ".....shall require controls to reduce the discharge of pollutants to the maximum extent practicable[3] (MEP) including management practices, control techniques and system, design and engineering methods....." Copermittees can reduce pollutants to the maximum extent practicable through the effective implementation of Best Management Practices[4] (BMPs).

24. Pursuant to 40 CFR 122.26(d)(2)(vi), the SDRWQCB may require each copermittee to prepare and submit a fiscal analysis demonstrating sufficient financial resources have been appropriated to implement the conditions of this Order.

25. Pollution prevention is defined as practices and processes which reduce or eliminate the generation of pollutants at their source. Under Section 6602(B) of the federal Pollution Prevention Act of 1990, Congress established a national policy that: ".....pollution should be prevented or reduced at the source, whenever feasible: pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner, whenever feasible; and disposal or other releases into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner...." The SDRWQCB fully supports pollution prevention as a fundamental principle of the SDRWQCB's mission to protect the quality of the Region's ground and surface waters and encourages its maximum use by the copermittees.

26. The "Water Quality Control Plan, San Diego Basin (9)" (hereinafter Basin Plan) was adopted by the SDRWQCB on September 8, 1994 and subsequently approved by the SWRCB on December 13, 1994. Subsequent revisions to the Basin Plan have also been adopted by the SDRWQCB and approved by the SWRCB The Basin Plan designates beneficial uses, narrative and numeric water quality objectives, and includes prohibitions which are applicable to the storm water and urban runoff discharges regulated under this

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Order. The Basin Plan also incorporates by reference all SWRCB water quality control plans and policies including the 1990 Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and the 1974 Water Quality Control Policy for Enclosed Bays and Estuaries of California (Enclosed Bays and Estuaries Policy). The discharges regulated by this Order must be in compliance with the prohibitions and water quality standards of the Basin Plan and all referenced SWRCB water quality control plans and policies.

27. The beneficial uses of inland surface waters in San Diego County designated in the Basin Plan are: Municipal and Domestic supply; Agricultural supply; Industrial process supply; Industrial service supply; Freshwater Replenishment; Hydropower generation; Contact water recreation; Non-contact water recreation; Warm freshwater habitat; Cold freshwater habitat; Wildlife habitat; Preservation of biological habitats of special significance; and Rare, threatened, or endangered species. Beneficial uses of inland surface waters vary. The beneficial uses for specific inland surface waters are described in the Basin Plan. Inland surface waters consist of all waters exclusive of the waters of the Pacific Ocean, enclosed bays and estuaries, coastal lagoons, and ground waters.

28. The beneficial uses of coastal waters in San Diego County designated in the Basin Plan are: Industrial service supply; Navigation; Contact water recreation; Non-contact water recreation; Commercial and sport fishing; Estuarine habitat; Wildlife habitat; Preservation of biological habitats of special significance; Rare, threatened, or endangered species; Marine habitat; Aquaculture; Migration of aquatic organisms; Spawning, reproduction, and/or early development; Warm freshwater habitat; and Shellfish harvesting. Beneficial uses of coastal waters vary. The beneficial uses for specific coastal waters are described in the Basin Plan. Coastal waters are defined as waters subject to tidal action and include ocean waters and enclosed bays and estuaries.

29. The Basin Plan contains the following general antidegradation water quality objective which applies to all waters of the State within the San Diego Region:

"Wherever the existing quality of water is better than the quality of water established herein as objectives, such existing quality shall be maintained unless otherwise provided by the provisions of the State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining of Waters in California", including any revisions thereto, or the federal antidegradation policy, 40 CFR 131.12 (for surface waters only)."

Discharges of storm water in compliance with the terms and conditions of this Order will not degrade surface water quality. Furthermore, the purpose of this Order is to reduce pollutants in storm water discharges to the maximum extent practicable in conformance with Clean Water Act Section 402(p)(3)(B)(ii). Therefore, the Regional Board finds that this Order is in conformance with SWRCB Resolution No. 68-16 and the federal antidegradation policy described in 40 CFR 131.12.

30. The SDRWQCB, in establishing the requirements contained in this Order, considered factors including, but not limited to, the following:

a. Beneficial uses to be protected and the water quality objectives reasonably required for that purpose;
b. Other waste discharges;
c. The need to prevent nuisance;

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d. Past, present, and probable future beneficial uses of the waters under consideration;
e. Environmental characteristics of the waters under consideration, including the quality of water available thereto;
f. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
g. Economic considerations;
h. The need for developing housing within the region; and
i. The need to develop and use recycled water.

31. This Order shall serve as an NPDES permit pursuant to Clean Water Act Section 402, and waste discharge requirements pursuant to California Water Code Section 13260 for the discharge of storm water and urban runoff to surface waters of San Diego County.

32. The issuance of this Order for the discharge of storm water and urban runoff is exempt from the requirement for preparation of environmental documents under the California Environmental Quality Act (Public Resources Code, Division. 13, Chapter 3, Section 21000 et seq.) in accordance with the California Water Code Section 13389.

33. The SDRWQCB has notified the copermittees and all known interested parties of its intent to renew an NPDES permit for the existing discharge of storm water and urban runoff.

34. The SDRWQCB has, at a public meeting on August 10, 1995, held, or provided an opportunity for, a public hearing, and heard and considered all comments pertaining to the terms and conditions of this Order.

**IT IS HEREBY ORDERED** that the copermittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations adopted thereunder, shall each comply with the following:

## A. PROHIBITIONS

1. Any discharge to a storm water conveyance system that is not composed entirely of "storm water" is prohibited unless authorized by the SDRWQCB. The federal regulations, 40 CFR 122.26(b)(13), define storm water as runoff, snow melt runoff, and surface runoff and drainage. An illicit discharge is defined in 40 CFR 122.26 (b)(2) as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to an NPDES permit and discharges resulting from fire fighting activities. [Section 122.26 amended at FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

2. The discharge of storm water to waters of the United States containing pollutants which have not been reduced to the maximum extent practicable is prohibited.

3. The unauthorized discharge of treated or untreated sewage to waters of the state or to a storm water conveyance system is prohibited.

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4. The discharge of pollutants, or dredged or fill material, to waters of the United States, except as authorized by an NPDES permit or a dredged or fill material permit (subject to the exemption described in California Water Code §13376), is prohibited.

5. The discharge of waste to waters of the state in a manner causing, or threatening to cause, a condition of pollution, contamination, or nuisance as defined in California Water Code Section 13050, is prohibited.

6. The dumping, deposition, or discharge of waste (e.g., oil, rubbish, refuse) directly into waters of the state, or adjacent to such waters in any manner which may permit its being transported into the waters, is prohibited unless authorized by the SDRWQCB.

7. The discharge of treated or untreated waste to lakes or reservoirs used for municipal water supply, or to inland surface waters tributary thereto, is prohibited.

8. The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited.

9. The discharge of any radiological, chemical, or biological warfare agent into waters of the state is prohibited.

10. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in waters of the state or which unreasonably affect, or threaten to affect, beneficial uses of such waters, is prohibited.

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**B. DISCHARGE SPECIFICATIONS -- NON-STORM WATER**

1. Each copermittee shall forthwith effectively prohibit non-storm water discharges into its storm water conveyance systems unless such discharges are authorized by a separate NPDES permit.

2. Copermittees may, but need not, prohibit a non-storm water discharge that is currently authorized under a separate NPDES permit.

3. Copermittees may, but need not, prohibit the following classes of non-storm water discharges. If the copermitee proposes not to prohibit any of the following classes of non-storm water discharges, the copermitee must first comply with the requirements of section B.4. below to the satisfaction of the SDRWQCB Executive Officer.

   a. water line flushing;
   b. landscape irrigation;
   c. diverted stream flows;
   d. rising ground waters;

e. uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to storm water conveyance systems;
f. uncontaminated pumped ground water;
g. discharges from potable water sources;
h. foundation drains;
i. air conditioning condensation;
j. irrigation water springs;
k. water from crawl space pumps;
l. footing drains;
m. lawn watering;
n. individual residential car washing;
o. flows from riparian habitats and wetlands;
p. dechlorinated swimming pool discharges; and
q. street wash water.

4. Each copermittee shall submit the following information to the SDRWQCB for each non-storm water discharge class in section B.3. above which the copermittee proposes not to prohibit:

   a. identification of the non-storm water discharge class listed in section B.3. above which the copermitee proposes not to prohibit;

   b. identification of the BMPs which the copermitee will require to prevent or reduce pollutant discharges from the proposed non-prohibited class of non-storm water discharges;

   c. a monitoring program to access the volume, concentration and types of pollutants discharged as a result of the proposed non-prohibited class of non-storm water discharge; and

   d. a program to document and track compliance with the BMPs required for the non-prohibited class of non-storm water discharges.

5. Each copermittee shall prohibit, on a case by case basis, any individual non-storm water discharge listed in section B.3. above (or any class of non-storm water discharges listed above) that is determined by the copermittee to be a source of pollutants to waters of the United States.

6. Discharges or flows from emergency fire fighting activities shall be prohibited only when such flows are determined by the copermittee to be significant sources of pollutants to waters of the United States.

C. DISCHARGE SPECIFICATIONS -- STORM WATER

1. Each copermittee shall forthwith reduce the discharge of pollutants to its storm water conveyance systems to the maximum extent practicable.

2. Copermittees shall reduce pollutants to the maximum extent practicable through implementation of the Comprehensive Storm Water and Urban Runoff Management Program described in section E.

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D. **RECEIVING WATER LIMITATIONS**

The discharge of storm water and non storm water (subject to the limitations described in section B. above) shall not cause or contribute to a violation of any applicable receiving water quality objective contained in the Basin Plan or any SWRCB water quality control plan or policy.

E. **COMPREHENSIVE STORM WATER AND URBAN RUNOFF MANAGEMENT PROGRAM**

1. Each copermittee shall effectively implement a Comprehensive Storm Water and Urban Runoff Management Program to achieve compliance with the Prohibitions (section A.), Discharge Specifications (sections B. and C.), and Receiving Water Limitations (section D.) of this Order.

2. The Comprehensive Storm Water and Urban Runoff Management Program shall contain the components listed below and described in sections F. through K. of this Order.

   a. Legal authority (section F.);
   b. Illicit Connection / Illegal Discharge Detection Program (section G.);
   c. Best Management Practices Program (section H.)
      (1) Existing Minimum Best Management Practices Program
      (2) Municipal Best Management Practices Program
      (3) Construction Best Management Practices Program
      (4) Commercial Best Management Practices Program
      (5) Industrial Best Management Practices Program;
   d. Wet Weather Monitoring and Reporting Program (section I.);
   e. Assessment of Management Program Effectiveness (section J.); and
   f. Fiscal Analysis (section K.).

3. Each copermittee shall fully implement each component of the Comprehensive Storm Water and Urban Runoff Management Program as expeditiously as possible, but in no event later than the deadline dates specified in sections F. through K. of this Order.

F. **LEGAL AUTHORITY**

1. Pursuant to 40 CFR 122.26(d)(2)(i)(A-F), each copermittee shall establish and maintain adequate legal authority through ordinance, statute, permit, contract or other means to control discharges to and from those portions of the storm water conveyance system over which it has jurisdiction. This authority must, at a minimum, authorize the copermittee to:

   a. Control the discharge of storm water from industrial (including construction) sites to the copermittee's storm water conveyance system;

   b. Prohibit illicit discharges into the copermittees storm water conveyance system in accordance with sections A., B., C., D., and E. of this Order;

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c. Control spills, dumping, and disposal of materials other than storm water into the copermittees storm water conveyance system;

d. Control through interagency agreements among copermittees the contribution of pollutants from one portion of the municipal system to another portion of the municipal system;

e. Require compliance with conditions in ordinances, permits, contracts or orders; and

f. Carry out all inspection, surveillance and monitoring necessary to determine compliance and noncompliance with the applicable conditions of this Order, including the prohibition on illicit discharges in Discharge Specifications - Non-Storm Water (section B.) of this Order.

2. The Cities of Carlsbad, Oceanside, and Santee shall, by **September 10, 1995**, submit a report to the SDRWQCB indicating that legal authority has been obtained to implement and enforce each of the key regulatory requirements contained in 40 CFR 122.26(d)(2)(i)(A-F) and summarized in F.1. above.

3. Each copermittee shall, by **December 15, 1995**, provide to the SDRWQCB a statement certified by its chief legal counsel that the copermittee has adequate legal authority to implement and enforce each of the key regulatory requirements contained in 40 CFR 122.26(d)(2)(i)(A-F) and summarized in F.1. above. The copermittee shall develop and submit a matrix that compares, in a side by side format, the regulatory requirements in 40 CFR 122.26(d)(2)(i)(A-F) to the copermittee's legal authority. Furthermore, the matrix shall also illustrate where the authority to mandate compliance is vested. In order to support the assertion of adequate legal authority, the copermittee shall include the complete text of the applicable storm water, grading, or other ordinances. The copermittee shall also provide a specific explanation of why and how the language of the storm water and grading ordinance or other authority meets the requirements of 40 CFR 122.26(d)(2)(i)(A-F). The copermittee shall indicate to whom the ordinance applies and how it will operate to control, prevent or stop discharges that violate the terms and conditions of this Order.

## G. ILLICIT CONNECTION AND ILLEGAL DISCHARGE DETECTION PROGRAM

The purpose of the Illicit Connection and Illegal Discharge (IC/ID) Detection Program is to detect and eliminate illicit connections and illegal discharges (IC/ID) to the storm water conveyance system. The IC/ID Detection Program consists of the following three major components/activities:

a. Detection of IC/IDs;
b. Followup investigation of each IC/ID; and
c. Elimination of each IC/ID.

1. Each copermittee shall forthwith, in conjunction with its local ordinance, implement the IC/ID Detection Program described below to comply with sections A., B., C., D., and E. of this Order.

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2. Each copermittee shall implement each component of the IC/ID Detection Program in accordance with sections G.3 - G.6. below.

3. **Detection of IC/IDS**

Each copermittee shall, at a minimum, detect Illicit connections and illegal discharges by way of (1) dry weather field screening; and the (2) public complaint and information hotline as described in Attachment A.

4. **Followup Investigation of IC/IDs**

Each copermittee shall conduct followup investigations of every IC/ID detected (regardless of means of detection) as follows:

a. Each copermittee shall, by **December 15, 1995**, submit to the SDRWQCB written followup procedures to investigate and confirm the source of each IC/ID. Followup procedures may include, but are not limited to, further field screening (observations and field analyses), collection and laboratory analysis of samples (upstream and downstream), smoke or dye tests, and video taping with a remote control camera.

b. Each copermittee shall, as expeditiously as possible, conduct followup investigations to identify the source of each IC/ID detected by any means.

c. Each copermittee shall, by **December 15, 1995**, submit to the SDRWQCB written procedures for documenting the findings of each investigation, for making recommendations, and setting projected time schedules to eliminate each IC/ID. The procedures should include notification to the complainant of the findings and subsequent planned actions.

5. **Elimination of IC/IDs**

Each copermittee shall eliminate each IC/ID using its legal authority as follows:

a. Each copermittee shall establish and submit to the SDRWQCB, by **December 15, 1995**, written procedures to eliminate IC/IDs by means of a gradually escalating level of enforcement (e.g., flyers, letters, notices of violation, monetary penalties, referral to County/City District Attorney). The failure of a responsible party to achieve compliance with an initial enforcement action should result in the prompt escalation to a higher level of enforcement; and

b. Each copermittee shall eliminate all IC/ID's as expeditiously as possible but in no event later than **August 10, 1998.**

H. BEST MANAGEMENT PRACTICES PROGRAMS

The purpose of each of the following five BMP Programs is to reduce pollutants in storm water discharges to the maximum extent practicable in compliance with the Prohibitions

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(section A.), Discharge Specifications (sections B. and C.), and Receiving Water Limitations (section D.) of this Order.

1. **Existing Minimum Best Management Practices Program**

   a. Each copermittee shall continue to effectively implement its existing BMP programs for municipal, construction, commercial, and industrial runoff sources. These existing programs must include, at a minimum, the BMPs described in Attachment B of this Order.

   b. Each copermittee shall, by **December 15, 1995**, submit a report to the SDRWQCB describing the implementation status of its current BMP programs for municipal, construction, commercial and industrial sources.

2. **Municipal Best Management Practices Program**

   The purpose of the Municipal Best Management Practices Program is to reduce pollutants in storm water runoff from municipal activities, facilities and land uses.

   The Municipal Best Management Practices Program shall consist of the following components and activities:

   (1) Land Use Planning, Management and Zoning;
   (2) Targeted Municipal Pollutant Sources;
   (3) BMPs Required For Municipal Land Uses;
   (4) Education of Municipal Departments and Employees;
   (5) Education of the Public;
   (6) Copermittee Implementation of Municipal Facility Storm Water Pollution Prevention Plan (SWPPPs);
   (7) Copermittee Inspections of Municipal Facilities; and
   (8) Copermittee Enforcement at Municipal Facilities.

   a. Each copermittee shall submit to the SDRWQCB by **August 10, 1996**, a Municipal Best Management Practices Program in accordance with sections H.2.c. - H.2.j. to achieve compliance with sections A., B., C., D., and E. of this Order.

   b. Each copermittee shall implement the Municipal Best Management Practices Program in accordance with sections H.2.c. - H.2.j. no later than **November 10, 1996**, unless otherwise directed by the SDRWQCB Executive Officer.

   c. Land Use Planning, Management And Zoning

      Land use planning, management, and zoning presents an important opportunity to reduce pollutants in storm water runoff by integrating water quality concerns into the development and redevelopment planning process. It is applicable to all types of land use. The objective is to guide decisions regarding existing and future uses of land to protect water quality. This component shall include measures to:

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(1) Direct heavy development away from environmentally sensitive areas where possible;
(2) Establish design criteria and performance standards for new development and redevelopment such as buffer zones, open space preservation, limits on impervious surfaces and erosion and sediment control;
(3) Adopt local codes and ordinances to protect storm water quality; and
(4) Approve storm water management plans for new development.

d. Targeted Municipal Pollutant Sources

Each copermittee shall, at a minimum, target the following municipal sources:

(1) New development and redevelopment areas;
(2) Commercial and residential land use areas;
(3) Public streets, roads and highways under its jurisdiction;
(4) Flood control management projects;
(5) Landfills and sewage treatment plants;
(6) Municipal Corporate Yards; and
(7) Pesticides, herbicides and fertilizers at public parks, golf courses, landscaping around public schools, cemeteries and other public right-of-ways.

e. Municipal BMPs Required For Land Uses

Each copermittee shall describe the BMPs that it will implement to reduce pollutants in runoff from the targeted municipal sources described in H.2.d. above. Each copermittee shall include pollution prevention, source control, and treatment control BMPs as appropriate. Pollution prevention shall always be emphasized. Examples of each BMP category are described below:

(1) Pollution Prevention (non-structural) measures reduce or eliminate the generation of pollutants, or waste. The most important municipal pollution prevention measure is land use planning.

(2) Source control BMPs (non-structural) control pollutants once they are generated. Examples include:

a. public education;
b. household hazardous waste collection;
c. used oil recycling;
d. vehicle use reduction (congestion management); material storage controls;
f. catch basin cleaning;
g. safer alternative products;
h. leaking sanitary sewer control;
i. prevention of sewage spills into storm drains

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j. roadway/bridge maintenance;
k. illicit connection detection and elimination;
l. illegal dumping detection and elimination;
m. storm channel maintenance;
n. detention/infiltration device maintenance;
o. leak and spill control;
p. street cleaning;
q. vegetation controls;
r. pesticide, herbicide and fertilizer use controls; and
s. good housekeeping practices.

(3) Treatment control measures (structural) remove pollutants from storm water runoff. Examples include constructed wetlands, detention basins, biofilters, infiltration, oil water separators and media filtration devices.

f. Education Of Municipal Departments And Employees

Each copermittee shall develop and implement an educational program for all municipal departments and employees. The objective of the education program is to inform municipal departments and employees about pollution prevention, pollution sources, pollution controls, and water quality impacts. This program shall describe and schedule educational products and activities such as brochures and workshops. Education outreach shall target high priority municipal sources such as sewage spills entering storm drains, disposal of street sweeping or other waste, and municipal corporate yards.

g. Education Of The Public

Each copermittee shall implement a public education program. The objective of the education program is to inform the public about pollution prevention, sources, controls, and water quality impacts from storm water and urban runoff. This program shall describe and schedule educational products and activities such as brochures and workshops. Education outreach shall target political leaders, the general public, commercial and industrial businesses, trade associations, developers, contractors and the media.

(1) The copermittees shall establish a Public Education Subcommittee which reports to the copermittee management committee (as described in the MOU) made up of at least five copermittees and a representative from each of the following eight groups: other municipal departments, construction, media, community, schools, commercial business, industrial business, and decision makers/elected officials.

(2) The Public Education Subcommittee shall establish a public education program addressing municipal, residential, commercial, industrial and construction sources of storm water pollutants.

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(Residential includes all residents, both owners and renters, as well as managers of multifamily dwellings and permanent and temporary residents of boats in marinas.) The goal of the subcommittee is to develop cooperative watershed based public education programs emphasizing pollution prevention. Public education programs should be communicated in both English and Spanish.

h. Copermittee Implementation Of Municipal Facility SWPPPs.

Each copermittee shall implement a site specific Storm Water Pollution Prevention Plans (SWPPPs) at each industrial facility owned by the municipality, including all corporate yards.

i. Copermittee Inspections Of Municipal Facilities

Each copermittee shall inspect each industrial facility owned by the municipality, including all corporate yards. Each facility should be inspected for compliance with its SWPPP and the storm water ordinance. This component shall describe inspection priorities, frequency, procedures and documentation.

j. Copermittee Enforcement At Municipal Facilities

Each copermittee shall enforce its local storm water ordinance at all municipal facilities and activities. This component shall describe enforcement priorities, penalties and other remedies to deter infractions and correct violations.

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3. **CONSTRUCTION BEST MANAGEMENT PRACTICES PROGRAM**

The purpose of the Construction Best Management Practices Program is to (1) reduce pollutants in storm water runoff from construction sites and activities, and (2) maintain pre-construction hydrologic conditions. The Construction Best Management Practices Program shall consist of the following major components and activities:

(1) Site Planning;
(2) BMPs Required For Construction Sites;
(3) Education for Construction Site Owners and Operators;
(4) Copermittee Review of Construction Site SWPPPs;
(5) Copermittee Inspections of Construction Sites; and
(6) Copermittee Enforcement at Construction Sites.

a. Each copermittee shall submit to the SDRWQCB by **August 10, 1996**, a Construction Best Management Practices Program in accordance with sections H.3.c. - H.3.j. to achieve compliance with sections A., B., C., D, and E. of this Order.

b. Each copermittee shall implement the Construction Best Management Practices Program in accordance with sections G.3.c. - G.3.j. no later than

**November 10, 1996**, unless otherwise directed by the SDRWQCB Executive Officer.

c. Site Planning

The objective of site planning is for the copermittee and the construction site owner to address potential water quality problems early in the site design process. Each copermittee shall require the following:

(1) Phased grading and development to minimize exposure and to coincide with seasonal dry periods;
(2) Site stabilization and revegetation as early as possible; and
(3) Review and approval of engineering plans and issuance of local permits.

d. BMPS Required For Construction Sites

Each copermittee shall describe the BMPs that it will require construction site owner/operator to implement to reduce pollutants in runoff. Each copermittee shall include pollution prevention, source control, and treatment control best management practices as appropriate. Pollution prevention shall always be emphasized. Examples of each BMP category are described below:

(1) Pollution Prevention (non-structural) measures reduce or eliminate the generation of pollutants or waste. At construction sites, pollution prevention primarily means erosion prevention. Examples include revegetation, matting, mulching, or other soil stabilization processes.

(2) Source control BMPs (non-structural) control pollutants once they are generated. At construction sites, source controls are primarily sediment controls. Examples include sand bags, hay bales, check dams, riprap, storm drain inlet protection, and silt fences.

(3) Treatment control BMPs (structural) remove pollutants, such as sediment, from storm water runoff. Examples include retention ponds, sediment basins, and filtration devices.

e. Each copermittee shall require maintenance and replacement of all source and treatment control BMPs.

f. Each copermittee shall require appropriate post construction BMPs. Each copermittee shall require maintenance and replacement of all post construction BMPs.

g. Each copermittee is responsible for storm water runoff from all construction sites within its jurisdiction, including those which are currently regulated under the statewide NPDES General Construction Storm Water Permit and those which are not subject to the general permit at this time. This includes all construction sites, regardless of size (i.e., sites less than five acres).

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h. Education for Construction Site Owners and Operators

Each copermittee shall implement an educational program for construction site owners and operators. The objective of the education program is to inform construction site owners and operators about pollution prevention ( i.e., erosion prevention), pollution sources, pollution controls, and water quality impacts. This program shall describe and schedule educational products and activities such as brochures and workshops. Education outreach shall target high priority construction sites.

i. Copermittee Review of Construction Site SWPPPS.

Each copermittee shall review construction site Storm Water Pollution Prevention Plans (SWPPPs) for compliance with its local grading and storm water ordinances.

j. Copermittee Inspections of Construction Sites

Each copermittee shall inspect construction sites for compliance with its grading ordinance and permits. This component should describe inspection priorities, frequency, procedures, and documentation. Each copermittee shall inspect all construction sites for proper maintenance and replacement of all source and treatment controls.

k. Copermittee Enforcement at Construction Sites

Each copermittee shall enforce its local storm water ordinance, grading ordinance and permits at construction sites. This component shall describe enforcement priorities, penalties and other remedies to deter infractions and correct violations.

4. **COMMERCIAL BEST MANAGEMENT PRACTICES PROGRAM**

The purpose of the Commercial Best Management Practices Program is to reduce pollutants in storm water runoff from commercial sites. The Commercial Best Management Practices Program shall consist of the following major components and activities:

(1) Prioritization of Commercial Categories;
(2) BMPs Required For Commercial Sites;
(3) Education for Commercial Site Owners and Operators;
(4) Copermittee Inspections of Commercial Sites; and
(5) Copermittee Enforcement at Commercial Sites.

a. Each copermittee shall submit to the SDRWQCB by **August 10, 1997**, a Commercial Best Management Practices Program in accordance with sections H.4.c. - H.4.g., to achieve compliance with sections A., B., C., D., and E. of this Order.

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b. Each copermittee shall implement the Commercial Best Management Practices Program in accordance with sections H.4.c. - H.4.g., no later than **November 10, 1997**, unless otherwise directed by the SDRWQCB Executive Officer.

c. Prioritization of Commercial Categories

Each copermittee shall identify all commercial categories and prioritize the categories based on their threat to water quality.

(1) In evaluating threat to water quality each copermittee shall consider (1) type of commercial activity; (2) materials used in the commercial activity and the likelihood that storm water discharges will be contaminated; (3) non-storm water discharges; (4) proximity to water bodies; and (5) sensitivity of water bodies.

(2) At a minimum the priority categories shall include gas stations, vehicle repair and maintenance shops, car dealerships, commercial car washes, dry cleaners, cement mixing businesses, concrete cutting businesses, and restaurants.

d. BMPs Required for Commercial Sites

Each copermittee shall describe the BMPs that it will require commercial sites to implement to reduce pollutants in runoff. Each copermittee shall include pollution prevention, source control, and treatment control BMPs as appropriate. Pollution prevention shall always be emphasized. Examples of each BMP category are described below:

(1) Pollution Prevention measures (non-structural) reduce or eliminate the generation of pollutants or waste. Examples include: substitution of nontoxic materials for toxic; improvements in operation and maintenance efficiency; recycling within production process; and replacement or upgrade of production equipment and technologies;

(2) Source control BMPs (non-structural) control pollutants once they are generated by preventing the contact of pollutants with storm water or preventing the discharge of pollutants. Examples include berms, covers, and good housekeeping practices such as prompt cleanup of spills; and

(3) Treatment control BMPs (structural) remove pollutants from storm runoff and include on-site pretreatment, filtration, and oil water separators.

e. Education for Commercial Site Owners and Operators

Each copermittee shall implement an educational program for commercial site owners and operators. The objective of the education component is to

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inform commercial site owners and operators, particularly those in high priority commercial categories, about pollution prevention, pollution sources, controls, and water quality impacts. This component shall describe and schedule educational products and activities such as brochures and workshops. Education outreach shall target high priority commercial sites and activities.

f. Copermittee Inspections of Commercial Sites

Each copermittee shall develop a program to inspect high priority categories of commercial sites for compliance with its storm water ordinance. This component shall describe inspection priorities, frequency, procedures, and documentation.

g. Copermittee Enforcement of Commercial Sites

Each copermittee shall enforce its storm water ordinance at commercial sites. This component shall describe enforcement priorities, penalties and other remedies to deter infractions and correct violations.

5. **INDUSTRIAL BEST MANAGEMENT PRACTICES PROGRAM**

The purpose of the Industrial Best Management Practices Program is to reduce pollutants in storm water runoff from industrial sites. The Industrial Best Management Practices Program shall consist of the following major components and activities:

(1) Prioritization of Industrial Categories;
(2) BMPs Required for Industrial Sites;
(3) Education for Industrial Site Owners and Operators;
(4) Copermittee Inspections of Industrial Sites; and
(5) Copermittee Enforcement at Industrial Sites.

a. Each copermittee shall submit to the SDRWQCB by **February 10, 1998**, a Industrial Best Management Practices Program in accordance with sections H.5.c. - H.5.h. to achieve compliance with sections A., B., C., D., and E. of this Order.

b. Each copermittee shall implement the Industrial Best Management Practices Program in accordance with sections H.5.c. - H.5.h. no later than **May 10, 1998**, unless otherwise directed by the SDRWQCB Executive Officer.

c. Prioritization of Industrial Categories

Each copermittee shall identify all industrial categories and prioritize the categories based on their threat to water quality.

(1) In evaluating threat to water quality each copermittee shall consider (1) type of industrial activity including SIC Code; (2) materials used in industrial processes and the potential for storm water

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contamination; (3) non-storm water discharges; (4) proximity to water bodies; and (5) sensitivity of water bodies.

(2) At a minimum, the priority categories shall include hazardous waste treatment, disposal or recovery facilities; industries subject to effluent limitations under 40 CFR Subchapter N; industries subject to SARA Title III; shipyards; heavy manufacturing facilities (e.g. aircraft); oil and gas/mining facilities; landfills; recycling facilities; electric power generating facilities; transportation facilities; light manufacturing facilities; industrial sewage treatment plants; and military bases.

(3) Each copermittee is responsible for storm water runoff from all industrial sites within its jurisdiction, including those which are currently regulated under the statewide NPDES General Industrial Storm Water Permit and those which are not subject to the general permit at this time.

d. BMPS Required for Industrial Sites

Each copermittee shall describe the BMPs that it will require industrial sites to implement to reduce pollutants in runoff. Each copermittee shall include pollution prevention, source control, and treatment control BMPs as appropriate. Pollution prevention shall be emphasized. Examples of each BMP category are described below:

(1) Pollution Prevention measures (non-structural) reduce or eliminate the generation of pollutants or waste. Examples include: substitution of nontoxic materials for toxic; improvements in operation and maintenance efficiency; recycling within production process; and replacement or upgrade of production equipment and technologies;

(2) Source control BMPs (non-structural) control pollutants once they are generated by preventing the contact of pollutants with storm water or preventing discharge of pollutants. Examples include: berms, covers, and good housekeeping practices such as prompt cleanup of spills; and

(3) Treatment control BMPs (structural) remove pollutants from storm water runoff and include on-site pretreatment, filtration and oil-water separators.

e. Education for Industrial Site Owners and Operators

Each copermittee shall implement an educational program for industrial site owners and operators. The objective of the education component is to inform industrial site owners and operators about pollution prevention, pollution sources, pollution controls, and water quality impacts. This component shall describe and schedule educational products and activities

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such as brochures and workshops. Education outreach shall target high priority industrial sites and activities.

f. Copermittee Review of Industrial SWPPPs

Each copermittee shall review industrial Storm Water Pollution Prevention Plans (SWPPPs) for compliance with its local storm water ordinance.

g. Copermittee Inspection of Industrial Sites

Each copermittee shall develop a program to inspect high priority categories of industrial sites for compliance with its local storm water ordinance. This component shall describe inspection priorities, frequency, procedures, and documentation.

h. Copermittee Enforcement at Industrial Sites

Each copermittee shall enforce its storm water ordinance at industrial sites. This component shall describe enforcement priorities, penalties and other remedies to deter infractions and correct violations.

## I. WET WEATHER MONITORING AND REPORTING PROGRAM

The purpose of the Wet Weather Monitoring Program is to characterize storm water pollutant loading and concentrations, including long term trends, during the wet weather season. Each copermittee shall, beginning with the 1995-96 wet weather season, conduct wet weather monitoring and reporting in accordance with Attachment C of this Order.

## J. ASSESSMENT OF MANAGEMENT PROGRAM EFFECTIVENESS

Each copermitee shall, by **January 31, 1996**, submit a report to the SDRWQCB describing estimated reductions in storm water pollutant loads expected as a result of the implementation of the Comprehensive Storm Water and Urban Runoff Management Program. Estimates of storm water pollutant load reductions shall be based on direct and indirect measurements of the effectiveness of the Comprehensive Storm Water and Urban Runoff Management Program. The report shall identify the direct and indirect measurements which will be used to track the long term effectiveness of the Comprehensive Storm Water and Urban Runoff Management Program.

1. Direct measurements of program effectiveness may include:

   a. Removal efficiencies of BMPs that control storm water quality;
   b. Reductions in the volume of storm water discharged;
   c. Reductions in the event mean concentrations; or
   d. Reductions in seasonal pollutant loadings.

2. Indirect measurements of program effectiveness may include changes in:

   a. Level of enforcement activity;
   b. Public awareness;

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c. Number of reports of illicit discharges or illegal dumping;
d. Gallons of used oil recycled;
e. Amount of household hazardous waste collected;
f. Number of spill cleanups;
g. Number of storm drains stenciled;
h. Acres of open space; and
i. Number of construction and erosion and sediment control plans submitted and approved.

## K. FISCAL ANALYSIS

Each copermittee shall develop and submit to the SDRWQCB by **January 31, 1996** a fiscal analysis demonstrating that sufficient financial resources have been appropriated to implement the conditions of this Order. This Order will be effective on August 10, 1995 and expires on August 10, 2000. For each of the five fiscal years to be covered by this Order, the fiscal analysis must describe the necessary capital and operation and maintenance expenditures necessary to accomplish the activities required under this Order. The analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures including legal restrictions on the use of such funds. The fiscal analysis shall contain the following information:

1. Identification of the major tasks for each component required under this Order;
2. Development of a schedule outlining when each of the tasks for each component will be undertaken;
3. An estimate of the personnel and capital expenses necessary to accomplish each task for each component;
4. An estimate of other non-capital costs to implement the tasks for each component;
5. Identification of funding sources to cover total expenditures (e.g. general revenues, storm water utilities, plan review fees, permit fees, industrial/commercial user fees, special assessment district funds, special assessments on property tax bills and revenue bonds);
6. A comparison of the funding sources with the funding needs; and
7. Identification of alternative funding sources if adequate funding is not available.

## L. PROVISIONS

1. Duty To Comply [40 CFR 122.26(a)(3)(vi)

   Each copermitees need only comply with conditions of this Order relating to (1) discharges from storm water conveyance systems for which they are operators; and (2) the Wet Weather Monitoring and Reporting Program described in Attachment C of this Order to be conducted jointly by all copermittees pursuant to the copermittees Memorandum of Understanding.

2. Duty To Comply [40 CFR 122.41(a)]

   The discharger must comply with all conditions of this Order. Any permit noncompliance constitutes a violation of the Clean Water Act and the California Water Code and is grounds for enforcement action; for permit termination,

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revocation and reissuance, or modification; or denial of a report of waste discharge submitted in application for permit modification or reissuance.

3. Duty To Comply [40 CFR 122.41(a)(1)]

The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Ac for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this Order has not yet been modified to incorporate the requirement.

4. Need to Halt or Reduce Activity Not a Defense [40 CFR 122.41(c)]

It shall not be a defense for the discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. Upon reduction, loss, or failure of a treatment facility, the discharger shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of a treatment facility fails, is reduced, or is lost.

5. Duty to Mitigate [40 CFR 122.41(d)]

The discharger shall take all reasonable steps to minimize or prevent any discharge or prevent any discharge or sludge use or disposal in violation of this Order which has a reasonable likelihood of adversely affecting human health or the environment.

6. Proper Operation and Maintenance [40 CFR 122.41(e)]

The discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the discharger only when the operation is necessary to achieve compliance with the conditions of this Order.

7. Permit Actions [40 CFR 122.41(f)] [California Water Code § 13381]

This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this Order;

b. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts;

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c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; or

d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

The filing of a request by the discharger for modification, revocation and reissuance, or termination of this Order, or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

8. Property Rights [40 CFR 122.41(g)] [California Water Code §13263(g)]

This Order does not convey any property rights of any sort or any exclusive privilege. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the discharger from liabilities under federal, state, or local laws, nor create a vested right for the discharger to continue the waste discharge.

9. Inspection and Entry [40 CFR 122.41(i)] [California Water Code § 13267(c)]

The discharger shall allow the SDRWQCB, or an authorized SDRWQCB representative, or an authorized representative of the USEPA (including an authorized contractor acting as a representative of the SDRWQCB or USEPA), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and

d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the Clean Water Act or California Water Code, any substances or parameters at any location.

10. Bypass of Treatment Facilities [40 CFR 122.41(m)]

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

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(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not Exceeding Limitations

The discharger may allow any bypass to occur which does not cause effluent limitations of this Order or the concentrations of pollutants set forth in Ocean Plan Table A or Table B to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs c. and d. of this provision.

c. Notice

(1) Anticipated bypass. If the discharger knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass.

(2) Unanticipated bypass. The discharger shall submit notice of an unanticipated bypass as required in Reporting Requirement N.9.

d. Prohibition of Bypass

(1) Bypass is prohibited, and the SDRWQCB may take enforcement action against the discharger for bypass, unless:Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The discharger submitted notices as required under paragraph c. of this section.The SDRWQCB Executive Officer may approve an anticipated bypass, after considering its adverse effects, if the SDRWQCB Executive Officer determines that it will meet the three conditions listed above in paragraph d.(1) of this section.

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11. Upset [40 CFR 122.41(n)]

a. Definition

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based effluent limitations because of factors beyond the reasonable control of the discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an Upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph c. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions Necessary for a Demonstration of Upset

A discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the discharger can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The discharger submitted notice of the upset as required in Reporting Requirement N.9.(24 hour notice) of this Order; and

(4) The discharger complied with any remedial measures required under Provision L.5. of this Order.

d. Burden of Proof

In any enforcement proceeding the discharger seeking to establish the occurrence of an upset has the burden of proof.

12. Other Effluent Limitations and Standards [40 CFR 122.44(b)(1)]

If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Clean water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this Order, the SDRWQCB Executive Officer may institute proceedings under these regulations to modify or revoke and reissue the Order to conform to the toxic effluent standard or prohibition.

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13. The discharger shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncomplying discharge.

14. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.

15. The discharger shall comply with any interim effluent limitations as established by addendum, enforcement action, or revised waste discharge requirements which have been, or may be, adopted by this SDRWQCB.

## M. MONITORING REQUIREMENTS

1. Wet Weather Monitoring Annual Report

Pursuant to the Memorandum of Understanding, the copermitees shall jointly conduct the wet weather monitoring program described in Attachment C. of this Order. A single wet weather monitoring report shall be submitted by August 10 of each year.

2. Monitoring and Records [40 CFR 122.41(j)(1)]

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

3. Monitoring and Records [40 CFR 122.41(j)(2)] [California Water Code § 13383(a)]

The discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the SDRWQCB Executive Officer at any time.

4. Monitoring and Records [40 CFR 122.21(j)(3)]

Records of monitoring information shall include the information requested in Attachments A. and C. and the following:

a. The date, exact place, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

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5. Monitoring and Records [40 CFR 122.21(j)(4)]

Monitoring results must be conducted according to test procedures approved under 40 CFR part 136 unless other test procedures have been specified in the permit.

6. Monitoring and Records [40 CFR 122.21(j)(5)]

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

7. Monitoring and Records [40 CFR 122.41(k)(2)]

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

8. Monitoring Reports [40 CFR 122.41(l)(4)

Monitoring results shall be reported at the intervals specified elsewhere in this Order.

9. Monitoring Reports [40 CFR 122.41(l)(4)(ii)]

If the discharger monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR part 136, unless otherwise specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the reports requested by the SDRWQCB Executive Officer.

10. Monitoring Reports [40 CFR 122.41(l)(4)(iii)]

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the SDRWQCB Executive Officer in the permit.

## N REPORTING REQUIREMENTS

1. **Memorandum of Understanding**

Each copermittee shall submit a signed and executed copy of the Memorandum of Understanding (MOU) to the SDRWQCB no later than **August 10, 1995.**

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2. **Annual Report** [40 CFR 122.42(c)]

Each copermittee must submit an annual report to the SDRWQCB Executive Officer by **August 10** of each year. The report shall include a detailed discussion on the status of implementing the Comprehensive Storm Water and Urban Runoff Management Program described in section E. through K. of this Order: The discussion shall address the following:

a. Non-Prohibited Non-Storm Water Discharges (section B.)

Provide a status report on each non-prohibited class of non-storm water discharges described in section B.3. containing the following information:

(1) identification of the non-storm water discharge class(es) ;

(2) identification of the BMPs which have been implemented to prevent or reduce pollutant discharges from the non-prohibited class of non-storm water discharges;

(3) the data results of the monitoring program to access the volume, concentration and types of pollutants discharged as a result of the proposed non-prohibited class of non-storm water discharge; and

(4) A summary describing the number and nature of enforcement actions, inspections, and public education related to these non-storm water discharge classes.

b. Legal Authority (section F.)

Provide confirmation of continuing adequate legal authority as required in Section F. of this Order.

c. Illicit Connection / Illegal Discharge Detection Program (section G.);

(1) Provide a status report on all IC/ID detection activities including:

(a) number of IC/IDs detected by field screening;summary of field screening data including a frequency distribution of data to identify stations at which elevated levels of pollutants are consistently found. (Field screening data report is due every January 31).; and
(b) number of IC/IDs reported by public hotline .

(2) Provide a status report on all IC/ID elimination activities

(a) including:number of IC/IDs eliminated;
(b) number of enforcement actions taken

d. Best Management Practices Program (section H.)

Provide a status report on the implementation of each of the following five BMP programs:

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(1) Existing Minimum Best Management Practices Program;
(2) Municipal Best Management Practices Program;
(3) Construction Best Management Practices Program;
(4) Commercial Best Management Practices Program; and
(5) Industrial Best Management Practices Program.

e. Assessment of Management Program Effectiveness (section J.);

Using direct and indirect measures selected as long term indicators of management program effectiveness, provide an assessment of overall reductions in storm water pollutant loads, occurring during the past year, attributable to implementation of the Comprehensive Storm Water and Urban Runoff Management Program. Provide a summary describing the number and nature of enforcement actions, inspections, public education programs, and identification of water quality improvements or degradation.

f. Fiscal Analysis (section K.).

Update the projected five year fiscal analysis required in section K. of this Order, if necessary. At a minimum documentation should be submitted demonstrating that sufficient financial resources have been appropriated for the upcoming fiscal year to implement the conditions of this Order. Also include a description of the annual expenditures for the previous fiscal year.

3. Duty to Reapply [40 CFR 122.41(b)]

This Order expires on August 10, 2000. If the discharger wishes to continue any activity regulated by this Order after the expiration date of this Order, the discharger must apply for and obtain new waste discharge requirements. The discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations not later than 180 days in advance of the expiration date of this Order as application for issuance of new waste discharge requirements.

4. Duty to Provide Information [40 CFR 122.41(h)]

The discharger shall furnish to the Executive Officer, SWRCB Executive Director, or USEPA, within a reasonable time, any information which the Executive Officer, SWRCB Executive Director, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order, or to determine compliance with this Order. The discharger shall also furnish to the SDRWQCB Executive Officer, SWRCB Executive Director, or USEPA, upon request, copies of records required to be kept by this Order.

5. Planned Changes [40 CFR 122.41(l)(1)]

The discharger shall give notice to the SDRWQCB Executive Officer as soon as possible of any planned physical alterations or additions to the permitted facility.

Notice is required only when:

a The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b);

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b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order, nor to notification requirements under 40 CFR 122.42(a)(l); or

c. The alteration or addition results in a significant change in the discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of conditions in this Order that are different from or absent in the existing Order, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

6. Anticipated Non-Compliance [40 CFR 122.41(l)(2)]

The discharger shall give advance notice to the Executive Officer of any planned changes in the permitted facility or activity which may result in noncompliance with the requirements of this Order.

7. Transfers [40 CFR 122.41(l)(3)]

This Order is not transferable to any person except after notice to the SDRWQCB Executive Officer. The SDRWQCB Executive Officer may require modification or revocation and reissuance of this Order to change the name of the discharger and

incorporate such other requirements as may be necessary under the Clean Water Act or the California Water Code in accordance with the following:

a. Transfers by Modification [40 CFR 122.61(a)]

Except as provided in paragraph b. of this reporting requirement, this Order may be transferred by the discharger to a new owner or operator only if this Order has been modified or revoked and reissued, or a minor modification made to identify the new discharger and incorporate such other requirements as may be necessary under the Clean Water Act or California Water Code.

b. Automatic Transfers [40 CFR 122.61(b)]

As an alternative to transfers under paragraph a. of this reporting requirement, any NPDES permit may be automatically transferred to a new discharger if:

(1) The current discharger notifies the SDRWQCB Executive Officer at least 30 days in advance of the proposed transfer date in paragraph b.(2) of this reporting requirement;

(2) The notice includes a written agreement between the existing and new dischargers containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

(3) The SDRWQCB Executive Officer does not notify the existing discharger and the proposed new discharger of his or her intent to modify or revoke and reissue the Order. A modification under this

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subparagraph may also be a minor modification under 40 CFR Part 122.63. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph b.(2) of this reporting requirement.

8. Compliance Schedules [40 CFR 122.41(l)(5)]

Written reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order shall be submitted to the SDRWQCB no later than 14 days following each schedule date.

9. Twenty-four Hour Reporting [40 CFR 122.41(l)(6)]

The discharger shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally to the SDRWQCB Executive Officer within 24 hours from the time the discharger becomes aware of the circumstances. A written description of any noncompliance shall be submitted to the SDRWQCB Executive Officer within five days of such an occurrence and contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The following shall be included as information which must be reported within 24 hours under this reporting requirement:

a. Any unanticipated bypass which exceeds any effluent limitation in this Order;

b. Any discharge of treated or untreated wastewater resulting from pipeline breaks, obstruction, surcharge or any other circumstance;

c. Any upset which exceeds any effluent limitation in this Order; and

d. Any violation of the prohibitions of this Order.

10. Other Non-Compliance [40 CFR 122.41(l)(7)]

The discharger shall report all instances of noncompliance not reported under Monitoring Requirements M.7., M.8., and M.9., and Reporting Requirements N.8. and N.9. of this Order, at the time monitoring reports are submitted. The reports shall contain the information listed in Reporting Requirement N.9. of this Order.

11. Other Information [40 CFR 122.41(l)(8)]

Where the discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge, or submitted incorrect information in a Report of Waste Discharge, or in any report to the SDRWQCB, it shall promptly submit such facts or information.

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12. Signatory Requirements [40 CFR 122.41(k)(1) and 40 CFR 122.22]

All applications, reports, or information submitted to the SDRWQCB Executive Officer shall be signed and certified.

a. All Reports of Waste Discharge shall be signed as follows:

(1) **For a corporation**: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or (b) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) **For a partnership or sole proprietorship**: by a general partner or the proprietor, respectively; or

(3) **For a municipality, State, Federal or other public agency:** by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (a) the chief executive officer of the agency; or (b) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA).

b. All reports required by this Order, and other information requested by the SDRWQCB Executive Officer shall be signed by a person described in paragraph a. of this reporting requirement, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph a. of this reporting requirement;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and,

(3) The written authorization is submitted to the SDRWQCB Executive Officer.

c. If an authorization under paragraph b. of this reporting requirement is no longer accurate because a different individual or position has responsibility

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for the overall operation of the facility, a new authorization satisfying the requirements of paragraph b. of this reporting requirement must be submitted to the SDRWQCB Executive Officer prior to or together with any reports, information, or applications to be signed by an authorized representative.

d. Any person signing a document under paragraph a. or b. of this reporting requirement shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

13. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this Order shall be available for public inspection at the offices of the California Regional Water Quality Control Board, San Diego Region. As required by the Clean Water Act, Reports of Waste Discharge, this Order, and effluent data shall not be considered confidential.

14. The discharger shall submit reports and provide notifications as required by this Order to the following:

a. Storm Water Unit
California Regional Water Quality Control Board
San Diego Region
9771 Clairemont Mesa Blvd, Suite B
San Diego, California 92124-1331

Phone - (619) 467-2952 or
Fax - (619) 571-6972

b. U.S. Environmental Protection Agency
Region IX
Permits Issuance Section (W-5-1)
75 Hawthorne Street
San Francisco, California 94105

15. Unless otherwise directed, the discharger shall submit three copies of each report required under this Order to the SDRWQCB and one copy to USEPA.

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O. **NOTIFICATION**

1. California Water Code Section 13263(g) states:

   No discharge of waste into the waters of the state, whether or not such discharge is made pursuant to waste discharge requirements, shall create a vested right to continue such discharge. All discharges of waste into waters of the state are privileges, not rights.

2. Enforcement Provisions [40 CFR 122.41(a)(2)] [California Water Code Sections 13385 and 13387]

   The Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any condition or limitation of this Order, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation of this Order, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any condition or limitation of this Order, and who knows at that time that he or she thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Clean Water Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

3. Except as provided in Provisions L.10. and L.11. nothing in this Order shall be construed to relieve the discharger from civil or criminal penalties for noncompliance.

4. Nothing in this Order shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the Clean Water Act.

5. Nothing in this Order shall be construed to preclude institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

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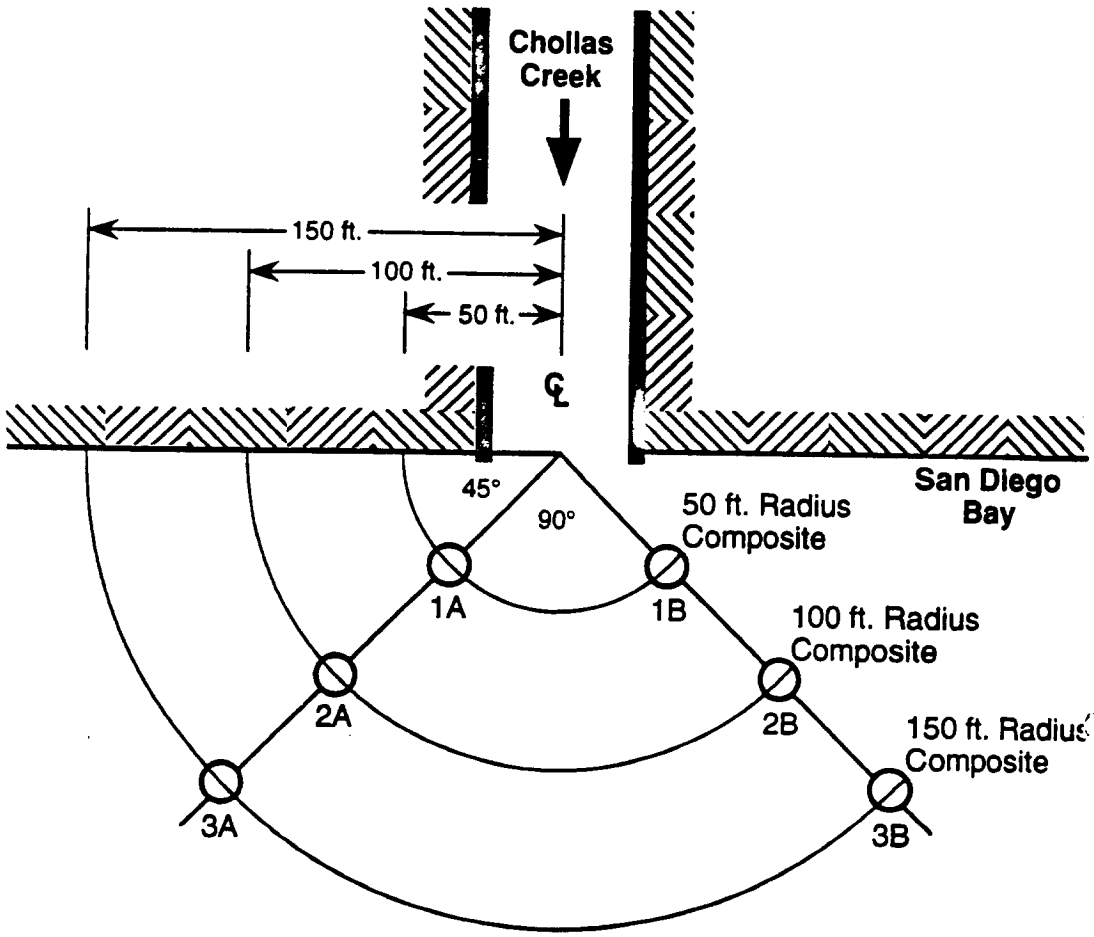


Not to Scale.

**Figure 2**
**SAN DIEGO BAY**
**MOUTH OF CHOLLAS CREEK STATION LOCATIONS**

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FTM:FSD-MR2

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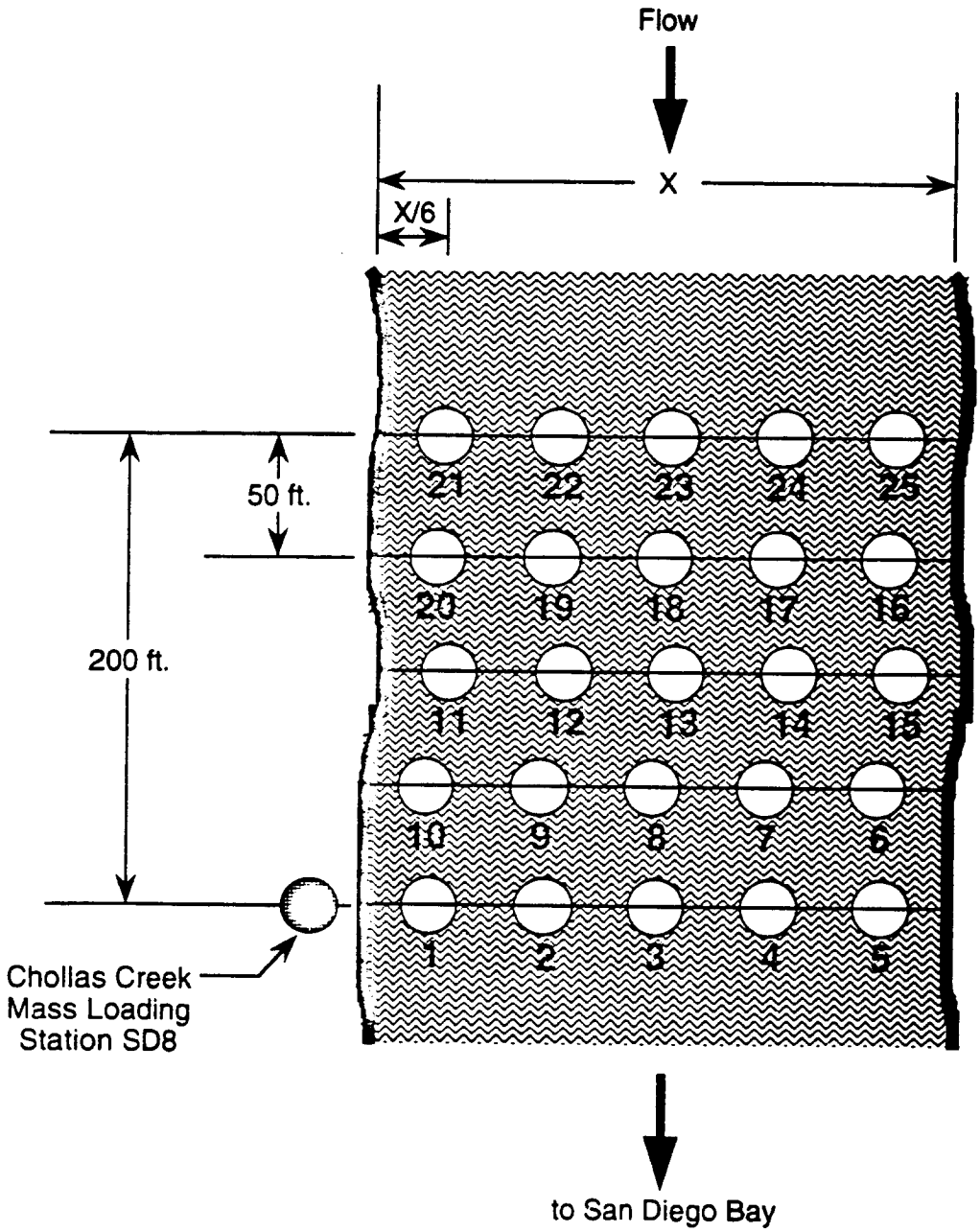


**Figure 1**
**CHOLLAS CREEK SEDIMENT STATION LOCATIONS**

SUPERMAC\HD\STORMWATER\FRANKS PAPERS\SD-MR
FTM\F\SD-MR

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The concentration of other PAHs, should also be provided if available without additional analytical costs.

11. PCBs

At a minimum the concentration of the following PCBs shall be reported: PCB 1016, PCB 1221, PCB 1232, PCB 1242, PCB 1248, PCB 1254, and PCB 1260. Additional PCB information, such as the concentrations of individual congeners, should also be provided if available without additional analytical costs.

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jrp33\attachmt.c
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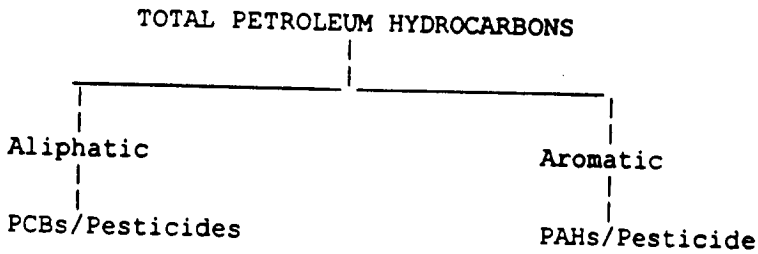
except mercury. Preparation procedures for mercury are included in Method 7471 "Mercury in Solid or Semisolid Waste."

8. Total Petroleum Hydrocarbons, $nC_{12}$ - $nC_{32}$

Using gas chromatography, analyze for the medium molecular weight hydrocarbons, boiling point range $nC_{12}$ - $nC_{32}$. Using Method 3611, "Alumina Column Cleanup and Separation of Petroleum Wastes," separate the two resulting fractions, specifying the concentrations of (1) saturated aliphatic hydrocarbons; (2) unsaturated aromatic hydrocarbons; and their sum, the Total Petroleum Hydrocarbons. The concentrations of the remaining monitored contaminants, PCBs, and PAHs, can be determined by further analysis of these two fractions.




9. Extraction Procedures for Modified Method 8015, 8080, 8270

Conduct only the analysis portion of Modified Method 8015 "Nonhalogenated Volatile Organics," Method 8080 "Organochlorine Pesticides and PCBs," and Method 8270 "Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Packed Column Technique." Do not conduct the extractions according to these methods. Instead, the extractions should be conducted according to Method 3540 "Soxhlet Extraction" or Method 3550 "Sonication Extraction."

10. Polynuclear Aromatic Hydrocarbons (PAHs)

The concentrations of the individual PAHs can be determined by further analysis of the unsaturated aromatic fraction. At a minimum, the concentrations of the following PAHs shall be reported: Acenaphthylene, Fluorene, Benz[a]anthracene, 1,2-Benzanthracene, 3,4-Benzofluoranthene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, 1,12-Benzoperylene, Dibenzo[ah]anthracene, Fluoranthene, Indeno[1,2,3-cd]pyrene, Phenanthrene, 1-Methyl Phenanthrene, 2-Methyl Phenanthrene, Perylene, Benzo[e]pyrene, Benzo[a]pyrene, Benzo[ghi]perylene, Chrysene, Fluoranthene, Pyrene, and Anthracene.

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| SEDIMENT CHEMISTRY CONSTITUENTS COMPOSITE SAMPLE | USEPA TEST METHOD NUMBER | DETECT LIMIT DRY | STATION[4] Chollas Creek | STATION[4] San Diego Bay |
|---|---|---|---|---|
| **General Physical** | | | | |
| 1. Grain Size | - | N/A | | |
| **Metals**[7] | | | | |
| 1. Arsenic (As) | 7060 OR 7061 | 0.5 mg/kg | | |
| 2. Cadmium (Cd)<br>3. Chromium (Cr)<br>4. Copper (Cu) | 6010 | 0.5 mg/kg | | |
| 5. Lead (Pb) | 7421 | 0.5 mg/kg | | |
| 6. Mercury (Hg) | 7471 | 0.1 mg/kg | | |
| 7. Nickel (Ni)<br>8. Silver (Ag) | 6010 | 0.5 mg/kg | | |
| 9. Zinc (Zn) | 6010 | 2.0 mg/kg | | |
| **Organics** | | | | |
| 1. Total Petroleum Hydrocarbons (TPH)[8, 9] | Modified 8015 or DHS | 500.0 ug/kg | | |
| 2. Polynuclear Aromatic Hydrocarbons (PAHs)[9, 10] and Pesticides | 8270 | 100.0 ug/kg | | |
| 3. Polychlorinated Biphenyl (PCBs)[9, 11] and Organochlorine Pesticides | 8080 | 20.0 ug/kg | | |
| 4. Total Organic Carbon (TOC) | 9060 | - | | |

Table 4
**SEDIMENT CHEMISTRY CONSTITUENTS COMPOSITE SAMPLE**

TABLE 4 FOOTNOTES:

7. Metals

Method 3050 "Acid Digestion of Sediments, Sludges, and Soils" shall be used in preparation for all metal analyses

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| CONSTITUENT PRIORITY FOR ANALYSIS |
|---|
| **LAND USE STATIONS** |
| 1. TSS and TDS.<br>2. Total Metals and Hardness.<br>3. TKN, Nitrate, Nitrite, Ammonia, pH, and BOD.<br>4. Total Petroleum Hydrocarbons.<br>5. COD, MBAS, Total and Dissolved Phosphorous, and Turbidity.<br>6. Pesticides (608).<br>7. A/B/N Extractables (625).<br>8. Total Phenols. |
| **MASS LOADING STATIONS (With Toxicity)** |
| 1. TSS and TDS.<br>2. Total Metals and Hardness.<br>3. TKN, Nitrate, Nitrite, Ammonia, pH, and BOD.<br>4. *Ceriodaphnia dubia*.<br>5. Dissolved Metals.<br>6. COD, MBAS, Total and Dissolved Phosphorous, and Turbidity.<br>7. Pesticides (608).<br>8. A/B/N Extractables (625).<br>9. Total Phenols.<br>10. *Pimephales promelas*. |
| **MASS LOADING STATIONS (Without Toxicity)** |
| 1. TSS and TDS.<br>2. Total Metals and Hardness.<br>3. TKN, Nitrate, Nitrite, Ammonia, pH, and BOD.<br>4. COD, MBAS, Total and Dissolved Phosphorous, and Turbidity.<br>5. Pesticides (608).<br>6. A/B/N Extractables (625).<br>7. Total Phenols. |

Table 3
CONSTITUENT PRIORITY FOR ANALYSIS

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| WATER CHEMISTRY CONSTITUENTS COMPOSITE SAMPLE | STATION[4] | |
|---|---|---|
| | LAND USE[5] | MASS LOADING[6] |
| **Other Organics** | | |
| 1. Methylene Blue Activated Substances (MBAS) | | |
| 2. Total Petroleum Hydrocarbons (TPH) | | |

Table 2 Continued
**WATER CHEMISTRY CONSTITUENTS**
**COMPOSITE SAMPLE**

[4]Shaded areas designate constituents to be analyzed.
[5]El Cajon/Santee set, Carlsbad/Oceanside set, and Tributary to San Diego Bay set.
[6]Switzer Creek, Chollas Creek, and Tecolote Creek.

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| WATER CHEMISTRY CONSTITUENTS COMPOSITE SAMPLE | STATION[4] LAND USE[5] | STATION[4] MASS LOADING[6] |
|---|---|---|
| **Pesticides** | | |
| 1. Aldrin | | |
| 2. Alpha-BHC | | |
| 3. Beta-BHC | | |
| 4. Gamma-BHC | | |
| 5. Delta-BHC | | |
| 6. Chlordane | | |
| 7. 4,4'-DDT | | |
| 8. 4,4'-DDE | | |
| 9. 4,4'-DDD | | |
| 10. Dieldrin | | |
| 11. Alpha-endosulfan | | |
| 12. Beta-endosulfan | | |
| 13. Endosulfan Sulfate | | |
| 14. Endrin | | |
| 15. Endrin Aldehyde | | |
| 16. Heptachlor | | |
| 17. Heptachlor Epoxide | | |
| 18. PCB-1242 | | |
| 19. PCB-1254 | | |
| 20. PCB-1221 | | |
| 21. PCB-1232 | | |
| 22. PCB-1248 | | |
| 23. PCB-1260 | | |
| 24. PCB-1016 | | |
| 25. Toxaphene | | |
| **Total Recoverable Metals** | | |
| 1. Antimony (Sb) | | |
| 2. Arsenic (As) | | |
| 3. Beryllium (Be) | | |
| 4. Cadmium (Cd) | | |
| 5. Chromium (Cr) | | |
| 6. Copper (Cu) | | |
| 7. Lead (Pb) | | |
| 8. Mercury (Hg) | | |
| 9. Nickel (Ni) | | |
| 10. Selenium (Se) | | |
| 11. Silver (Ag) | | |
| 12. Thallium (Tl) | | |
| 13. Zinc (Zn) | | |

Table 2 Continued
**WATER CHEMISTRY CONSTITUENTS COMPOSITE SAMPLE**

[4]Shaded areas designate constituents to be analyzed.
[5]El Cajon/Santee set, Carlsbad/Oceanside set, and Tributary to San Diego Bay set.
[6]Switzer Creek, Chollas Creek, and Tecolote Creek.

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| WATER CHEMISTRY CONSTITUENTS COMPOSITE SAMPLE | STATION[4] LAND USE[5] | STATION[4] MASS LOADING[6] |
|---|---|---|
| **Base/Neutral** | | |
| 29. Di-n-octyl phthalate | | |
| 30. 1,2-diphenylhydrazine (as azobenzene) | | |
| 31. Fluoranthene | | |
| 32. Fluorene | | |
| 33. Hexachlorobenzene | | |
| 34. Hexachlorobutadiene | | |
| 35. Hexachlorocydopentadiene | | |
| 36. Hexachloroethane | | |
| 37. Indeno(1,2,3-cd)pyrene | | |
| 38. Isophorone | | |
| 39. Naphthalene | | |
| 40. Nitrobenzene | | |
| 41. N-nitrosodimethylamine | | |
| 42. N-nitrosodi-n-propylamine | | |
| 43. N-nitrosodiphenylamine | | |
| 44. Phenanthrene | | |
| 45. Pyrene | | |
| 46. 1,2,4-trichlorobenzene | | |
| **General Physical/Inorganic** | | |
| 1. Ammonia | | |
| 2. Biochemical Oxygen Demand ($BOD_5$) | | |
| 3. Chemical Oxygen Demand (COD) | | |
| 4. Dissolved Phosphorus | | |
| 5. Nitrate plus Nitrite | | |
| 6. pH | | |
| 7. Total Hardness | | |
| 8. Total Kjeldahl Nitrogen (TKN) | | |
| 9. Total Phosphorus | | |
| 10. Total Dissolved Solids (TDS) | | |
| 11. Total Suspended Solids (TSS) | | |
| 12. Turbidity | | |

Table 2 Continued
**WATER CHEMISTRY CONSTITUENTS**
**COMPOSITE SAMPLE**

[4]Shaded areas designate constituents to be analyzed.
[5]El Cajon/Santee set, Carlsbad/Oceanside set, and Tributary to San Diego Bay set.
[6]Switzer Creek, Chollas Creek, and Tecolote Creek.

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| WATER CHEMISTRY CONSTITUENTS COMPOSITE SAMPLE | STATION[4] LAND USE[5] | STATION[4] MASS LOADING[6] |
|---|---|---|
| **Acid Compounds** | | |
| 1. 2-Chlorophenol | | |
| 2. 2,4-Dichlorophenol | | |
| 3. 2,4-Dimethylphenol | | |
| 4. 4,6-Dinitro-o-cresol | | |
| 5. 2,4-Dinitrophenol | | |
| 6. 2-Nitrophenol | | |
| 7. 4-Nitrophenol | | |
| 8. p-Chloro-m-cresol | | |
| 9. Pentachlorophenol | | |
| 10. Phenol | | |
| 11. 2,4,6-Trichlorophenol | | |
| **Base/Neutral** | | |
| 1. Acenaphthene | | |
| 2. Acenaphthylene | | |
| 3. Anthracene | | |
| 4. Benzidine | | |
| 5. Benzo(a)anthracene | | |
| 6. Benzo(a)pyrene | | |
| 7. 3,4-benzofluoranthene | | |
| 8. Benzo(ghi)perylene | | |
| 9. Benzo(k)fluoranthene | | |
| 10. Bis(2-chloroethoxy)methane | | |
| 11. Bis(2-chloroethyl)ether | | |
| 12. Bis(2-chloroisopropyl)ether | | |
| 13. Bis(2-ethylhexyl)phthalate | | |
| 14. 4-bromophenyl phenyl ether | | |
| 15. Butylbenzyl phthalate | | |
| 16. 2-Chloronaphthalene | | |
| 17. 4-Chlorophenyl phenyl ether | | |
| 18. Chrysene | | |
| 19. Dibenzo(a,h)anthracene | | |
| 20. 1,2-Dichlorobenzene | | |
| 21. 1,3-Dichlorobenzene | | |
| 22. 1,4-Dichlorobenzene | | |
| 23. 3,3-Dichlorobenzidine | | |
| 24. Diethyl phthalate | | |
| 25. Dimethyl phthalate | | |
| 26. Di-n-butyl phthalate | | |
| 27. 2,4-Dinitrotoluene | | |
| 28. 2-6-dinitrotoluene | | |

Table 2
**WATER CHEMISTRY CONSTITUENTS**
**COMPOSITE SAMPLE**

[4]Shaded areas designate constituents to be analyzed.
[5]El Cajon/Santee set, Carlsbad/Oceanside set, and Tributary to San Diego Bay set.
[6]Switzer Creek, Chollas Creek, and Tecolote Creek.

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Reporting Requirement N.12 of Order No. 95-76.

O. Submit five (5) hardcopies and one (1) electronic copy in Wordperfect or compatible format (ANSI Delimited Text, Generic Word Processor, or Text, ASCII Delimited Text, Generic Word Processor, or Text, DisplayWrite, IBM DCA FFT, or RFT, MS Word, MulitMate, OfficeWriter, Rich Text Format, Wordstar, and XYWrite III) on a three and one half(3 1/2) inch computer disk of all final reports to the SDRWQCB no later than **August 10, 1996** and every August 10 thereafter.

| WATER CHEMISTRY CONSTITUENTS GRAB SAMPLE | STATION[4] | |
|---|---|---|
| | LAND USE[5] | MASS LOADING[6] |
| **General Physical/Inorganic**<br>1. pH<br>2. Oil and Grease<br>3. Specific Conductance<br>3. Temperature<br>4. Total Cyanide | | |
| **Bacteriological**<br>1. Fecal Coliform<br>2. Fecal Streptococci<br>3. Total Coliform | | |

Table 1
**WATER CHEMISTRY CONSTITUENTS GRAB SAMPLE**

[4]Shaded areas designate constituents to be analyzed.
[5]El Cajon/Santee set, Carlsbad/Oceanside set, and Tributary to San Diego Bay set.
[6]Switzer Creek, Chollas Creek, and Tecolote Creek.

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D. Evaluate compliance with non-metals water quality objectives established for receiving waters in Quality Criteria for 1986, "Gold Book," EPA 440/5-86-001.

E. In evaluating toxicity results, conduct the statistical methods specified in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, (Second Edition, EPA 600 4-89/001, March 1989 or subsequent editions) and Standard Guide For Conducting 10-Day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods, (American Society for Testing and Materials, Procedure E 1367-92).

F. Describe the data to be stored and the storage format.

G. Include applicable hydrographs and precipitation information.

H. Identify sources of pollutants in the monitored storm water conveyance systems.

I. Based on the data, recommend general and site-specific pollution prevention and corrective measures which should be implemented. Evaluate the effectiveness of existing measures.

J. Compare the current San Diego storm water monitoring results to previous years' monitoring results, the National Urban Runoff Program (NURP) data, and the results of other municipal storm water monitoring programs.

K. Identify potential trends, if any, in storm water/urban runoff.

L. Submit one (1) copy of all data in an Excel or compatible format (Lotus 1-2-3, Quatro Pro, and dBase II-IV) to the RWQCB on a three and one half (3 1/2) inch computer disk by **June 30, 1996** and every June 30 thereafter.

M. Submit three (3) copies of all draft reports to the SDRWQCB no later than by **July 15, 1996** and every July 15 thereafter.

N. All final monitoring reports shall be signed and certified by an authorized person as required by

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4. Field setup.
5. Sampler equipment check and setup.
6. Sample collection.
7. Use of field blanks to assess field contamination.
8. Use of field duplicate samples.
9. Transportation to the laboratory.
10. Training of field personnel.
11. Evaluation, and enhancement if needed of the QA/QC plan.

B. Develop and implement a QA/QC plan for laboratory operations, that covers at a minimum:

1. Quality assurance objectives.
2. Organization of laboratory personnel, their education, experience, and duties.
3. Sample procedures.
4. Sample custody.
5. Calibration procedures and frequency.
6. Analytical procedures.
7. Data reduction, validation, and reporting.
8. Internal quality control procedures.
9. Performance and system audits.
10. Preventive maintenance.
11. Assessment of accuracy and precision.
12. Corrective actions.
13. Quality assurance report.

## IX. *DATA ANALYSIS AND REPORTING*

A. For each monitoring program component listed above (if applicable), provide the data/results, methods of evaluating the data, graphical summaries of the data, and an explanation/discussion of the data including conclusions, if any, which can be drawn.

B. Define the magnitude of each pollutant in terms of event mean concentration and mass loading. Describe and provide the models/calculations used to estimate the event mean concentrations and mass loadings.

C. In evaluating metals results, provide the concentration of each metal and the hardness of the water sample. Calculate the water quality objective for each metal at the corresponding hardness. Compare the measured concentration for each metal to the receiving water quality objective (adjusted for hardness) in Quality Criteria for 1986, "Gold Book," EPA 440/5-86-001.

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per year, before and after the wet season. Sediment samples shall be surficial meaning, collected from within the top one inch of bay sediment. The pre and post-wet season samples should be collected within the two (2) week period before October 1 and the two (2) week period after April 30 of the following year. Composite sediment from Station 1A and 1B. Conduct a bioassay on the Station 1 composite sample. Composite sediment from Station 3A and 3B. Conduct a sediment bioassay on the Station 3 composite sediment sample.

**San Diego Bay**

1. **Mouth of Chollas Creek.**

B. Conduct each bioassay in accordance with Standard Guide For Conducting 10-Day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods, (American Society for Testing and Materials, Procedure E 1367-92) and Standard Guide for Collection, Storage, Characterization, and Manipulation of Sediments for Toxicological Testing, (American Society for Testing and Materials, Procedure E 1391-90).

C. Follow the protocol for use with the organism, *Eohaustorius estuarius*. Each bioassay should include at a minimum five (5) replicates of test sediment and the following three (3) types of controls: five (5) test chambers of negative sediment, five (5) test chambers of control reference sediment, and six to seven (6-7) test chambers of positive control.

## VII. *MONITORING AND REPORTING PROGRAM OBJECTIVES*

A. Define the objectives of Wet Weather Monitoring and Reporting Program No. 95-76.

## VIII. *QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)*

**All field and laboratory handling must be conducted using "clean techniques." See citation under Section I.F. above.**

A. Develop and implement a QA/QC plan for field operations, that covers at a minimum:

1. Quality assurance objectives.
2. Sample container preparation, labeling, and storage.
3. Chain-of-custody tracking.

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for the constituents shown in Table 4, SEDIMENT CHEMISTRY CONSTITUENTS, COMPOSITE SAMPLE.

V. *SAN DIEGO BAY/SEDIMENT CHEMISTRY*
**(6 Stations) (1 Composite Sample/2 Stations) (2/Year)**

A. Collect sediment samples from San Diego Bay at the mouth of Chollas Creek twice per year, before and after the wet season. The pre and post-wet season samples should be collected within the two (2) week period before October 1 and the two (2) week period after April 30 of the following year.

**San Diego Bay**

1. **Mouth of Chollas Creek.**

B. Collect one (1) sediment sample from each of six (6) stations at the Chollas Creek outfall as shown in Figure 2, SAN DIEGO BAY, MOUTH OF CHOLLAS CREEK STATION LOCATIONS. The station location pattern is designed to allow detection of a gradient, if present. The stations will be located along two (2) transects emanating from the centerline of the channel. Three (3) stations will be located along each transect. The first transect will extend from the channel centerline at a forty-five (45) degree angle. The second transect will extend from the channel centerline at a forty-five (45) degree angle in the opposite direction. Paired stations will be located at fifty (50), one hundred (100), and one hundred and fifty (150) feet from the centerline of the channel. Sediment samples shall be surficial meaning, collected from within the top one inch of bay sediment.

C. Composite the two (2) fifty (50) foot samples into one (1) composite sample. Composite the two (2) one hundred (100) foot samples into one (1) composite sample. Composite the two (2) one hundred and fifty (150) foot samples into one (1) composite sample. Analyze each of the three (3) composite sediment samples for the constituents shown in Table 4, SEDIMENT CHEMISTRY CONSTITUENTS, COMPOSITE SAMPLE.

VI. *SAN DIEGO BAY/SEDIMENT BIOASSAY*
**(2 Stations) (1 Bioassay/Station) (2/Year)**

A. For purposes of conducting sediment bioassays, collect sediment from Stations 1A, 1B, 3A, and 3B (see Figure 2) in San Diego Bay at the mouth of Chollas Creek twice

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F. Chronic Toxicity, expressed as $TU_c$ equals 100/NOEC. NOEC (No Observed Effect Concentration) is the maximum concentration of test water (in terms of percent test water) that causes no observed effect on a critical life stage of a test organism. The water quality objective for chronic toxicity is 1.0 $TU_c$ as a daily average. If the chronic toxicity objective of 1.0 $TU_c$ is exceeded, the copermittees shall analyze the corresponding archived water sample for dissolved metals. Dissolved metals, will be required in lieu of the requirement to conduct a toxicity reduction evaluation (TRE) and toxicity identification reduction (TIE).

IV. *MASS LOADING STATION/SEDIMENT CHEMISTRY* **(Chollas Creek 25 Stations) (1 Composite Sample/25 Stations) (2/year)**

A. Collect sediment samples twice per year, before and after the wet weather season, at the Chollas Creek mass loading station, SD8, (upstream of the tidal influence where the channel is natural and no longer concrete). The pre and post-wet season samples should be collected within the two (2) week period before October 1 and the two (2) week period after April 30 of the following year.

**San Diego Bay**

1. **Chollas Creek** -- SD8.

B. Collect one (1) sediment sample from each of twenty-five (25) stations in Chollas Creek [sediment from all twenty-five (25) stations will be composited into one (1) sample for analysis]. The twenty-five (25) stations will be located in accordance with Figure 1, CHOLLAS CREEK SEDIMENT STATION LOCATIONS. The stations will be located along five (5) bank to bank transects of the creek, each equally spaced across a two hundred (200) foot reach (length) of creek upstream from Chollas Creek mass loading station, SD8, where the channel is natural and no longer concrete. Each bank to bank transect will have five (5) equally spaced stations from which one (1) sample will be collected. Sediment samples shall be surficial meaning, collected from within the top one to two inches of creek sediment.

C. Composite the twenty-five (25) sediment samples into one (1) sample. Analyze the composite sediment sample

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the order of priority in which the analyses are to be conducted.

**San Diego Bay**

1. **Chollas Creek** -- SD8.

**Mission Bay**

2. **Tecolote Creek** -- SD5.

B. Archive a portion of all water samples taken from Chollas Creek and Tecolote Creek mass loading stations during each of three (3) storms. If toxicity of these samples is found to be significant, follow-up chemical analyses on the archived portions will be required.

C. The toxicity bioassays shall be conducted as specified in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, (Second Edition, EPA 600 4-89/001, March 1989 or subsequent editions) and Supplement to Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Revision 1, EPA 600 4-89/001a, September 1989).[2,3]

D. Specifically the following two (2) bioassays shall be conducted on samples from Chollas Creek and Tecolote Creek during three (3) storm events:

1. "Fathead Minnow, *Pimephales Promelas*, Larval Survival and Growth Test Method 1000.0"

2. "Cladoceran, *Ceriodaphnia Dubia*, Survival and Reproduction Test Method 1002.0"

E. Although these are both seven (7) day chronic toxicity bioassays, acute toxicity can also be calculated from these tests if daily observations on mortality are made. Rather than conducting separate tests for acute toxicity, record daily mortality during the above chronic tests and calculate acute toxicity.

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[3]A single storm water sample will be split into sevenths (seven subsamples) to allow for daily replenishment of the test chambers. Every effort shall be made to meet the USEPA protocol for holding times. All holding times will be recorded and reported to the RWQCB.

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B. Sample each station during three (3) storm events. Sample the first two (2) storm events of the wet weather season which meet the USEPA's criteria. For the third storm event, sample the first event after February 1 which meets the USEPA's criteria.

C. Equip each mass loading station with an automatic refrigerated flow composite sampler by October 1.

D. At each station, during each storm event, collect one (1) grab sample and one (1) composite sample. Analyze all grab samples for the constituents shown in Table 1, WATER CHEMISTRY CONSTITUENTS, GRAB SAMPLE.[2] Analyze all composite samples for the constituents shown in Table 2, WATER CHEMISTRY CONSTITUENTS, COMPOSITE SAMPLE. In the event that sample volumes prove insufficient for analysis of all listed constituents, Table 3, CONSTITUENT PRIORITY FOR ANALYSIS, specifies the order of priority in which the analyses are to be conducted.

E. Monitoring must be conducted according to USEPA test procedures approved under Title 40, Code of Federal Regulations (CFR), Part 136, "Guidelines Establishing Test Procedures for Analysis of Pollutants Under the Clean Water Act" as amended, unless other test procedures have been specified by this Order or the Executive Officer.

F. All sampling and laboratory analyses must be conducted using "clean techniques" in accordance with the Interim Guidance On Determination and Use of Water-Effect Ratios for Metals, EPA-823-B-94-001. Specifically Appendix C, Guidance Concerning use of "Clean Technique" and QA/QC When Measuring Trace Metals.

## III. *MASS LOADING STATIONS/AMBIENT WATER TOXICITY*
**(2 Stations) (2 Bioassays/Station) (3 Storms)**

A. To estimate the chronic toxicity of ambient water in Chollas and Tecolote Creeks during storm events, collect additional water samples (concurrent with sample collected for water chemistry) from these stations for toxicity bioassays. Conduct two (2) chronic toxicity bioassays from Chollas and Tecolote Creek mass loading stations during each of three (3) storms. In the event that sample volume proves insufficient for analysis of all listed constituents, Table 3, CONSTITUENT PRIORITY FOR ANALYSIS, specifies

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insufficient for analysis of all listed constituents, Table 3, CONSTITUENT PRIORITY FOR ANALYSIS, specifies the order of priority in which the analyses are to be conducted.

E. Monitoring must be conducted according to USEPA test procedures approved under 40 CFR § 136, "Guidelines Establishing Test Procedures for Analysis of Pollutants Under the Clean Water Act" as amended, unless other test procedures have been specified by this Monitoring and Reporting Program, or the Executive Officer.

F. All sampling and laboratory analyses must be conducted using "clean techniques" in accordance with the Interim Guidance On Determination and Use of Water-Effect Ratios for Metals, EPA-823-B-94-001. Specifically Appendix C, Guidance Concerning use of "Clean Technique" and QA/QC When Measuring Trace Metals.

G. Copermittees are no longer required to analyze grab samples from land use stations for volatile organic compounds. The Copermittees shall redirect fifty percent (50%) of the total resulting cost savings into their public education program. Evidence that each Copermittee's education budget has been augmented by fifty percent (50%) of the total cost savings (resulting from deletion of volatiles) shall be submitted to the RWQCB no later than July 31, 1996.

II. ***MASS LOADING STATIONS/WATER CHEMISTRY***
**(3 Stations) (2 Samples/Station) (3 Storms)**

A. Monitor the following three (3) existing mass loading stations sampled during the 1994/95 San Diego Copermittees Wet Weather Monitoring Program.

**San Diego Bay**

1. **Switzer Creek** -- SD7, located near the intersection of Imperial Avenue, National Avenue and 12th Avenue in the San Diego Trolley Yard.

2. **Chollas Creek** -- SD8, in the creek near the intersection of 33rd Street and Durant Street.

**Mission Bay**

3. **Tecolote Creek** -- SD5, located near the intersection of Tecolote Road and Morena Boulevard, in San Diego.

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**Tributary to San Diego Bay**

7. **Commercial** -- SD10, Bramson Place and Interstate 805.

8. **Industrial** -- SD11, 1342 Crosby Street.

9. **Residential** -- SD12, Landis Street, east of 40th Street.

B. Sample each station during three (3) storm events. Sample the first two (2) storm events of the wet weather season which meet the United States Environmental Protection Agency's (USEPA's) criteria as described in 40 CFR § 122.21(g)(7)[1]. For the third storm event, sample the first event after February 1 which meets the USEPA's criteria. The key components of USEPA's storm event criteria [40 CFR § 122.21(g)(7)] are summarized below.

   1. A rainfall of at least one-tenth (0.1) inch in the drainage area.

   2. No storm event in excess of one-tenth (0.1) inch in the drainage area for at least seventy-two (72) hours prior to the sampled storm event.

   3. A storm event within plus or minus fifty (50) percent of the average or median per storm volume and duration for the region.

C. Equip each land use station with an automatic refrigerated flow composite sampler by October 1.

D. At each station, during each storm event, collect one (1) grab sample and one (1) composite sample. Analyze all grab samples for the constituents shown in Table 1, WATER CHEMISTRY CONSTITUENTS, GRAB SAMPLE.[2] Analyze all composite samples for the constituents shown in Table 2, WATER CHEMISTRY CONSTITUENTS, COMPOSITE SAMPLE. In the event that sample volumes prove

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[1]For purposes of this Monitoring and Reporting Program the requirement that there be a one (1) month separation between storm event samples has been deleted.

[2]Total Chlorine Residual need not be analyzed in the field (as a water chemistry constituent) but will be analyzed and reported (estimated) during ambient water toxicity tests.

# ATTACHMENT C (draft)

## WET WEATHER MONITORING & REPORTING PROGRAM TO ORDER NO. 95-76

The purpose of the Wet Weather Monitoring and Reporting Program is to characterize storm water pollutant loading and concentrations, including long term trends, during the wet weather season. The wet weather season is defined as October 1 through April 30 of each year.

Pursuant to the copermittees' Memorandum of Understanding, the copermittees shall collectively conduct Wet Weather Monitoring and Reporting Program to Order No. 95-76 in accordance with the specifications below. This program shall be conducted on an ongoing basis beginning with the 1995-96 wet weather season (starting October 1, 1995).

I. ***LAND USE STATIONS/WATER CHEMISTRY***
**(9 Stations) (2 Samples/Station) (3 Storms)**

A. Monitor the existing nine (9) land use stations sampled during the 1994/95 San Diego Copermittees Wet Weather Monitoring Program.

**El Cajon/Santee**

1. **Residential** -- SC1, manhole in Jeremy Street south of the Braverman Drive intersection in Santee.

2. **Industrial** -- SC2, in Forrester Creek at the Vernon Way overpass in El Cajon.

3. **Commercial** -- SC3, Wal-Mart parking lot on Town Center Parkway in Santee.

**Carlsbad/Oceanside**

4. **Commercial** -- NC1, intersection of Yuma Avenue and Manzanita Drive in Oceanside.

5. **Residential** -- NC2, intersection of Park Drive and Adams Street in Carlsbad.

6. **Industrial** -- NC3, intersection of Yarrow Drive and Camino Vida Roble in Oceanside.

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d. A program for prevention of sewage spills into the storm water conveyance system to the extend practicable; and

e. A program for prevention and control of pollutants from:

1. Storm water conveyance system operation and management;

2. Streets and roads;

3. Flood control activities;

4. Public facilities; and

5. Maintenance of public facilities including, but not limited to, streets and roads, public lots, public water bodies and municipal buildings.

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NPDES Storm Water Permits as a prerequisite condition to the issuance of a local permit; and

j. Provide input to SANDAG representatives to ensure that water quality considerations are included in Congestion Management activities.

2. Establish a periodic catch basin and storm water channel cleaning program.

3. Increase cleaning frequency of trash receptacles and the number of roadside and beach trash receptacles in areas where needed.

4. Conduct street sweeping in a manner which improves the quality of urban runoff and which is consistent with the current findings on optimum street sweeping methodologies and equipment.

5. Establish a program to eliminate the improper disposal of solid waste, including, but not limited to, litter lawn/garden clippings and animal waste, into the street or areas where runoff may carry these pollutants to the storm water conveyance system.

6. Participate in recycling and Household Hazardous Waste Programs.

7. Establish municipal source control including interdepartmental education and SWPPP for corporation yards. This program must also include:

a. Storm Water Pollution Prevention Plans (SWPPPs) for Copermittee facilities such as corporation yards and vehicle maintenance facilities;

b. A program for inspection of Copermittee facilities;

c. BMP program, stressing pollution prevention for all Copermittee activities. This should include a focused education program for Copermittee employees involved in outdoor operation or maintenance activities anywhere in a Copermittee's jurisdiction. Specifically, Copermittees must minimally develop a timeline and a program for the adoption and implementation of an Integrated Pest Management (IPM) program for all public parks, golf courses, landscaping around public schools, buildings and cemeteries. The IPM program is to be fully implemented within two years of the issuance of this order;

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**ATTACHMENT B** (DRAFT)

## EXISTING MINIMUM BEST MANAGEMENT PRACTICES PROGRAM ORDER NO. 95-76

1. Establish a Public Education Program which includes, at a minimum, the following elements:

   a. Establish or improve an areawide catch basin stenciling program to discourage the dumping, spillage or discharge of pollutants or debris into storm water conveyance systems;

   b. Develop programs to promote, publicize and facilitate public reporting of illicit connections and illegal discharges;

   c. Develop public education and community outreach programs to increase public awareness of storm water conveyance systems and their intended purpose. Target specific audiences including decision makers/elected officials, municipal personnel, commercial, industrial and construction personnel, media, volunteers, citizens and students;

   d. Encourage all residents, owners, renters, managers of multi-family dwellings, and businesses to remove and properly dispose of dirt, rubbish and debris from their sidewalks and alleys which may contribute pollutants to urban runoff. (i.e., sweep and discard in trash, do not hose);

   e. Encourage recycling of oil, antifreeze, batteries, tires, glass, paper, plastic and other materials to prevent their improper disposal into the storm water conveyance system;

   f. Encourage the proper disposal of household hazardous wastes to prevent disposal of such materials to the storm water conveyance system;

   g. Encourage the proper use and conservation of water to minimize runoff from landscaped areas, lawns, golf-courses, etc.;

   h. Educate all departments and personnel of each copermittee on the requirements of the storm water/urban runoff management program and on ways to comply and encourage compliance with those requirements;

   i. Consider requiring verification of compliance with the statewide General Industrial and General Construction

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agencies include the SDRWQCB, Department of Public Health, Department of Fish and Game, etc.) The hotline shall also provide general information to the public.

**Task 1. Develop and submit Public Complaint and Information Hotline procedures**

Develop written procedures for receiving and documenting complaints from the public or governmental agencies (federal, state, or local, including in-house staff) of activities or incidents involving illicit connections or illegal discharges to the storm water conveyance system. The procedures shall also address the provision of information to the public on topics including, but not limited to, storm water pollution, pollution prevention, and proper disposal alternatives (including scheduled disposal events). Submit your written public hotline procedures to the SDRWQCB no later than **December 15, 1995.**

**Task 2. Establish Public Complaint and Information Hotline**

Establish a dedicated phone number to which the public can report incidents of illicit connections and illegal discharges no later than **January 31, 1996.** The phone line at a minimum should have voicemail capabilities (or telephone answering machine with a recorded message), must be in at least English and Spanish languages (copermittees can establish a model message), and advise callers to dial 911 in the case of an emergency.

**Task 3. Publicize Public Complaint and Information Hotline**

Include the following information in public education brochures and announcements:

a. Public complaint hotline telephone number;
b. Definition of an illicit connection;
c. Definition of an illegal discharge; and
d. Common disposal alternatives (and scheduled disposal events).

Publicize the hotline within 60 days of dedication. Send notice to the SDRWQCB that you have publicized the hotline no later than **March 31, 1997.**



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NOTE:
Bacteriological analyses need only be conducted at those stations tributary to San Diego Bay.

c. If the station is dry (no flowing or ponded runoff), make and record all observations on USEPA's field screening data form.

Submit your written field screening procedures to the SDRWQCB no later than **December 15, 1995**. Also submit the name of the manufacturer of the test method along with the range and accuracy of the test. Alternative Dry Weather Field Screening Programs that are more comprehensive than described herein may be submitted with proper justification, in lieu of this program, for review by SDRWQCB staff.

**Task 6. Conduct dry weather field screening**

Conduct field screening in accordance with your storm water conveyance system map and field screening procedures as described in Tasks 1 and 5 above.

During field screening, confirm the accuracy of your storm water conveyance system map. If inaccuracies are found, conduct the followup investigation and elimination activities described in sections G.4. and G.5. of this Order. Also, correct your storm water conveyance system map and resubmit it to the SDRWQCB as part of the dry weather field screening data report due **January 31, 1997**.

**Task 7. Summarize and report field screening results**

Using Excel or compatible format (Lotus 1-2-3, Quatro Pro, and dBase II-IV), report the data in tabular and graphical presentations. Develop a frequency distribution of data to identify stations at which elevated levels are consistently found. Submit a summary data report in spreadsheet format and a frequency distribution to the SDRWQCB on **January 31, 1997** and each **January 31** thereafter.

## PUBLIC COMPLAINT AND INFORMATION HOTLINE

Each copermittee shall, no later than **January 31, 1996**, establish a public hotline in accordance with the specifications below. A storm water public complaint hotline is required to receive complaints from the public or governmental agencies of activities or incidents involving illicit connections or illegal discharges to the storm water conveyance system. (Governmental

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**Task 4. Complete and submit conveyance system map**

Clearly identify each dry weather field screening station and the watershed drained through each station on your storm water conveyance system map. Ensure that all drainage areas within your jurisdiction are screened. Submit your map to the SDRWQCB no later than **December 15, 1995.**

**Task 5. Develop and submit field screening procedures**

Develop written procedures for dry weather field screening, including both field observations and analyses. The procedures must be based on the following minimum criteria:

a. Conduct field screening at each station once per month during the dry weather season.

b. If there is flowing or ponded runoff at the station and there has been at least seventy-two (72) hours of dry weather, make observations and collect two (2) grab samples during a twenty-four (24) hour period with a minimum period of four (4) hours between samples. Record observations and analyses on United States Environmental Protection Agency's (USEPA's) field screening data form[1]. Provide all information requested by the form, including General Information [time since last rain, and quantity of last rain], Field Site Description [conveyance type, and dominant watershed land uses], Flow Estimation [width of water surface, approximate depth of water, approximate flow velocity, and flow rate], and Visual Observations [odor, color, clarity, floatables, deposits/stains, vegetation condition, structural condition, and biological]. At a minimum, conduct field analyses for the following constituents:

Water Temperature (degrees Celsius)
pH
Total Phenol (mg/l)
Total Chlorine (mg/l)
Total Copper (mg/l)
Detergents (mg/l)
Total Coliform (San Diego Bay only)
Fecal Coliform (San Diego Bay only)

[1]USEPA, Off. of Water, Guidance Manual For The Preparation Of Part 1 Of The NPDES Permit Applications For Discharges From Municipal Separate Storm Sewer Systems, fig. 4.6 at p. 86, USEPA-505/8-91-003A, (April 1991).

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# ATTACHMENT A (draft)

## DRY WEATHER FIELD SCREENING AND PUBLIC HOTLINE SPECIFICATIONS TO ORDER NO. 95-76

### DRY WEATHER FIELD SCREENING

Dry weather field screening consists of (1) field observations, and (2) field analysis at selected stations during the dry weather season for the purpose of detecting illicit connections and illegal discharges. The dry weather season is defined as May 1 through September 30 of each year.

Each copermittee shall continue to conduct its existing dry weather field screening program for the **1995** dry weather season. The 1995 dry weather season report shall be submitted by **January 31, 1996.**

Each copermittee shall, on an ongoing basis beginning **May 1, 1996**, conduct dry weather field screening in accordance with the specifications below. The **1996** dry weather field screening results shall be submitted on **January 31, 1997.**

**Task 1. Develop storm water conveyance system map**

Develop or obtain an up to date map showing your municipality's entire storm water conveyance system and all watersheds within your jurisdiction. Identify and label all watersheds and storm water conveyance systems. The accuracy of your storm water conveyance system map will be confirmed during field screening (See Task 6).

**Task 2. Select field screening stations**

Based upon hydrologic characteristics, select dry weather field screening stations which cover your entire municipality. Although there are no specific minimum number of stations or drainage size requirements, you must include enough stations to ensure that all watersheds, and all portions of each watershed, within your jurisdiction are drained through at least one station.

**Task 3. Justify field screening stations**

Provide written justification for your selection of each field screening station. Provide a detailed narrative description of each site and a photograph. Submit your justification/description to the SDRWQCB no later than **December 15, 1995.**

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## COMPLIANCE AND REPORTING HEDULE FOR ORDER NO. 95-76

6/20/95

| TASK NUMBER | TASK | PERMIT SECTION | PAGE | SUBMITTAL TYPE | INITIAL IMPLEMENTATION DATE OR SUBMITTAL DATE | FREQUENCY OF IMPLEMENTATION OR SUBMITTAL |
|---|---|---|---|---|---|---|
| 25 | Municipal BMP Program -- submit annual report | N.2. | 31 | Annual Report | 8/10 | Annually |
| 26 | Construction BMP Program -- submit proposed program | H.3.a. | 18 | Proposed Program | 8/10/96 | Once only |
| 27 | Construction BMP Program -- implement program | H.3.b. | 18 | Implementation Notice | 11/10/96 | Ongoing |
| 28 | Construction BMP Program -- submit annual report | N.2. | 31 | Annual Report | 8/10 | Annually |
| 29 | Commercial BMP Program -- submit proposed program | H.4.a. | 20 | Proposed Program | 8/10/97 | Once only |
| 30 | Commercial BMP Program -- implement program | H.4.b. | 20 | Implementation Notice | 11/10/97 | Ongoing |
| 31 | Commercial BMP Program -- submit annual report | N.2. | 31 | Annual Report | 8/10 | Annually |
| 32 | Industrial BMP Program -- submit proposed program | H.5.a. | 22 | Proposed Program | 2/10/98 | Once only |
| 33 | Industrial BMP Program -- implement program | H.5.b. | 22 | Implementation Notice | 5/10/98 | Ongoing |
| 34 | Industrial BMP Program -- submit annual report | N.2. | 31 | Annual Report | 8/10 | Annually |
| 35 | Monitoring and Reporting -- Initiate Wet Weather Monitoring Program | Attachment C. | 1 | - | 10/1/95 | Ongoing |
| 36 | Monitoring and Reporting -- Submit one electronic copy of Wet Weather Monitoring Data | Attachment C. | 10 | Annual Monitoring Report | 6/30/96 | Annually |
| 37 | Monitoring and Reporting -- Submit three hard copies of Wet Weather Monitoring draft report | Attachment C. | 10 | Annual Monitoring Report | 7/15/96 | Annually |
| 38 | Monitoring and Reporting -- Submit five hard copies and 1 electronic copy of Wet Weather Monitoring final report | Attachment C. | 11 | Annual Monitoring Report | 8/10/96 | Annually |
| 39 | Effectiveness Assessment -- Submit assessment of management program effectiveness | J. | 24 | Report | 1/31/98 | Once only |
| 40 | Effectiveness Assesement -- Submit annual report on assessment of management program effectiveness | N.2. | 31 | Annual Report | 8/10/96 | Annually |
| 41 | Fiscal Analysis -- Submit Five Year Projected Fiscal Analysis | K. | 26 | Report | 1/31/96 | Once only |
| 42 | Fiscal Analysis -- Submit Annual Report Fiscal Analysis | N.2. | 31 | Annual Report | 8/10 | Annually |

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# COMPLIANCE AND REPORTING SCHEDULE FOR ORDER NO. 95-76

5/20/95

| TASK NUMBER | TASK | PERMIT SECTION | PAGE | SUBMITTAL TYPE | INITIAL IMPLEMENTATION DATE OR SUBMITTAL DATE | FREQUENCY OF IMPLEMENTATION OR SUBMITTAL |
|---|---|---|---|---|---|---|
| 1 | Submit a signed and executed copy of MOU | N.1. | 31 | MOU | 8/10/95 | Once only |
| 2 | Effectively prohibit non-storm water discharges into storm water conveyance system | B.1. | 10 | - | Forthwith | Ongoing |
| 3 | Reduce the discharge of pollutants in storm water conveyance system to the maximum extent possible | C.1. | 11 | - | Forthwith | Ongoing |
| 4 | Fully implement Comprehensive Storm Water and Urban Runoff Management Program | E.3. | 12 | Implementation Notice | As expeditiously as possible, but no later than the deadline dates specified in Sections F. through K. | Ongoing |
| 5 | Legal Authority -- Cities of Carlsbad, Oceanside and Santee shall submit evidence of legal authority. | F.2. | 12 | Report | 9/10/95 | Once only |
| 6 | Legal Authority --Submit certification of adequate legal authority | F.3. | 13 | Certification Report | 12/15/95 | Once only |
| 7 | IC/ID Detection Program -- Implement program. | G.1. | 13 | Implementation Notice | Forthwith | Ongoing |
| 8 | IC/ID Detection Program -- Initiate dry weather field screening | Attachment A. | 3 | - | 5/1/96 | Ongoing |
| 9 | IC/ID Detection Program -- Submit justification for selection of field screening stations | Attachment A. | 1 | Report | 12/15/95 | Once only |
| 10 | IC/ID Detection Program -- Submit storm water conveyance system map | Attachment A. | 2 | Map | 12/15/95 | Once only |
| 11 | IC/ID Detection Program -- Submit written field screening procedures | Attachment A. | 2 | Procedures | 12/15/95 | Once only |
| 12 | IC/ID Detection Program -- Submit corrected storm water conveyance system map, if necessary | Attachment A. | 3 | Corrected Map | 1/31/97 | Once only |
| 13 | IC/ID Detection Program -- Submit dry weather season report | Attachment A. | 3 | Field Screening Annual Report | 1/31/97 | Annually |
| 14 | IC/ID Detection Program -- Submit written "public complaint and information hotline" procedures | Attachment A. | 4 | Procedures | 12/15/95 | Once only |
| 15 | IC/ID Detection Program -- Establish and maintain public hotline for IC/ID's | Attachment A. | 4 | Implementation Notice | 1/31/96 | Ongoing |
| 16 | IC/ID Detection Program -- Submit notice that hotline has been publicized | Attachment A. | 4 | Notice | 3/31/97 | Once only |
| 17 | IC/ID Detection Program -- Submit written procedures for follow-up investigations of IC/IDs | G.4.a. | 14 | Procedures | 12/15/95 | Once only |
| 18 | IC/ID Detection Program -- Submit written procedures for documenting investigation findings and planning elimination of IC/IDs | G.4.c. | 14 | Procedures | 12/15/95 | Once only |
| 19 | IC/ID Detection Program -- Submit written enforcement procedures to eliminate IC/IDs | G.5.a. | 14 | Procedures | 12/15/95 | Once only |
| 20 | IC/ID Detection Program -- Eliminate all IC/IDs | G.5.b. | 14 | Implementation Notice | 8/10/96 | Ongoing |
| 21 | IC/ID Detection Program -- Submit report on status of existing minimum BMP program. | H.1.b. | 15 | Report | 12/15/95 | Once only |
| 22 | Submit report documenting IC/IDs eliminated during the preceding year. | N.2. | 32 | Report | 8/10 | Annually |
| 23 | Municipal BMP Program -- submit proposed program | H.2.a. | 15 | Proposed Program | 8/10/96 | Once only |
| 24 | Municipal BMP Program -- Implement program | H.2.b. | 15 | Implementation Notice | 11/10/96 | Ongoing |



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## END NOTES

1 **Storm water (wet weather flows)** consists of precipitation only and is defined in 40 CFR 122.26(b)(13) as storm water runoff, snow melt runoff, and surface runoff and drainage.

2 **Storm Water Conveyance System** - A discernable, confined, and discrete conveyance or system of conveyances, including but not limited to, natural channels, storm drains, gutters, ditches, pipes, tunnel, conduit, highways, and roads under the jurisdiction of a city, town, borough, county, parish, or other public body.

3 **Maximum extent practicable** - Maximum extent practicable is a performance standard for municipalities to reduce the discharge of pollutants from storm water conveyance systems as much as practicable. Under the MEP standard municipalities are required to employ the Best Management Practices that are technically and economically feasible. The selection of specific BMPs to achieve the MEP standard must be based upon the following factors:

a. The effectiveness of the BMP in reducing pollutants;
b. The degree of regulatory compliance with this Order and other federal, state and local laws and regulations;
c. The degree of public acceptance;
d. The cost of implementing the BMP in relationship to the pollution control benefit; and
e. The technical feasibility of the BMP.

4 **Best Management Practices** - Best Management Practices ( BMPs) are defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

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6. This Order shall become effective on August 10, 1995, provided the USEPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, this Order shall not become effective until such objection is withdrawn.

7. This Order supersedes Order No. 90-42 upon the effective date of this Order.

I, Arthur L. Coe, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on August 10, 1995.

ARTHUR L. COE
Executive Officer

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**California Regional Water Quality Control Board**
**Santa Ana Region**
**2010 Iowa Avenue, Suite 100**
**Riverside, CA 92507-2409**

# FACT SHEET

**March 8, 1996**

ITEM: 11

SUBJECT: Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the Incorporated cities of Riverside County within the Santa Ana Region, Storm Water Run-off Management Program, Order No. 96-30 (NPDES No. CAS 618033)

## PROJECT

The attached pages contain information concerning an application for renewal of waste discharge requirements and a National Pollutant Discharge Elimination System (NPDES) permit, Order No. 96-30, NPDES No. CAS 618033, which prescribes waste discharge requirements for urban storm water run-off from the cities and the unincorporated areas in Riverside County within the jurisdiction of the Santa Ana Regional Board. On January 3, 1995 the Riverside County Flood Control and Water Conservation District (RCFC&WCD), the County of Riverside, the Cities of Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as the Permittees), submitted NPDES Application No.CAS 618033 for an area-wide stormwater discharge permit under NPDES. The permit application was submitted in accordance with the previous NPDES permit (Order No. 90-104, NPDES No. CA 8000192) which expired on July 1, 1995. Additionally, the permit application follows guidance provided by staff of the State Water Resources Control Board (State Board) and the Regional Water Quality Control Boards (Regional Boards).

## PROJECT AREA

The permitted area is delineated by the San Bernardino-Riverside County boundary line on the north and northwest, the Orange-Riverside County boundary line on the west, the Santa Ana-San Diego Regional Board boundary line on the south, and the Santa Ana-Colorado River Basin Regional Board boundary line on the east. Areas of the County not addressed or which are excluded by the stormwater regulations and areas not under the jurisdiction of the permittees are excluded from the area requested for coverage under this permit application. This includes the following areas and activities:

- Federal lands and state properties, including, but not limited to, military bases, national forests, hospitals, colleges and universities, and highways;



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- Native American tribal lands;
- Open space and rural (non-urbanized) areas;
- Agricultural lands; and
- Utilities and special districts.

As a partial illustration, federal and state lands in Riverside County within the jurisdiction of the Santa Ana Regional Board, for which coverage under a municipal stormwater NPDES permit is excluded, are shown in Appendix A (Western Riverside County NPDES Permit Area).

## CLEAN WATER ACT REQUIREMENTS

The Federal Clean Water Act (CWA) allows the United States Environmental Protection Agency (USEPA) to delegate its NPDES permitting authority to states with an approved environmental regulatory program. The State of California is one of the delegated states. The Porter-Cologne Act (California Water Code) authorizes the State Board, through its Regional Boards, to regulate and control the discharge of pollutants into waters of the State and tributaries thereto. Section 405 of the Water Quality Act (WQA) of 1987 added Section 402(p) to the CWA. Pursuant to Section 402(p)(4) of the CWA, the USEPA promulgated regulations for stormwater permit applications for stormwater discharges associated with industrial activities and municipal separate storm drain systems serving a population of 100,000 or more. This permit governing municipal stormwater discharges meets both the statutory requirements of Section 402(p)(3)(B) and all requirements applicable to an NPDES permit issued under the issuing authority's discretionary authority in accordance with Section 401(a)(1)(B) of the CWA.

## AREA-WIDE STORMWATER PERMIT

To regulate and control stormwater discharges from the Riverside County area to the municipal storm drain systems, an area-wide approach is essential. The entire storm drain system is not controlled by a single entity; the RCFC&WCD, the County, several Cities, the State Department of Transportation (Caltrans), and the U.S. Army Corps of Engineers, in addition to other smaller entities, manage the systems. In addition to the Cities, the County and the RCFC&WCD, there are a number of other significant contributors of urban stormwater runoff to these storm drain systems. These include: large institutions such as the State university system, schools, hospitals, etc.; federal facilities such as military sites, etc.; State agencies such as Caltrans; water and wastewater management agencies such as Eastern and Western Municipal Water District; the National Forest Service and State parks. The Regional Board has issued a separate NPDES permit to Caltrans. In addition, Caltrans, and the other contributors identified, are not under the jurisdiction of the Permittees. The management and control of the entire flood control system cannot be effectively carried out without the cooperation and efforts of all these entities. Also,

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it would not be meaningful to issue a separate stormwater permit to each of the entities within the permitted area whose land/facilities drain into the storm drain systems operated by the Permittees. The Regional Board has concluded that the best management option for the Riverside County area is to issue an area-wide stormwater permit to the RCFC&WCD, Riverside County, and the cities in Riverside County. A separate stormwater NPDES permit has been issued to Caltrans. Stormwater discharges from other state, federal, utility, or special district facilities and state or federal lands will either be added to the Riverside County permit or permitted separately.

Some of the RCFC&WCD storm drain systems discharge into storm drain systems controlled by other entities, such as the Orange County Flood Control District, which is (or will be) regulated under the Regional Board's Order No. 96-30, NPDES No. CA 8000192. Some areas within Riverside County are within the Colorado River Basin and San Diego Regional Boards' jurisdiction. Permit requirements for stormwater runoff from the drainage areas of Riverside County within the jurisdiction of the San Diego and Colorado River Basin Regional Boards are addressed by these Regional Boards.

## COORDINATION WITH OTHER REGIONAL AGENCIES

In developing best management practices and monitoring programs, consultation/coordination with other drainage management entities and other Regional Boards is essential. Regional Board staff will coordinate the program with other Regional Boards and other flood control entities/cities on an "as needed" basis. The permit/program process is at the same stage of development in both the Santa Ana and San Diego Regional Board areas of Riverside County. Common programs, reports, implementation schedules and efforts are desirable and will be utilized to the maximum extent practicable.

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## EXISTING FACILITIES AND PROGRAMS

Within the Santa Ana Region, the RCFC&WCD serves a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The RCFC&WCD's system includes an estimated 200 miles of open and closed storm drains. The storm drain systems operated by the remaining Permittees include an estimated 57 miles of open and closed storm drains. Approximately one-quarter (1/4) of Riverside County drains into water bodies within this Regional Board's jurisdiction. Stormwater discharges from urbanized areas consist mainly of surface runoff from residential, commercial, and industrial developments. In addition, there are stormwater discharges from agricultural land uses, including dairy operations. However, the WQA specifically excludes agricultural discharges from regulation under this program. The constituents of concern and significance in storm water discharges are: total suspended solids, biochemical oxygen demand (BOD), chemical oxygen demand (COD), oil and grease (O&G), heavy metals, nutrients and organic chemicals such as base/neutral and acid extractables, pesticides and herbicides, and petroleum hydrocarbon components

To protect the beneficial uses of waters of the State, the pollutants from all sources need to be controlled. Recognizing this, and the fact that stormwater discharges contain pollutants, the Permittees and the Regional Board have all agreed that an area-wide stormwater permit is the most effective way to develop and implement a comprehensive stormwater management program in a timely manner. This area-wide stormwater permit contains requirements with time schedules that will allow the Permittees to continue to address water quality problems caused by urban stormwater runoff through their management programs to reduce pollutants in stormwater discharges to the maximum extent practicable.

## PERMIT REQUIREMENTS

In accordance with Section 402(p)(3), as part of a program to reduce the pollutants in stormwater discharges to the maximum extent practicable, the Permittees have been required to submit existing management plans and programs being implemented or developed in the previous municipal stormwater NPDES permit to reduce pollutants in stormwater discharges. In addition, the permittees will be required to report, review and/or revise the management programs and control measures in accordance with a time schedule approved by the Executive Officer of the Regional Board for this municipal permit.

If existing management programs are not effective in controlling pollutant loading and in achieving the water quality objectives of the receiving waters, additional programs shall be developed and implemented upon consultation and approval of the Executive Officer.

The permit also requires the development and implementation of management programs and/or best management practices (BMPs) during the life of the permit such that the quality of stormwater discharged can be improved and the water quality objectives of the receiving waters ultimately can be met. It is also expected that through implementation of these programs and/or BMPs the beneficial uses of the receiving waters will be protected.

## BENEFICIAL USES

Stormwater flows which are discharged to municipal storm drain systems in Riverside County are tributary to various water bodies (inland surface streams and lake and reservoirs) of the state. The beneficial uses of these water bodies include municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and preservation of rare and endangered species. The ultimate goal of this stormwater management program is to protect the beneficial uses of the receiving waters.

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ANTIDEGRADATION ANALYSIS

The Regional Board has considered whether a complete antidegradation analysis, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, is required for these stormwater discharges. The Regional Board finds that the pollutant loading rates to the receiving waters will be reduced with the implementation of the requirements in this order. As a result, the quality of stormwater discharges and receiving waters will be improved, thereby protecting the beneficial uses of waters of the United States. This is consistent with the federal and state antidegradation requirements and a complete antidegradation analysis is not necessary.

PUBLIC WORKSHOP

The Regional Board recognizes the significance of Riverside County's Storm Water/Cleanwater Protection Program and will conduct, participate, and/or assist with at least one workshop every year during the term of this permit to promote and discuss the progress of the stormwater management program. The details of the annual workshop will be published in local newspapers and mailed to interested parties. Persons wishing to be included in the mailing list for any of the items related to this permit may register their name, mailing address and phone number with the Regional Board office at the address given below.

PUBLIC HEARING

The Regional Board will hold a public hearing regarding the proposed waste discharge requirements. The public hearing is scheduled to be held on March 8, 1996, starting at 9:30 a.m. at the City Council Chambers, 3300 Newport Boulevard, Newport Beach, California. Further information regarding the conduct and nature of the public hearing concerning these waste discharge requirements may be obtained by writing or visiting the Santa Ana Regional Board office, 2010 Iowa Avenue, Suite 100, Riverside, CA 92507.

INFORMATION AND COPYING

Persons wishing further information may write to the above address or call Pavlova Vitale at 909/782-4920. Copies of the application, proposed waste discharge requirements, and other documents (other than those which the Executive Officer maintains as confidential) are available at the Regional Board office for inspection and copying by appointment scheduled between the hours of 10:00 a.m. and 4:00 p.m., Monday through Thursday (excluding holidays).

REGISTER OF INTERESTED PERSONS

Any person interested in a particular application or group for applications may leave his name, address and phone number as part of the file for an application. Copies of tentative waste discharge requirements will be mailed to all interested parties.

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
NPDES NO. CAS 618033
AND
WASTE DISCHARGE REQUIREMENTS
ORDER NO. 96-30
FOR
THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On January 3, 1995, the Riverside County Flood Control and Water Conservation District (RCFC&WCD), in cooperation with the County of Riverside, and the incorporated cities of Beaumont, Corona, Calimesa, Canyon Lake, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto (hereinafter collectively referred to as "permittees"), have jointly submitted a National Pollutant Discharge Elimination System (NPDES) Application No. CAS 618033 to renew their areawide NPDES permit for urban storm water run-off.

2. The 1987 amendments to the Clean Water Act required the United States Environmental Protection Agency (EPA) to develop permitting regulations for storm water discharges from municipal separate storm sewer systems serving a population of 100,000 or more and for storm water discharges associated with industrial activities, including construction sites. The EPA published proposed storm water regulations on December 7, 1988 and promulgated the final regulations on November 16, 1990. Prior to the EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Regional Board requested areawide NPDES permits for urban storm water run-off.

3. On July 13, 1990, the Regional Board adopted Order No. 90-104 for urban storm water run-off from urban areas in Riverside County within the Santa Ana Region. Order No. 90-104 expired on July 1, 1995. The Riverside County Flood Control and Water Conservation District was named as the principal permittee and Riverside County and the incorporated cities were named as the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the RCFC&WCD will continue as principal permittee and Riverside County and the incorporated cities will continue as co-permittees. However, the Regional Board, in exercising its enforcement discretion, will take action only against the individual permittee responsible for specific violations of this order, whenever possible.



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4. Order No. 90-104 required the permittees to develop and implement a drainage area management plan (DAMP); develop and implement storm water and receiving water monitoring plans; to eliminate illegal and illicit discharges to the storm drain systems; and, to enact the necessary legal authority to effectively prohibit illegal and illicit discharges. The overall goal of these requirements was to reduce pollutant loadings to surface waters from urban run-off to the maximum extent practicable (MEP)[1]. This Order regulates urban storm water run-off[2] from areas under the jurisdiction of the permittees.

5. The Report of Waste Discharge (the permit renewal application) included the following major components:

   a. A map of the drainage area and maps of existing storm drain facilities
   b. A summary of the storm water management program
   c. A Consolidated Program for Water Quality Monitoring
   d. A copy of a Proposed Storm Water/Urban Run-off Management and Discharge Control Ordinance
   e. A copy of the current Implementation Agreement
   f. A copy of the Interagency Agreement
   g. The Drainage Area Management Plan (DAMP)
   h. A copy of Proposed Riverside County Grading and Erosion Control Ordinance

6. Within the Santa Ana Region, the permittees serve a population of approximately 930,000, occupying an area of approximately 1,360 square miles. The permitted area is shown on Appendix 1. This order regulates storm water run-off from areas under the jurisdiction of the permittees. The term storm water as used in this order includes storm water run-off, snow melt run-off, and surface run-off and drainage. The average annual rainfall in the urbanized area of Riverside County ranges from 10 to 12 inches. The permittees have jurisdiction over and/or maintenance responsibility for storm water conveyance systems within Riverside County. The storm drain system includes an estimated 200 miles of open and closed storm drains owned and operated by RCFC&WCD and an estimated 57 miles of open and closed storm drains owned and operated by the remaining permittees. The permittees have identified major outfalls( with a pipe diameter of 36 inches or greater or drainage areas draining 50 acres or more) and have submitted maps of existing storm drain facilities.

7. Approximately one quarter (1/4) of the entire Riverside County area drains into water bodies within the Santa Ana Region. Most of the urbanized areas of Riverside County lie within this Regional Board's jurisdiction. Storm water run-off from other portions of

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[1] Maximum Extent Practicable (MEP) means to the maximum extent possible, taking into account equitable considerations of synergistic, additive and competing factors, including but not limited to the gravity of the problem, fiscal feasibility, public health risks, societal concerns and social benefits.

[2] Urban storm water run-off discharges include those discharges from residential, commercial, industrial and construction areas within the permitted area and excludes discharges from feedlots, dairies and farms

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Riverside County is regulated by the San Diego and Colorado River Basin Regional Boards. The discharges consist of run-off from rainfall, snow melt, and surfacing ground water from various land use areas which either discharge directly to the Santa Ana River or to watercourses tributary to the Santa Ana River. Other major rivers in the area include the San Jacinto River and Temescal Creek. The San Jacinto Mountain areas drain into the San Jacinto River, which discharges into Lake Elsinore. Any overflow from Lake Elsinore is tributary to Temescal Creek, which flows into Reach 3 of the Santa Ana River in the Prado Flood Control Basin.

8. The Santa Ana River Basin is the major watershed within this Region. This watershed is divided into the upper and lower Santa Ana watersheds. The lower Santa Ana River Basin (downstream from Prado Dam) includes the Orange County drainage areas and the Upper Santa Ana River Basin includes the San Bernardino County and the Riverside County drainage areas. The San Bernardino County drainage areas are generally upstream of the Riverside County drainage areas.

9. The three county areas within this Region are regulated under three areawide permits for urban storm water run-off. These areawide NPDES permits are:

   a. Orange County, NPDES No. CA 8000180, Order No. 90-71 (upon renewal NPDES No. CAS 618030, Order No. 96-31)

   b. Riverside County, NPDES No. CA 8000192, Order No. 90-104 (upon renewal NPDES No. CAS 618033, Order No. 96-30)

   c. San Bernardino County, NPDES No. CA 8000200, Order No. 90-136 (upon renewal NPDES No. CAS 618036, Order No. 96-32)

10. Run-off from the San Bernardino County drainage areas is generally conveyed to the Riverside County drainage areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Dam (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

11. In addition to the Regional Board, a number of other stakeholders are involved in the management of the water resources of the Region. These include, but are not limited to, the incorporated cities in the Region, publicly owned treatment works, the three counties, and the Santa Ana Watershed Project Authority and its member agencies. The entities listed in Appendix 2 are considered as potential dischargers of storm water to the Riverside County drainage areas. It is expected that these entities will also work cooperatively with the permittees to manage urban run-off. The Regional Board has the discretion and authority to require non-cooperating entities to participate in this areawide permit or to issue individual storm water permits, pursuant to 40 CFR 122.26(a)

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Cooperation and coordination among all the stakeholders are critical to optimize the use of limited resources and insure economical management of the watershed. Recognizing this fact, this order focusses on watershed management and seeks to integrate the programs of all the stakeholders, especially the three municipal storm water permit holders, within this watershed.

12. The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies are threatened or impaired in part due to urban storm water run-off and non-storm water flows from urbanized areas. Preliminary results from urban storm water monitoring programs within the Region indicate that major pollutants of concern in urban run-off are certain heavy metals, sediment, coliform bacteria, pesticides, and nutrients. Municipal storm water run-off is a source of pollutants to waters of the Region that may be causing or contributing to water quality impairment. It is recognized that instream or end-of-channel treatment of storm water is difficult and expensive. Therefore, it is critical to identify the pollutant sources and to develop management practices necessary to reduce pollutant loading to storm water. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events and point source discharges permitted by the Regional Board under individual permits.

13. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources of urban storm water pollution nationwide:

    a. Industrial sites where appropriate pollution control and best management practices (BMPs) are not implemented,

    b. Construction sites where erosion and siltation controls and BMPs are not implemented, and

    c. Urban run-off where the drainage area is not properly managed.

14. To address the industrial and construction sites, the State Water Resources Control Board (State Board) issued two statewide general NPDES permits: one for storm water run-off from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water run-off from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). Most industrial activities (some light industrial activities are exempt) and construction activities on five acres or more are required to get individual NPDES permits for storm water discharges, or get coverage under these statewide general permits by completing and filing a Notice of Intent (NOI) with the State Board.

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15. In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water run-off from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order No. 94-7, NPDES NO. CA 8000336, for concentrated animal feeding operations, including dairies (General Dairy Permit). The Regional Board has issued and continues to issue individual storm water permits for certain industrial facilities within the Region.

16. One of the major components of these statewide permits, the Caltrans permit, and the General Dairy Permit is the requirement for the development and implementation of a storm water pollution prevention plan (SWPPP).

17. The Regional Board is the enforcing authority for the two statewide general permits. However, in most cases, the industrial and construction sites discharge directly into storm drains and/or flood control facilities owned and operated by the permittees. These industrial and construction sites are also regulated under local laws and regulations. Therefore, a coordinated effort between the permittees and the Regional Board is critical to avoid duplicative storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

18. The permittees generally conduct inspections of industrial and commercial facilities and construction sites within their jurisdiction to determine compliance with local storm water ordinances and regulations as well as for other regulatory purposes. The permittees have established a subcommittee to develop an enforcement/compliance strategy for industrial and commercial facilities and construction sites. The permittees have agreed to notify Regional Board staff when conditions are observed during such inspections which result in a threat or potential threat to water quality. This also includes failure to obtain coverage under the general storm water permits.

19. The permittees have agreed not to issue grading and/or building permits without proof of compliance for projects subject to the State's General Construction Activity Storm Water Permit.

20. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm drain system

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maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees will assess public agency activities and facilities for potential impact to storm water quality and develop and implement best management practices to reduce pollutant discharges from those activities/facilities found to be significant sources of pollutants. Non-storm water discharges from these facilities and/or activities also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III., Discharge Limitations, 3 of this order or are permitted by the Regional Board under an individual NPDES permit.

21 The major focus of storm water pollution prevention is the development and implementation of an appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to attain water quality consistent with the water quality objectives for the receiving waters in order to protect beneficial uses. The permittees developed and submitted a DAMP, which was approved on January 18, 1994.

22 The DAMP is a dynamic document and the permittees have implemented, or are in the process of implementing its various elements. The Regional Board also recognizes other drainage area management plans such as the Drainage Water Quality Plan for Lake Mathews (DWQPLM), which includes structural BMPs for pollution control. The RCFC & WCD and Riverside County are involved in the DWQPLM.

23. There is some contribution of pollutants in urban run-off from privately owned and operated facilities such as residences, businesses and commercial establishments and public and private institutions. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, and institutions. Therefore, the DAMP has a strong emphasis on public education.

24. The DAMP included 34 BMPs and a time schedule for implementation. These BMPs are organized into two components: BMPs for existing facilities and BMPs for new development. Both components include regulatory activities, public education programs and operations and maintenance activities.

25. In order to characterize storm water discharges, to identify problem areas, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. From 1990 through 1995, the principal permittee administered the monitoring program for the permittees which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The Report of Waste Discharge included a Consolidated Program for Water Quality Monitoring.

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26. In order to make the best use of limited resources of all the permittees (including other municipal permittees in San Bernardino and Orange Counties), and to derive maximum benefit from the storm water management programs, future programs should consider and explore approaches and program elements common to all three counties. An integrated management program may be developed with the cooperation of all the stakeholders, including the permittees in the three counties, and the Regional Board. The Regional Board will coordinate the activities within the watershed and seek participation of the permittees

27. The permittees have agreed to revise the implementation agreement that was developed in 1990 as required under Order No. 90-104 to coordinate the activities of the principal and co-permittees.

28. Illegal dumping and illicit/illegal connections and discharges to the storm drains are contributors to storm water and other surface water contamination. All the permittees have completed a reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains). The permittees are required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are required to develop a program to prohibit illegal/illicit connections to their storm drains and flood control facilities.

29. This order requires the permittees to continue to implement the BMPs listed in the DAMP and to effectively prohibit illegal and illicit discharges to the storm drain system. One of the major elements of the DAMP, the Storm Water/Urban Run-off Management and Discharge Controls Ordinance, was adopted by Riverside County on May 9, 1995. The purpose of this ordinance is to reduce pollutant discharges in storm water, and to regulate illicit connections and non-storm water discharges to the storm drain system.

30. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in planning procedures, in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc.

31. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Riverside County having programs/activities that have an impact on storm water quality (e.g., Fire Department, Department of Environmental Health, Planning Department, Building and Safety, Code Enforcement, etc.) As such, these organizations are expected to actively participate in implementing this areawide storm water program.

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32. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, agricultural land, utilities and special districts, and Native American tribal lands. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.

33. The permittees may petition the Regional Board to issue a NPDES permit to any discharger of non-storm water into storm drain systems that the permittees own or operate.

34. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region.

35. The requirements contained in this order are necessary to implement the Basin Plan.

36. In accordance with the Clean Water Act and its implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants to waters of the United States to the maximum extent practicable.

37. The legislative history and the preamble to the federal storm water regulations indicate that Congress and the U.S. EPA were aware of the difficulties in regulating urban storm water run-off solely through traditional end-of-pipe treatment. However, the U.S. EPA and the State Water Resources Control Board have determined that the NPDES permits for urban storm water run-off must contain effluent limitations based on water quality standards (beneficial uses and water quality objectives). The development and implementation of best management practices (BMPs), which will achieve compliance with applicable standards, are generally considered to be acceptable as effluent limitations. In accordance with Section 402 (p) of the Clean Water Act, this order requires the permittees to develop controls to reduce the discharge of pollutants to the maximum extent practicable. If urban storm water discharges cause an exceedance of the water quality standards in the receiving waters, the BMPs must be reevaluated, revised and implemented as appropriate to address any exceedances of receiving water quality standards. Numeric and narrative water quality objectives are contained in the Basin Plan for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Extensive water quality monitoring and analysis of the data are essential to make that determination. Due to the high cost associated with monitoring, and due to the variability that exists in the current storm water monitoring efforts being conducted by the permittees and other municipal permittees in Orange and San Bernardino Counties under their municipal storm

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water permits, a tri-county monitoring program to develop and implement effective monitoring procedures and strategies will be considered.

38 It is the Regional Board's intent that this order shall attain and protect the beneficial uses of receiving waters. This order therefore, includes Receiving Water Limitations required to implement water quality objectives and to prevent nuisance and water quality impairment in receiving waters. This order requires implementation of control measures in accordance with the DAMP that will reduce pollutants in storm water discharges to the maximum extent practicable. The Receiving Water Limitations require the implementation of control measures that are technically and economically feasible as necessary to protect beneficial uses and water quality objectives of the receiving waters.

The Regional Board finds that the unique aspects of the regulation of storm water discharges through municipal storm sewer systems, including intermittent discharges, difficulties in monitoring and limited physical control over the discharge, will require adequate time to implement and evaluate the effectiveness of best management practices and to determine whether they will adequately protect receiving waters. Therefore, the permit includes a procedure for determining whether storm water discharges are causing continuing and recurring exceedances of receiving water limitations and for evaluating whether the DAMP must be revised. The permittee will be in compliance with the Receiving Water Limitations so long as the permittees comply with that procedure.

39. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Regional Board.

40. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

41. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

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42. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

43. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

**IT IS HEREBY ORDERED** that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and the regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF THE PRINCIPAL PERMITTEE:

The principal permittee shall be responsible for managing the overall storm water program and shall:

1. Conduct water quality and hydrographic monitoring of the municipal separate drain system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop criteria for inspections of the municipal storm drain systems.

3. Conduct inspections of the storm drain systems owned and operated by the RCFC&WCD.

4. Implement management programs, monitoring programs, and related plans as required by this order.

5. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority within the scope of the Riverside County Flood Control and Water Conservation District Act, as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i)(A-F).

6. Respond and/or arrange for responding to emergency situations such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or reduce the discharge of pollutants to the municipal separate storm drain systems and to waters of the United States.

7. Prepare and submit to the Executive Officer of the Regional Board, unified reports, plans, and programs necessary to comply with this order

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The activities of the principal permittee should include, but not be limited to, the following:

8. Coordinate permit activities and participate in any committees/subcommittees formed to coordinate permit compliance activities.

9. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

10. Coordinate the implementation of areawide storm water quality management activities such as monitoring programs, public education, other pollution prevention measures, household hazardous waste collection, etc.

11. Gather and disseminate information on the progress of statewide municipal storm water programs and evaluate the information for potential use in the execution of this order.

12. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in reducing pollutant loadings to surface waters to the maximum extent practicable.

13. Coordinate activities pertaining to implementation of this order with the Regional Board.

14. Solicit and coordinate public input for any major proposed storm water management programs and implementation plans.

15. Develop and implement mechanisms, performance standards, etc., to promote consistent implementation of BMPs among the permittees.

16. In conjunction with the co-permittees, implement the BMPs listed in the approved DAMP.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

Each co-permittee shall be responsible for managing the storm water program within its jurisdiction and shall:

1. Adopt the Grading and Erosion Control Ordinance or its equivalent, within 120 days of adoption of this order.

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2. Conduct storm drain system inspections in accordance with the criteria developed by the principal permittee.

3. Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority as required by the Federal Storm Water Regulations, 40CFR, Part 122.26(d)(2)(i)(A-F).

4. Implement management programs, monitoring programs, and related plans as required by this order.

The co-permittees' activities should include, but not be limited to, the following:

5. Administer the storm water and erosion control ordinances adopted pursuant to Item 1., above.

6. Conduct and coordinate with the principal permittee any surveys, monitoring and/or characterizations needed to identify the pollutant sources and drainage areas.

7. Review and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

8. Cooperate in committees and/or subcommittees formed by the principal permittee to address compliance with this order.

9. In conjunction with the principal permittee, implement the BMPs listed in the approved DAMP.

10. Submit to the principal permittee any information necessary to develop unified report submittals to the Executive Officer of the Regional Board.

11. Prepare and submit any specific reports/information related to the permittees' storm water program as deemed necessary by the Executive Officer of the Regional Board.

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## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.

2. This order authorizes storm water discharges to waters of the State from the permittees' existing municipal separate storm drain systems provided that the permittees implement the BMPs (structural and/or non-structural control measures) necessary to reduce the pollutants in the discharge to the maximum extent practicable. All other discharges are prohibited except those listed under Item 3., below, those for which the Regional Board has issued individual permits, and those discharges which are in accordance with Item 5., below.

3. The following discharges need not be prohibited by the permittees unless identified by the permittees as sources of pollutants to the waters of the United States.

   a. Discharges covered by an NPDES permit, or for which an approval has been issued by the Regional or State Board office;

   b. Discharges from potable water line flushing and other potable water sources;

   c. Discharges from fire fighting and fire hydrant testing and flushing;

   d. Discharges from landscape irrigation, lawn watering and other irrigation activities;

   e. Diverted stream flows:

   f. Rising ground waters and natural springs;

   g. Uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)) and uncontaminated pumped groundwater;

   h. Passive foundation drains;

   i. Air conditioning condensate;

   j. Water from crawl space pumps;

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k. Passive footing drains;

l. Discharges from individual residential vehicle washing (not including discharges from mobile sources such as automobile/equipment detailing or washing);

m. Flows from riparian habitats and wetlands;

n. Dechlorinated swimming pool discharges;

o. Street wash water and run-off from fire fighting (program descriptions shall address discharges or flows from fire fighting only where such discharges are identified as significant sources of pollutants to waters of the United States),

p. Waters not otherwise containing wastes as defined in California Water Code Section 13050 (d); and

q. Other types of discharges identified and recommended by the permittees and approved by the Regional Board.

For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.

4. The permittees shall take necessary steps as required under Item 1., above, to ensure that non-storm water discharges to the municipal storm drain system do not cause or contribute to violations of water quality objectives or discharge pollutants to waters of the United States.

5. Non-storm water discharges from permittees' activities into waters of the state are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3., above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in the storm water pollution prevention strategy, required under Section V., Provision 13., of this order, a proposed plan to address the non-storm water discharges.

6. The discharge shall not cause or contribute to degradation of groundwaters.

7. Pollutants in storm water discharges from the municipal separate storm sewer system shall be reduced to the maximum extent practicable.

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## IV. RECEIVING WATER LIMITATIONS

1. Receiving water limitations are based upon beneficial uses, water quality objectives and water quality standards contained in the Basin Plan, and amendments thereto, and on ambient water quality. The discharge of storm water, or non-storm water from a municipal storm sewer system for which the permittees are responsible under the terms of this order shall not cause or contribute to a continuing of recurring violation of any applicable receiving water limitations adopted by the Regional Board or the State Water Resources Control Board. The permittees will not be in violation of this provision so long as they are in compliance with the requirements set forth in 1.A.

   A. If the Executive Officer determines that a continuing or recurring exceedance of a receiving water limitation has been caused by discharges from the municipal storm sewer system, the following steps shall be taken:

      i. The Executive Officer will evaluate the adequacy of the permittees implementation of the DAMP based on the permittees submitted reports and other relevant information. The Executive Officer will determine if implementation of the DAMP has a reasonable likelihood of preventing future exceedances of receiving water limitations. If the Executive Officer makes this determination, the permittees are required to continue implementing the DAMP.

      ii. If the Executive Officer determines that the implementation of the DAMP will not have a reasonable likelihood of preventing future exceedances of receiving water limitations, the permittees shall, upon notice from the Executive Officer, do the following:

         a. The Executive Officer may require the permittees to submit a report that includes an evaluation of the relative contribution of the storm water discharges to the exceedance of the receiving water limitations. The report shall address the persistence and the causes of the exceedance, and the technical and economic feasibility of control actions by the permittees to reduce or eliminate the exceedance.

         b. The Executive Officer may require the permittees to submit a report reviewing the DAMP to determine whether it should be revised so that there will be a reasonable likelihood of preventing future exceedances of receiving water limitations, or whether revisions to achieve compliance with receiving water limitations are

technically or economically unfeasible. If the report recommends revision of the DAMP, the report shall include a work plan to revise the plan so that it will have a reasonable likelihood of preventing future exceedances of receiving water limitations. If the report concludes that no revisions are necessary to achieve compliance with receiving water limitations, the report shall explain how implementation of the DAMP will achieve compliance. If the report determines that revisions to achieve compliance with receiving water limitations are technically or economically infeasible, the permittees shall fully document this determination and shall include recommendations for actions to achieve compliance, including for example, commencement of a total maximum daily load report or revisions of the Basin Plan, and identification of funding sources for such actions.

c. The permittees shall implement the work plan and the revised DAMP as approved by the Executive Officer.

2. The Executive Officer shall review and approve or disapprove the reports required under Receiving Water Limitation 1. The reports may be submitted as part of the next Annual Report, or at some other time designated by the Executive Officer. So long as the permittees have complied with the procedures set forth in Receiving Water Limitation 1, they do not have to repeat the procedure for continuing exceedances of the same receiving water limitations. As appropriate, any determinations under this part or revisions to the DAMP may be considered by the Regional Board in a public meeting.

## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order and specifically with Section III., Discharge Limitations, and Section IV., Receiving Water Limitations, through timely implementation of their approved Drainage Area Management Plan and any approved modifications, revisions, or amendments thereto, which are developed pursuant to this order. The Drainage Area Management Plan and any amendments thereto are hereby made an enforceable part of this order.

2 Permittees shall implement all elements of the approved DAMP. Any proposed revisions to the DAMP shall be submitted to the Executive Officer of the Regional

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Board for review and approval. All revisions to the DAMP approved by the Executive Officer shall be implemented in a timely manner.

3. The permittees shall comply with Monitoring and Reporting Program No. 96-30, which is hereby made a part of this order, and any revisions thereto. The Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national, or other monitoring programs in lieu of Monitoring and Reporting Program No. 96-30.

4. Upon approval by the Executive Officer of the Regional Board, all plans and reports required by this order, including any subsequent amendments, shall be implemented and shall become an enforceable part of this order.

5. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any enforcement actions and known discharges of storm or wastewaters to facilities owned or operated by the permittees which may impair domestic water supply sources (e.g., discharges due to a levee break, illegal discharges to the street, etc.) or which may have an impact on human health or the environment; if the discharge is to Canyon Lake or any tributary to Canyon Lake, Elsinore Valley Municipal Water District shall also be notified immediately;

   b. Any industrial and/or construction facilities found not to be in compliance with the State's General Storm Water Permits or where the activities may be contributing pollutants to the waters of the U.S.; and

   c. Any suspected or reported activities on federal, state, or other entity's land or facilities, where the permittees do not have any jurisdiction, and where the suspected or reported activities may be contributing pollutants to waters of the United States.

6. The permittees shall not issue occupancy permits unless the applicant is informed of his obligation under the State's NPDES industrial general permit. The permittees shall not issue grading or building permits to developments that may result in land disturbance of five acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) unless the applicant shows proof of coverage under the State's General Construction Activity Storm Water Permit. The proof of coverage may include a letter from the Regional Board office, a copy of the Notice of Intent, etc. The

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permittees shall coordinate the activities of the various departments/sections within each permittee's jurisdiction to insure consistent implementation of storm water regulations.

7. Permit application asn special NPDES program requirements contained in 40 CFR 122.21 and 122.41-42 are incorporated into this order by reference.

## IMPLEMENTATION AGREEMENT

8. No later than June 4, 1996, the permittees shall submit to the Executive Officer of the Regional Board an updated copy of an implementation agreement with authorized signatures of each of the permittees. Any subsequent revisions to the implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees. At a minimum, the implementation agreement should include all the essential elements of the existing agreement, developed in accordance with Order No. 90-104.

## LEGAL AUTHORITY

9. The permittees shall adopt the proposed Storm Water/Urban Run-off Management and Discharge Control Ordinance, or its equivalent. No later than April 26, 1996, each permittee shall certify to the Regional Board that it has adequate legal authority to control the discharges of pollutants into the municipal storm drain system and that it has, at a minimum, satisfied each of the key regulatory requirements contained in 40 CFR Section 122.26(d)(2)(i)(A-F).

## ENFORCEMENT/COMPLIANCE STRATEGY

10 Permittees shall develop and implement an enforcement/compliance strategy to enforce storm water and erosion control ordinances. This enforcement/compliance strategy should include a mechanism to determine compliance of industrial facilities and construction sites, and notification to the Executive Officer of any finding of non-compliance and any proposed local enforcement action. The enforcement/compliance strategy shall be submitted to the Executive Officer of the Regional Board by August 27, 1996.

## PUBLIC EDUCATION AND OUTREACH

11 The permittees shall continue to implement the public education efforts already underway and shall implement all of the proposed efforts identified in the Report of Waste Discharge.

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12. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

13. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.

## MUNICIPAL FACILITIES

14. The permittees shall develop a pollution prevention strategy to address their public agency facilities and activities which are determined by the permittees (with the approval of the Executive Officer of the Regional Board) to be activities of concern regarding storm water pollution. The pollution prevention strategy shall be developed to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the United States. The pollution prevention strategy shall be submitted to the Executive Officer of the Regional Board by October 9, 1996. In developing the pollution prevention strategy, the permittees shall consider the following:

a. Identification of public agency facilities and activities that are potential contributors of pollutants to waters of the United States.

b. Potential pollutants of concern that are associated with the facilities and/or activities;

c. Proposed BMPs and a schedule for their implementation to ensure that these facilities are not sources of pollutants into the waters of the United States;

d. A monitoring program to measure the effectiveness of the BMPs;

e. A schedule for training of public agency staff to ensure proper implementation of the BMPs; and

f. Identification of any non-storm water discharges from the public agency facilities/activities, frequency of the discharge, characterization of the discharge, volume, flow and duration of the discharge, short term source control BMPs to mitigate the impacts

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from the discharge, and a schedule for elimination or permitting of the discharge.

## MUNICIPAL CONSTRUCTION PROJECTS/ACTIVITIES

15. This Order authorizes the discharge of storm water run-off from construction projects that may result in land disturbance of 5 acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) that are under ownership and/or direct responsibility of any of the permittees.

16. Prior to commencement of construction activities, the permittees shall notify the Executive Officer of the Regional Board of the proposed construction project. Upon completion of the project, the Executive Officer shall be notified of the completion of the project.

17. The permittees shall develop and implement a storm water pollution prevention plan and a monitoring program that is specific for the construction project prior to the commencement of any of the construction activities. The SWPPP and monitoring program shall be implemented throughout the duration of the construction project. The SWPPP shall be kept at the construction site and released to the public and/ or Regional Board staff upon request.

18. The SWPPP and the monitoring program for the construction projects shall be consistent with the requirements of the most recent version of the State's General Permit for Storm Water Discharges Associated with Construction Activities.

19. The permittees shall give advance notice to the Executive Officer of the Regional Board of any planned changes in the construction activity which may result in non-compliance with the current version of the State's General Permit for Storm P E TER

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22. Within 120 days of the issuance of this order, th rmittees all review their General Plan update and CEQA document prepar. .on proces s to insure that storm water-related issues are properly considered. If necessar , these processes shall be revised to include requirements for evaluation of sto m water-related impacts and identification of appropriate mitigation measures.

23. The permittees shall establish a mechanism to insure proper maintenance and operation of all permanent flood control structures. For new developments, the parties responsible for the maintenance of the flood control structures and funding sources for maintenance and operation of the facilities shall be identified prior to issuance of grading permits.

## FISCAL RESOURCES

24. The permittees shall prepare and submit a unified fiscal analysis report appropriate for implementation of the requirements of this order to the Executive Officer of the Regional Board. The fiscal analysis report shall be submitted no later than November 15, of each year and shall at a minimum include the following:

a. Each permittee's expenditures for the previous fiscal year;
b. Each permittee's budget for the current fiscal year;
c. A description of the source of funds;

## PERMIT EXPIRATION AND RENEWAL

25. This order expires on March 1, 2001 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

a. Any revisions to the Drainage Area Management Plan including, but not limited to, all the activities the permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;

b Changes in land use and/or population including map updates; and

c Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls, including map updates of the storm drain systems.

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26. This order may be modified, revoked or reissued prior to its expiration date for the following reasons:

a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order;

b. To incorporate applicable requirements of statewide water quality control plans and policies adopted by the State Water Resources Control Board or any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

d. To incorporate new or revised program elements and compliance schedule(s) necessary to comply with Section IV of this order.

27. This order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

28. Order No. 90-104 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on March 8, 1996.

Gerard J. Thibeault
Executive Officer

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# ORDER NO. 96-30
# APPENDIX 1
# PERMITTED AREA

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# ORDER NO. 96-30
# APPENDIX 2

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California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 96-30

NPDES NO. CAS 618033
for
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, THE COUNTY OF RIVERSIDE, AND THE INCORPORATED CITIES OF RIVERSIDE COUNTY WITHIN THE SANTA ANA REGION
AREAWIDE URBAN STORM WATER RUN-OFF

## I. GENERAL

1. Revisions of the monitoring and reporting program may be necessary to ensure that the discharger is in compliance with requirements and provisions contained in this order. Revisions may be made by the Executive Officer at any time during the term of this order, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

2. All sample collection, handling, storage, and analyses shall be in accordance with 40 CFR Part 136 or other methods approved by the Executive Officer.

3. The permittees are authorized to complement their monitoring data with data from other sources provided those sources are similar to sources in the Santa Ana Watershed.

4. The permittees shall implement the Consolidated Program for Water Quality Monitoring (submitted as part of the Report of Waste Discharge) until development and implementation of other acceptable monitoring programs.

## II. OBJECTIVES

The overall goal of this monitoring program is to provide feedback in direction for and in support of an effective watershed management program. The following are the major objectives:

1. To define storm water quality status, trends, and pollutants of concern.

2. To characterize pollutants in storm water and to assess the influence of land use on storm water quality.

3. To identify significant water quality problems related to storm water discharges within the watershed.



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4. To identify other sources of pollutants in storm water run-off to the extent possible (e.g., atmospheric deposition, contaminated sediments, other non-point sources, etc.).

5. To verify and to control illicit discharges.

6. To identify those waters which without additional action to control pollution from storm water discharges cannot reasonably be expected to attain or maintain applicable water quality objectives or the goals and requirements of the Basin Plan.

7. To evaluate the effectiveness of existing management programs, including an estimate of pollutant reductions achieved by the structural and nonstructural BMPs.

The Regional Board recognizes that these objectives may not be attainable during this permit period and authorizes the Executive Officer to evaluate and to determine adequate progress toward meeting each objective.

## III. MONITORING PROGRAM REQUIREMENTS

The lead permittee shall develop and submit for the approval of the Executive Officer an integrated monitoring program to achieve the above stated objectives. In developing this program, the lead permittee is encouraged to seek cooperation with the permittees from San Bernardino and Orange counties. The Executive Officer or his/her designated representative(s) shall facilitate the coordination meetings or subcommittees formed to achieve this goal. The development and implementation of the monitoring program shall be in accordance with the time schedule prescribed by the Executive Officer. At a minimum, the program shall consider the following:

1. Uniform guidelines for quality control, quality assurance, data collection and data analyses.

2. A mechanism for the collection, analysis and interpretation of existing data from Orange, Riverside, and San Bernardino County monitoring programs. These and other data from local, regional or national sources should be utilized to characterize different storm water sources, to determine pollutant generation, transport and fate; to develop a relationship between land use, development size, storm size and the event mean concentration of pollutants, to determine spatial and temporal variances in storm water quality and seasonal and other bias in the collected data; and to identify any unique features of the Santa Ana Watershed. The permittees are encouraged to use data from similar studies, if available.

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3. A description of the monitoring program including:

   a. The number and location of monitoring stations;
   b. Environmental indicators (e. g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;
   c. Parameters selected for field screening and for laboratory work; and
   d. Total number of samples to be collected from each station, receiving water and major outfall monitoring, frequency of sampling during dry weather and short or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.

4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including estimated cost.

## *IV.* REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of U. S. EPA, Region 9, no later than November 15, of each year. This progress report may be submitted in a mutually agreed upon electronic format. At a minimum, the annual progress report shall include the following:

   a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order.

   b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the Drainage Area Management Plan. The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and in reducing pollutant loads in storm water discharges.

   c. An analysis of the feasibility and usefulness of using structural BMPs based on data collected from the Drainage Water Quality Plan for Lake Mathews and/or other similar programs..

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d. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable.

3. Co-permittees shall be responsible for the submittal of all required information/materials needed to comply with this Monitoring and Reporting Program in a timely manner to the principal permittee. All such submittals shall be signed by a duly authorized representative of the co-permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| *ITEM* | *DUE DATE* |
|---|---|
| Legal Authority Certification | April 26, 1996 |
| Revised Implementation Agreement | June 4, 1996 |
| Enforcement Strategy | August 27, 1996 |
| Municipal Activities Pollution Prevention Strategy | October 9, 1996 |
| Annual Report including the Fiscal Analyses Report | November 15 of each year (next report due in 1996) |

Ordered by_____

Gerard J. Thibeault
Executive Officer

March 8, 1996

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STATE OF CALIFORNIA—CALIFORNIA ENVIRONMEN[illegible]

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
3[illegible]IAIN STREET, SUITE 500
RIVERSIDE, CA 92501-3339
PHONE (909) 782-4130
FAX (909) 781-6288

February 23, 1996

Mr. Ronald J. Novello
Director of Building and Development Services
County of Orange Environmental Management Agency
P.O. Box 4048
Santa Ana, CA 92702-4048

**RENEWAL OF WASTE DISCHARGE REQUIREMENTS FOR THE COUNTY OF ORANGE, ORANGE COUNTY FLOOD CONTROL DISTRICT AND INCORPORATED CITIES OF ORANGE COUNTY, ORDER 96-31, NPDES NO. CAS 618030 , AREAWIDE URBAN STORM WATER RUNOFF, ORANGE COUNTY**

Dear Mr. Novello:

Enclosed is a copy of the revised tentative Order No. 96-31, NPDES No. CAS 618030, revising Order No. 90-71. The only significant change is in the findings and the requirements related to receiving water limitations. These changes are in Findings 35 and 36 and in Section IV. Also please note that a clarification has been added to Finding 10. This item is now scheduled for consideration by the Regional Board at the March 8, 1996 Board meeting. A copy of the Agenda for the Board meeting is also enclosed.

If you have any questions, please contact Laurie Taul at 909-782-4906.

Sincerely,

mjadackapara

Michael J. Adackapara, Chief
Storm Water Program

Enclosure: Tentative Order No. 96-31, March 8, 1996 Board Meeting Agenda



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cc: w/ tentative Order No. 96-31

Orange County Environmental Management Agency, Storm Water Program - Chris Crompton/ Richard Boon
Orange County Environmental Management Agency, Department of Public Works, Flood Programs - Herb Nakasone
City of Anaheim - Mark Komoto
City of Brea - Sam Hanna
City of Buena Park - Loren Tuthill
City of Costa Mesa - Maher Nawar
City of Cypress - Gonsalo Vasquez
City of Fountain Valley - Susan Lynn
City of Fullerton - Don Hoppe
City of Garden Grove - Mel Araki
City of Huntington Beach - Randy Huttenberger
City of Irvine - Mike Loving
City of La Habra - Robert Sun
City of La Palma - Ismile Noorbaksh
City of Lake Forest - Rober Woodings
City of Los Alamitos - Jerry Anderson/Victor Rollinger
City of Newport Beach - John Wolter/Irwin Miller
City of Orange - Bob Bailey
City of Placentia - Chris Becker
City of Santa Ana - Lee Harry
City of Seal Beach - Dennis Jue
City of Stanton - Fred Wickman
City of Tustin - Robert Ledendecker/Katie Pitcher
City of Villa Park - Arnt Quisf
City of Westminster - Moheb Argand
City of Yorba Linda - Gideon Fellson
Woodward -Clyde Consultants - Bob Collacott
US EPA, Region 9 - Eugene Bromley
SWRCB, DWQ - Bruce Fujimoto

Other Interested Parties
City of Dana Point - Dennis Jue
City of Laguna Beach - Ross Cox
City of Laguna Hills - Ken Rosenfield
City of Laguna Niguel - Ken Montgomory
City of Mission Viejo - Theresa Gunn
City of San Clemente - Charlene Bailey
City of San Juan Capistrano - Theodore Simon

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STATE OF CALIFORNIA—CALIFORNIA ENVIRONM L PROTECTION AGENCY
PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
2010 IOWA AVENUE, SUITE 100
RIVERSIDE, CA 92507-2409
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July 21, 1995

Mr. Robert F. Wingard
Director of Regulation
County of Orange Environmental Management Agency
P.O. Box 4048
Santa Ana, CA 92702-4048

**RENEWAL OF WASTE DISCHARGE REQUIREMENTS FOR THE COUNTY OF ORANGE, ORANGE COUNTY FLOOD CONTROL DISTRICT AND INCORPORATED CITIES OF ORANGE COUNTY, ORDER 95-52, NPDES NO. CA 8000180, AREAWIDE URBAN STORM WATER RUNOFF, ORANGE COUNTY**

Dear Mr. Wingard:

Enclosed is a copy of tentative Order No. 95-52, NPDES No. CA 8000180, revising Order No. 90-71. The tentative order renews the requirements for the discharge of urban storm water runoff from the areas of Orange County within the Santa Ana Region. This item is scheduled for consideration by the Regional Board at the September 1, 1995 Board meeting. Please provide your comments by August 11, 1995.

Four copies of a "Notice of Public Hearing" and two copies of a "Statement of Posting Notice are also enclosed. Two copies of the notice of public hearing are to be posted by August 1, 1995, within the permitted area (e.g. local post office, library, city hall or courthouse). The third copy of the notice of public hearing should be published in a local newspaper of general circulation for one day, no later than August 1, 1995. Please retain the fourth copy of the notice of public hearing for your records. The expense of publication is to be paid by you.

By August 11, 1995, you must file with this office proof of posting and publication. Proof of posting shall consist of a statement executed on the enclosed form and the proof of publication shall consist of an affidavit from the publisher or the foreman of the newspaper, with a copy of the notice as published, attached.

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If you have any questions, please contact Laurie Nevils at (909) 782-4906.

Sincerely,

Michael J. Adackapara, Chief
Storm Water Program

Enclosures: Tentative Order No. 95-52
Notice of Public Hearing (4)
Statement of Posting Notice (2)

cc w/ Tentative Order No. 95-52:

City of Anaheim - Mark Komoto
City of Brea - Sam Hanna
City of Buena Park - Loren Tuthill
City of Costa Mesa - Maher Nawar
City of Cypress - Gonsalo Vasquez
City of Fountain Valley - Susan Lynn
City of Fullerton - Don Hoppe
City of Garden Grove - Mel Araki
City of Huntington Beach - Randy Huttenberger
City of Irvine - Mike Loving
City of La Habra - Robert Sun
City of La Palma - Ismile Noorbaksh
City of Lake Forest - Rober Woodings
City of Los Alamitos - Jerry Anderson
City of Newport Beach - John Wolter/Irwin Miller
City of Orange - Bob Bailey
City of Placentia - Chris Becker
City of Santa Ana - Lee Harry
City of Seal Beach - Dennis Jue
City of Stanton - Fred Wickman
City of Tustin - Robert Ledendecker/Katie Pitcher
City of Villa Park - Arnt Quisf
City of Westminster - Moheb Argand
City of Yorba Linda - Gideon Fellson

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California Regional Water Quality Control Board
Santa Ana Region

ORDER NO. 96-31
NPDES No. CAS618030

Waste Discharge Requirements
for
the County of Orange, Orange County Flood Control District
and
The Incorporated Cities of Orange County Within the Santa Ana Region
Areawide Urban Storm Water Run-off
Orange County

TENTATIVE

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On December 30, 1994, the County of Orange and the Orange County Flood Control District (OCFCD), in cooperation with the cities of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Lake Forest, Los Alamitos, Newport Beach, Orange, Placentia, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, and Yorba Linda (hereinafter collectively referred to as permittees), submitted National Pollutant Discharge Elimination System (NPDES) Application No. CA 8000180 and a Report of Waste Discharge for reissuance of their areawide storm water NPDES permit.

2. Section 402(p) of the Federal Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires NPDES permits for storm water discharges from separate municipal storm drain systems, storm water discharges associated with industrial activity (including construction activities), and designated storm water discharges which are considered significant contributors of pollutants to waters of the United States (U.S.). On November 16, 1990, the United States Environmental Protection Agency (hereinafter US EPA) published regulations (40 CFR Parts 122, 123 and 124) which describe permit application requirements for storm water discharges pursuant to Section 402(p) of the CWA. Prior to EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Region requested areawide NPDES permits for urban storm water run-off.

3. On July 13, 1990, the Regional Board adopted Order No. 90-71 for urban storm water run-off from urban areas in Orange County within the Santa Ana Region. The County of Orange was named as the principal permittee and the Orange County Flood Control District (OCFCD) and the incorporated cities were named as the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the County of Orange will continue as principal permittee and the OCFCD and the incorporated cities will continue as co-permittees. Order 90-71 expired on July 1, 1995.



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4. Order No. 90-71 required the permittees to develop and implement a drainage area management plan (DAMP) and a storm water and receiving water monitoring plan, to eliminate illegal and illicit discharges to the storm drain systems and to enact the necessary legal authority to effectively prohibit such discharges. The overall goal of these requirements was to reduce pollutant loadings to surface waters from urban run-off to the maximum extent practicable (MEP)[1].

5. This order outlines the next step toward an effective program and specifies requirements to protect the beneficial uses of the waters of the U. S. The intent of this permit is to regulate pollutant discharges, identify and focus on those areas which threaten the beneficial uses and improve water quality in the Region in a timely manner. This order regulates urban storm water run-off[2] from areas under the jurisdiction of the permittees.

6. The Report of Waste Discharge (the permit renewal application) included the following major components:

   a. Summary of status of current Storm Water Management Program
   b. Proposed Plan of Storm Water Quality Management Activities for 1995-2000
   c. The Drainage Area Management Plan
   d. A Model Water Quality Ordinance
   e. An Enforcement Consistency Guide
   f. A Reconnaissance Survey Field Inspection and Documentation Manual

7. The permittees serve a population of approximately 2.6 million, occupying an area of approximately 511 square miles (including both unincorporated areas and the limits of 31 cities). The permittees have jurisdiction over and /or maintenance responsibility for storm water conveyance systems within Orange County. The County's systems include an estimated 400 miles of storm drain systems. A major portion of the urbanized areas of Orange County drains into water bodies within this Regional Board's jurisdiction. The project area is shown on Attachment A. The major storm drain systems and drainage areas in Orange County which are within this Region are shown on Attachment B. A portion of the Orange County drainage area is within the jurisdiction of the San Diego Regional Board and is currently regulated under an order issued by that Board.

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[1] Maximum Extent Practicable (MEP) means to the maximum extent possible, taking into account equitable considerations of synergistic, additive, and competing factors, including but not limited to, gravity of the problem, fiscal feasibility, public health risks, societal concerns, and social benefits.

[2] Urban storm water run-off includes those discharges from residential, commercial, industrial and construction areas within the permitted area and excludes discharges from feedlots, dairies and farms.

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8. The permittees may lack legal jurisdiction over storm water discharges into their systems from some of the State and federal facilities, utilities and special districts, Native American tribal lands, waste water management agencies and other point and non-point source discharges otherwise permitted by the Regional Board. The Regional Board recognizes that the permittees should not be held responsible for such facilities and/or discharges.

9. Storm water discharges consist of surface run-off generated from various land uses in all the hydrologic drainage areas which discharge into the water bodies of the U. S. The quality of these discharges varies considerably and is affected by land use activities, basin hydrology and geology, season, the frequency and duration of storm events, and the presence of illegal disposal practices/illicit connections. Nationwide studies in urban areas have shown that urban run-off typically contains significant quantities of pollutants. Preliminary results from urban storm water monitoring programs within the permitted area indicate that the major pollutants of concern are certain heavy metals, sediment, chemical oxygen demand (COD), pesticides, herbicides, and nutrients.

   The 1989, 1991, and 1994 Water Quality Assessments by the Regional Board identified impairment of a number of water bodies within the permitted area. The beneficial uses of these water bodies have been found to be threatened or impaired due to point and non-point source discharges.

10. Certain activities that generate pollutants present in storm water runoff are beyond the ability of the permittees to eliminate. Examples of these include operation of internal combustion engines, atmospheric deposition, brake pad wear, tire wear and leaching of naturally-occurring minerals from local geography. Pollutants contributed by these activities, however, can be controlled by the permittees.

11. Storm water discharges to the storm drain systems in Orange County are tributary to various water bodies of the Region. The permitted area can be subdivided into five tributary watersheds: the San Gabriel River drainage area, the Huntington Harbor and Bolsa Bay drainage area, the Greenville-Banning Channel drainage area, the Santa Ana River drainage area, and the Newport Bay drainage area (see Attachment B). These watersheds are tributary to the Pacific Ocean. The surface water bodies in Orange County include:

   Inland Surface Streams

   a. Santa Ana River, Reaches 1 and 2,

   b. Silverado Creek (tributary to Santiago Creek),

   c. Santiago Creek, Reaches 1, 2, 3, and 4 (tributary to the Santa Ana River),

d. San Diego Creek, Reaches 1 and 2 (tributary to Newport Bay),

e. San Joaquin Freshwater Marsh (tributary to San Diego Creek),

f. All other tributaries to these Creeks: Bonita Creek, Serrano Creek, Peters Canyon Wash, Hicks Canyon Wash, Bee Canyon Wash, Borrego Canyon Wash, Agua Chinon Wash, Laguna Canyon Wash, Rattlesnake Canyon Wash, Sand Canyon Wash, Black Star Creek, Carbon Canyon Creek, Coyote Creek and other tributaries to these washes,

Bays, Estuaries, and Tidal Prisms

g. Anaheim Bay,

h. Sunset Bay,

i. Bolsa Bay and Bolsa Chica Ecological Reserve,

j. Lower and Upper Newport Bay,

k. Tidal Prism of Santa Ana River (to within 1000 feet of Victoria Street) and Newport Slough, Santa Ana Salt Marsh,

l. Tidal Prism of San Gabriel River (River Mouth to Marina Drive),

m. Tidal Prisms of Flood Control Channels Discharging to Coastal or Bay Waters (e.g. Huntington Harbor),

Ocean Waters

Nearshore Zone

n. San Gabriel River to Poppy Street in Corona Del Mar,

o. Poppy Street to Southeast Regional Boundary,

Offshore Zone

p. Waters between Nearshore Zone and Limit of State Waters,

Lakes and Reservoirs

q. Irvine Lake (Santiago Reservoir), and

r. Laguna, Peters Canyon, and Rattlesnake Reservoirs.

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11. (cont'd)
The beneficial uses of these water bodies include: municipal and domestic supply, agricultural supply, industrial service supply, groundwater recharge, navigation, hydropower generation, water contact recreation, non-contact water recreation, commercial and sportfishing, warm freshwater habitat, cold freshwater habitat, preservation of biological habitats of special significance, wildlife habitat, preservation of rare, threatened or endangered species, marine habitat, shellfish harvesting, spawning, reproduction and development of aquatic habitats, and estuarine habitat . The ultimate goal of this storm water management program is to protect the beneficial uses of the receiving waters.

12. The Santa Ana River Basin is the major watershed within the jurisdiction of the Regional Board. The lower Santa Ana River Basin (downstream from Prado Basin) includes the Orange County drainage areas and the Upper Santa Ana River Basin includes the San Bernardino and the Riverside drainage areas. Within the Region, generally the San Bernardino County drainage areas drain to the Riverside County drainage areas, and Riverside County drainage areas discharge to Orange County.

13. Within the Region, run-off from the San Bernardino County areas is generally conveyed to the Riverside County areas through the Santa Ana River or other drainage channels tributary to the Santa Ana River. These flows are then discharged to Reach 2 of the Santa Ana River through Prado Basin (Reach 3 of the Santa Ana River). Most of the flow in Reach 2 is recharged in Orange County. During wet weather, some of the flow is discharged to the Pacific Ocean through Reach 1 of the Santa Ana River.

14. The three county areas within this Region are regulated under three areawide permits for urban storm water run-off. These areawide NPDES permits are:

    a. Orange County, NPDES No. CAS618030;
    b. Riverside County, NPDES No. CAS618033; and
    c. San Bernardino County, NPDES No. CAS618036.

15. Studies conducted by the EPA, the states, flood control districts and other entities indicate the following major sources for urban storm water pollution nationwide:

    a. Industrial sites where appropriate pollution control and best management practices (BMPs)[3] are not implemented;

    b. Construction sites where erosion and siltation controls and BMPs are not implemented; and

    c. Urban run-off where the drainage area is not properly managed.

[3] Best Management Practices (BMPs) are water quality management practices that are maximized in efficiency for the control of storm water run-off pollution.

16. To address the industrial and construction sites, the State Board issued two statewide general NPDES permits: one for storm water run-off from industrial sites (NPDES No. CAS000001, General Industrial Activities Storm Water Permit) and the second one for storm water run-off from construction sites (NPDES No. CAS000002, General Construction Activity Storm Water Permit). In addition, the Regional Board adopted Order No. 94-005, NPDES NO. CA 8000279, for storm water run-off from facilities owned and/or operated by Caltrans, which includes freeways and highways, and Order 94-7, NPDES No. CA 8000336 for concentrated animal feeding operations, including dairies. The Regional Board issued and continues to issue individual storm water permits for certain industrial facilities within the Region.

17. One of the major components of these statewide permits and the Caltrans permit is the development and implementation of a storm water pollution prevention plan (SWPPP).

18. Most industrial activities (some light industrial activities are exempt) and construction sites on five acres or more are required to get coverage under these statewide general permits.

19. The Regional Board administers compliance with the State's General Industrial Activities Storm Water Permit and the General Construction Activity Storm Water Permit. However, in most cases, the industries and construction sites discharge into storm drains and/or flood control facilities owned and operated by the permittees. These industries and developers are also regulated under local laws and regulations. Therefore, a coordinated effort of the permittees and the Regional Board staff is critical to avoid duplicative and overlapping storm water regulatory activities. A memorandum of understanding between the permittees and the Regional Board may be appropriate to efficiently implement the storm water regulations for industries and construction sites at the local level.

20. The permittees have agreed to continue to notify Regional Board staff when conditions are observed during their routine activities which result in a threat or potential threat to water quality. This also includes failure to obtain coverage under the general storm water permits.

21. The permittees have developed project conditions of approval for new developments to be implemented at the time of grading or building permit issuance for individual sites on five acres or more, with the intent to comply with the General Construction Activity Storm Water Permit.

22. The permittees own/operate facilities where industrial or related activities take place that may have an impact on storm water quality. Some of the permittees also enter into contracts with outside parties to carry out municipal related activities that may also have an impact on storm water quality. These facilities and related activities include, but are not limited to, street sweeping, catch basin cleaning, maintenance yards, vehicle and equipment maintenance areas, waste transfer stations, corporation and storage yards, parks and recreational facilities, landscape and swimming pool maintenance activities, storm

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drain system maintenance activities and the application of herbicides, algaecides and pesticides. As part of this order, the permittees will prepare an environmental performance report for appropriate public facilities under their jurisdiction, and develop and implement best management practices for those activities found to require pollution prevention measures. Non-storm water discharges from these facilities and/or activities could also affect water quality. This order prohibits non-storm water discharges from public facilities unless the discharges are exempt under Section III, Discharge Limitations, 3 & 5 of this order or are permitted by the Regional Board under an individual NPDES permit.

23. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Orange County having programs/activities that have an impact on storm water quality. A list of these organizations is included in Attachment C. As such, these organizations are expected to actively participate in implementing the Orange County NPDES Storm Water Program. The Regional Board has the discretion and authority to require non-cooperating entities to participate in this areawide permit or obtain individual storm water discharge permits, pursuant to 40 CFR 122.26(a).

24. The major focus of storm water pollution prevention is the development and implementation of appropriate drainage area management plan (DAMP) including best management practices (BMPs). The ultimate goal of the urban storm water management program is to support attainment of water quality consistent with the water quality objectives for the receiving waters in order to protect beneficial uses through the implementation of the DAMP. The permittees developed and submitted a DAMP for approval, which was approved on May 3, 1994.

25. The DAMP is a dynamic document and the permittees have implemented, or are in the process of implementing, the various elements of the DAMP. This order requires the permittees to continue to implement the BMPs listed in the DAMP and to effectively prohibit illegal and illicit discharges to the storm drain system.

26. Urban run-off contains pollutants from privately owned and operated facilities such as residences, businesses, private and/or public institutions, and commercial establishments. Therefore, a successful storm water management plan should include the participation and cooperation of the public, businesses, the permittees and the regulators. The DAMP has a strong emphasis on public education.

27. The Orange County DAMP defined a management structure for the permittees' compliance effort, a formal agreement to underpin cooperation, and detailed municipal efforts to develop, implement, and evaluate various BMPs or control programs in the areas of public agency activities, public information, new-development and construction, public works construction, industrial discharger identification, and illicit discharger/connection identification and elimination. The DAMP also defined an extensive surface water quality and sediment monitoring program.

28. In order to characterize storm water discharges, to identify problem areas, to determine the impact of urban run-off on receiving waters, and to determine the effectiveness of the various BMPs, an effective monitoring program is critical. From 1990 through 1995, the principal permittee administered the monitoring program for the permittees which included storm water monitoring, receiving water monitoring, dry weather monitoring and sediment monitoring. The permit application included a summary of monitoring data collected during 1991-1994. The monitoring program did not identify any specific pollutant sources which could be targeted for special pollutant control programs. The monitoring data indicated spatial differences in water quality between Orange County's major watersheds. Some of the monitoring data collected to date may be used to develop baseline water quality data for future evaluation of program effectiveness.

29. The Strategic Plan and Initiatives (June 22, 1995) for the State Water Resources Control Board and the Regional Water Quality Control Boards recognizes the importance of an integrated watershed management approach. The Regional Board also recognizes that a watershed management program should integrate all related programs, including the storm water programs. Consistent with this approach, an integrated monitoring program could be developed with the cooperation of all the stakeholders, including the permittees in the three counties, and the Regional Board. The Regional Board will coordinate the activities within the watershed and seek participation of the permittees.

30. Any illegal dumping and illicit/illegal connections and discharges[4] to the storm drains could contribute to storm water and other surface water contamination. A reconnaissance survey of the municipal storm drain systems (open channels and underground storm drains) is being conducted by the permittees. The permittees are required to detect, identify and eliminate illicit/illegal discharges. Additionally, the permittees are also required to develop a program to prohibit illegal/illicit connections to their storm drains and flood control facilities.

31. The County of Orange obtains its authority to control pollutants in storm water discharges, to prohibit illegal discharges/illicit connections, to control spills, and to require compliance and carry out inspections of the storm drain systems in the County of Orange from the Orange County Flood Control Act, Orange County Water Pollution Ordinance, and various county ordinances which address industrial wastes and waste discharges within the unincorporated areas of Orange County and contract cities. The permittees have various forms of legal authority in place, such as charters, State Code provisions for General Law cities, city ordinances, and applicable portions of municipal codes and the State Water Code, to regulate storm water/urban run-off discharges.

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[4] Illegal discharge means any discharge (or seepage) to the municipal separate storm sewer that is not composed entirely of storm water except for the authorized discharges listed in Section III of this permit. Illegal discharges include the improper disposal of wastes into the storm sewer system.

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In order to insure countywide consistency and to provide a legal underpinning to the entire Orange County Storm Water Program, a model water quality ordinance was completed on August 15, 1994 and is available to the permittees for adoption.

32. Early identification of potential storm water impacts and mitigation measures can significantly reduce storm water pollution problems. The permittees should consider these impacts and appropriate mitigation measures in the planning procedures and in the California Environmental Quality Act (CEQA) review process for specific projects, Master Plans, etc. The County of Orange already requires a Water Quality Management Plan which addresses permanent post-construction BMPs, in addition to the SWPPP required by the statewide general permit for construction activity.

33. Successful implementation of the provisions and limitations in this order will require the cooperation of all the public agency organizations within Orange County having programs/activities that have an impact on storm water quality (e.g. Fire Department, Building and Safety, Code enforcement, etc.). As such, these organizations are expected to actively participate in implementing this areawide storm water program.

34. In accordance with the Clean Water Act and its implementing regulations, this order requires the permittees to develop and implement programs and policies necessary to control the discharge of pollutants in urban run-off to waters of the U. S. to the maximum extent practicable.

35. The legislative history and the preamble to the federal storm water regulations indicate that the Congress and the U.S. EPA were aware of the difficulties in regulating urban storm water run-off solely through traditional end-of-pipe treatment. However, it is the Regional Board's intent that this order shall attain and protect the beneficial uses of receiving waters. This order, therefore, includes Receiving Water Limitations required to implement water quality objectives and to prevent nuisance and water quality impairment in receiving waters. In accordance with Section 402 (p) of the Clean Water Act, this order requires the permittees to implement control measures in accordance with the DAMP that will reduce pollutants in storm water discharges to the maximum extent practicable. The Receiving Water Limitations require the implementation of control measures that are technically and economically feasible as necessary to protect beneficial uses and water quality objectives of the receiving waters.

36. The Regional Board finds that the unique aspects of the regulation of storm water discharges through municipal storm sewer systems, including intermittent discharges, difficulties in monitoring and limited physical control over the discharge, will require adequate time to implement and evaluate the effectiveness of best management practices and to determine whether they will adequately protect receiving waters. Therefore, the permit includes a procedure for determining whether storm water discharges are causing continuing and recurring exceedances of receiving water limitations and for evaluating

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whether the DAMP must be revised. The permittees will be in compliance with the Receiving Water Limitations so long as it complies with that procedure.

37. A revised Water Quality Control Plan (Basin Plan) was adopted by the Regional Board and became effective on January 24, 1995. The Basin Plan contains water quality objectives and beneficial uses for water bodies in the Santa Ana Region. The Basin Plan also incorporates by reference all State Board water quality control plans and policies including the 1990 Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and the 1974 Water Quality Control Policy for Enclosed Bays and Estuaries of California ( Enclosed Bays and Estuaries Plan).

38. The requirements contained in this order are necessary to implement the plans and policies described in Finding 36, above. These plans and policies contain numeric and narrative water quality standards for the water bodies in this Region. This order does not contain numeric effluent limitations for any constituents because the impact of the storm water discharges on the water quality of the receiving waters has not yet been fully determined. Continuation of water quality/biota monitoring and analysis of the data are essential to make that determination.

39. The permittees may petition the Regional Board to issue a separate NPDES permit to any discharger of non-storm water into storm drain systems that they own or operate.

40. The permittees have developed a Storm Water Implementation Agreement between the County, its cities and the Orange County Flood Control District as required under Order No. 90-71.

41. The storm water regulations require public participation in the storm water management program development and implementation. As such the permittees are required to solicit and consider all comments received from the public and submit copies of the comments to the Executive Officer of the Regional Board. In considering the public comments, the permittees may modify reports, plans, or schedules prior to submittal to the Executive Officer.

42. In accordance with California Water Code Section 13389, the issuance of waste discharge requirements for this discharge is exempt from those provisions of the California Environmental Quality Act contained in Chapter 3 (commencing with Section 21100), Division 13 of the Public Resources Code.

43. The Regional Board has considered anti-degradation requirements, pursuant to 40 CFR 131.12 and State Board Resolution 68-16, for this discharge. The Regional Board finds that the storm water discharges are consistent with the federal and state anti-degradation requirements and a complete anti-degradation analysis is not necessary.

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44. The Regional Board has notified the permittees and interested parties of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

45. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

**IT IS HEREBY ORDERED** that the permittees, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act, as amended, and regulations and guidelines adopted thereunder, shall comply with the following:

## I. RESPONSIBILITIES OF PRINCIPAL PERMITTEE

The principal permittee shall be responsible for the overall program management and shall:

1. Conduct chemical and biological water quality monitoring of the storm drain system outfalls as agreed upon by the Executive Officer of the Regional Board.

2. Develop criteria for inspections of the municipal separate storm drain systems.

3. Conduct inspections of the storm drain systems within its jurisdiction.

4. Implement management programs (within its jurisdiction), monitoring programs, and related plans as required by this order.

5. Enact and revise policies/ordinances necessary to establish legal authority as required by the Federal Storm Water Regulations.

6. Respond and/arrange for responding to emergency situations such as accidental spills, leaks, illegal discharges/illicit connections, etc. to prevent or reduce the discharge of pollutants to storm drain systems and waters of the U.S.

7. Prepare and submit to the Executive Officer of the Regional Board unified reports, plans, and programs as required by this order.

The activities of the principal permittee should include, but not be limited to, the following:

8. Coordinate permit activities and participate in any subcommittees formed as necessary, to coordinate compliance activities with this order.

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9. Provide technical and administrative support and inform the co-permittees of the progress of other pertinent municipal programs, pilot projects, research studies, etc.

10. Coordinate the implementation of areawide storm water quality management activities such as public education, pollution prevention, household hazardous waste collection, etc.

11. Develop and implement mechanisms, performance standards, etc., to promote uniform and consistent implementation of BMPs among the permittees.

12. Pursue enforcement actions as necessary within its jurisdiction to ensure compliance with storm water management programs, ordinances and implementation plans including physical elimination of undocumented connections and illicit discharges.

13. In conjunction with the other permittees, implement the BMPs listed in the approved DAMP.

14. Monitor the implementation of the plans and programs required by this order and determine their effectiveness in protecting beneficial uses.

15. Coordinate all the activities with the Regional Board including the submittal of all reports, plans, and programs as required under this order.

16. Obtain public input for any proposed management and implementation plans where applicable.

17. Cooperate in watershed management programs and regional and/or statewide monitoring programs.

## II. RESPONSIBILITIES OF THE CO-PERMITTEES

The co-permittees shall be responsible for the management of storm drain systems within their jurisdictions and shall:

1. Implement management programs, monitoring programs, implementation plans and all BMPs outlined in the DAMP within each respective jurisdiction as required by Order No. 96-31.

2. Adopt the Orange County Water Quality Ordinance or the equivalent legislation necessary to establish and maintain adequate legal authority as required by the Federal Storm Water Regulations.

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3. Conduct storm drain system inspections in accordance with the criteria developed by the principal permittee.

The co-permittees' activities should include , but not be limited to, the following:

4. Participate in committees or subcommittees formed by the principal permittee to address storm water related issues to comply with this order.

5. Review, approve, implement, and comment on all plans, strategies, management programs, monitoring programs, as developed by the principal permittee or any subcommittee to comply with this order.

6. Pursue enforcement actions as necessary to ensure compliance with the storm water management programs, ordinances and the implementation plans including physical elimination of undocumented connections and illicit discharges.

7. Conduct and coordinate with the principal permittee any surveys and characterizations needed to identify the pollutant sources and drainage areas.

8. Submit storm drain system maps with periodic revisions as necessary.

9. Respond to emergency situations such as accidental spills, leaks, illegal discharges/illicit connections, etc. to prevent or reduce the discharge of pollutants to storm drain systems and waters of the U.S.

10. Prepare and submit all reports to the principal permittee in a timely manner.

## III. DISCHARGE LIMITATIONS

1. The permittees shall prohibit illicit/illegal discharges from entering into the municipal separate storm sewer systems (municipal storm drain systems) and require controls to reduce the discharge of pollutants to the maximum extent practicable.

2. The discharge of storm water from permittees' municipal storm drain systems to waters of the United States containing pollutants which have not been reduced to the maximum extent practicable is prohibited.

3. The following discharges need not be prohibited by the permittees unless identified by the permittees as a source of pollutants to the receiving waters.

   a. discharges composed entirely of storm water,

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b. covered by NPDES permits or written clearances issued by the Regional or State Board
c. from potable water line flushing and other potable water sources,
d. fire hydrant testing and flushing,
e. air conditioning condensation,
f. landscape irrigation, lawn garden watering and other irrigation waters,
g. passive foundation drains,
h. passive footing drains,
i. water from crawl space pumps,
j. dechlorinated swimming pool discharges,
k. non-commercial vehicle washing,
l. diverted stream flows,
m. rising ground waters and natural springs,
n. ground water infiltration as defined in 40 CFR 35.2005 (20) and uncontaminated pumped groundwater,
o. flows from riparian habitats and wetlands,
p. street wash water and run-off from fire fighting (program descriptions shall address discharges or flows from fire fighting only where such discharges are identified as significant sources of pollutants to waters of the United States),
q. waters not otherwise containing wastes as defined in California Water Code Section 13050 (d), and
r. other types of discharges identified and recommended by the permittees and approved by the Regional Board.

For purposes of this order, a discharge may include storm water and other types of discharges as indicated above.

4. If it is determined by the permittees that any of the preceding discharges cause or contribute to violations of water quality standards or are significant contributors of pollutants to waters of the U.S., the permittees shall prohibit these discharges from entering the storm drain system.

5. Non-storm water discharges from public agency activities into waters of the U.S. are prohibited unless the non-storm water discharges are permitted by an NPDES permit or are included in Item 3., above. If permitting or immediate elimination of the non-storm water discharges is impractical, the permittees shall include in the Environmental Performance Report, required under Section V., Provision 18., of this order, a proposed plan to eliminate the non-storm water discharges in a timely manner.

6. The permittees shall reduce the discharge of pollutants to the storm water conveyance systems to the maximum extent practicable.

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## IV. RECEIVING WATER LIMITATIONS

1. Receiving water limitations have been established based on beneficial uses, water quality objectives, and water quality standards contained in the Basin Plan, and amendments thereto, and on ambient water quality. The discharge of storm water, or non-storm water, from a municipal storm sewer system for which the permittees are responsible under the terms of this permit shall not cause or contribute to a continuing or recurring violation of any applicable receiving water limitations adopted the Regional Board or the State Water Resources Control Board. The permittees will not be in violation of this provision so long as they are in compliance with the requirements set forth in 1.a.

   a. If the Executive Officer determines that a continuing or recurring exceedance of a receiving water limitation has been caused by discharges from the municipal storm sewer system, the following steps shall be taken:

      i. The Executive Officer will evaluate the adequacy of the permittees' implementation of the DAMP based on the permittees' submitted reports and other relevant information. The Executive Officer will determine if implementation of the DAMP has a reasonable likelihood of preventing future exceedances of receiving water limitations. If the Executive Officer makes this determination, the permittees are required to continue implementing the DAMP.

      ii. If the Executive Officer determines that implementation of the DAMP will not have a reasonable likelihood of preventing future exceedances of receiving water limitations, the permittees shall, upon notice from the Executive Officer, do the following:

         A. The Executive Officer may require the permittees to submit a report that includes an evaluation of the relative contribution of the storm water discharges to the exceedance of the receiving water limitation. The report shall address the persistence and the causes of the exceedance, and the technical and economic feasibility of control actions by the permittees to reduce or eliminate the exceedance.

         B. The Executive Officer may require the permittees to submit a report reviewing the DAMP to determine whether it should be revised so that there will be a reasonable likelihood of preventing future exceedances of receiving water limitations, or whether revisions to achieve compliance with receiving water limitations are technically or economically infeasible. If the report recommends revision of the DAMP, the report shall include a work plan to

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revise the plan so that it will have a reasonable likelihood of preventing future exceedances of receiving water limitations. If the report concludes that no revisions are necessary to achieve compliance with receiving water limitations, the report shall explain how implementation of the DAMP will achieve compliance. If the report determines that revisions to achieve compliance with receiving water limitations are technically or economically infeasible, the permittees shall fully document this determination and shall include recommendations for actions to achieve compliance, including, for example, commencement of a total maximum daily load report or revision of the Basin Plan, and identification of funding sources for such actions.

C. The permittees shall implement the work plan and the revised DAMP as approved by the Executive Officer.

2. The Executive Officer shall review and approve or disapprove the reports required under Receiving Water Limitation 1. The reports may be submitted as part of the next Annual Report, or at some other time designated by the Executive Officer. So long as the permittees have complied with the procedures set forth in Receiving Water Limitation 1, they do not have to repeat the procedure for continuing exceedances of the same receiving water limitations. As appropriate, any determinations under this part or revisions to the DAMP may be considered by the Regional Board in a public meeting.

## V. PROVISIONS

### GENERAL

1. Permittees shall demonstrate compliance with all the requirements in this order and specifically with Section III. Discharge Limitations and Section IV. Receiving Water Limitations, through timely implementation of their approved Drainage Area Management Plan (DAMP) and any approved modifications, revisions, or amendments developed pursuant to this order. The approved DAMP, as included in the Report of Waste Discharge, including any approved amendments thereto, is hereby made an enforceable component of this order.

2. The permittees shall implement all elements of the approved DAMP. Where the dates are different than those of the order, the dates in the order shall prevail. Any proposed revisions to the DAMP shall be submitted with the Annual Report to the Executive Officer of the Regional Board for review and approval. All approved revisions to the DAMP shall be implemented in a timely manner.

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3. The permittees shall comply with Monitoring and Reporting Program No. 96-31 which is hereby made a part of this order and any revisions thereto. The Executive Officer is authorized to revise the Monitoring and Reporting Program and also to allow the permittees to participate in regional, statewide, national or other monitoring programs in lieu of Monitoring and Reporting Program No. 96-31.

4. Upon approval by the Executive Officer of the Regional Board, all plans, reports and subsequent amendments as required by this order shall be implemented and shall become an enforceable part of this order. Prior to approval by the Executive Officer, these plans, reports and amendments shall not be considered as an enforceable part of this order.

5. The permittees shall report to the Executive Officer of the Regional Board:

   a. Any enforcement actions and discharges of storm or wastewaters, known to the permittees, which may have an impact on human health or the environment,

   b. Any suspected or reported activities on federal, state, or other entity's land or facilities, where the permittees do not have any jurisdiction, and where the suspected or reported activities may be contributing pollutants to waters of the U.S.

6. The permittees shall not issue any grading permit for construction activities which will disturb five acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) until proof of coverage with the State's General Construction Activity Storm Water Permit is verified. The proof of coverage may include a letter from the Regional Board office, a copy of the Notice of Intent, Waste Discharger Identification number, etc.

7. The permittees shall identify all illegal and or illicit connections by February 1, 1997 and submit a report of the findings by February 28, 1997 including a schedule for elimination of any identified illicit connection and for periodic inspections of the storm drain facilities.

8. Permit application and special NPDES program requirements contained in 40 CFR 122.21, 122.41 and 122.42 (c) are incorporated into this order by reference.

## IMPLEMENTATION AGREEMENT

13. No later than May 31, 1996, the permittees shall submit to the Executive Officer of the Regional Board a copy of the existing Storm Water Program Implementation Agreement with authorized signatures of each of the permittees. Any further revisions to the implementation agreement shall be forwarded to the Executive Officer of the Regional Board within 30 days of approval by the permittees.

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## LEGAL AUTHORITY

14. The permittees shall adopt the proposed Water Quality Ordinance, or its equivalent. The permittees shall review their existing grading and erosion control ordinances and determine the need for any revision. Upon adoption of the ordinances, but no later than July 31, 1997 each permittee shall certify to the Regional Board that it has adequate legal authority to control the discharges of pollutants into the municipal storm drain system and that it has satisfied the requirements of 40 CFR Section 122.26(d)(2)(i)(A-F). The certification may be submitted jointly by all permittees.

## ENFORCEMENT/COMPLIANCE STRATEGY

15. The Permittees shall implement the Enforcement Consistency Guide, dated 8/15/94, or an equivalent enforcement strategy, in order to enforce the Water Quality Ordinance. Upon implementation, but no later than July 31, 1997, each permittee shall certify to the Regional Board that the guide or similar policies are in place for their enforcement staff. Before implementation, this guide and its equivalent must include the following:

    a. A mechanism to determine compliance of industrial facilities, commercial facilities, and construction sites with storm water ordinances and concerns;

    b. A program to monitor and control the pollutants in storm water discharges to the municipal system from industrial facilities that the permittees determines are contributing to a substantial pollutant loading to the municipal storm drain system. The program shall identify priorities and procedures for inspections and establishing and implementing control measures.

16. The permittees shall develop a training program and offer it to the staff of existing industrial and construction inspection programs, to raise concerns with regard to storm water requirements.

17. The permittees will continue to provide notification to the Regional Board regarding storm water related information gathered during site inspections of industrial and construction sites regulated by the Statewide General Storm Water Permits.

## PUBLIC EDUCATION AND OUTREACH

18. The permittees will continue to implement the public education efforts already underway and shall implement all of the proposed efforts contained in the permit application. Any proposed changes shall be reported in the Annual Report.

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19. When feasible, the permittees shall participate in joint outreach with other programs including, but not limited to, other municipal storm water programs to ensure that a consistent message on storm water pollution prevention is brought to the public.

20. The permittees shall develop public education materials to encourage the public to report illegal dumping from residential, industrial, construction and commercial sites into public streets, storm drains and other water bodies.

21. The permittees shall develop BMP guidance for the control of those potentially polluting activities not otherwise regulated by any agency.

## MUNICIPAL FACILITIES

22. The permittees shall prepare an Environmental Performance Report, as stated in the amended DAMP, to address public agency facilities and activities not currently required to obtain coverage under the State's general storm water permits. This report may include a pollution prevention strategy to ensure that the public agency facilities and/or activities that are currently not required to obtain coverage under the State's general storm water permits are not sources of pollutants into the waters of the U.S. A report shall be submitted to the Executive Officer of the Regional Board by July 31, 1997, identifying the extent of the investigation and all findings of the Environmental Performance Report as it pertains to storm water quality. Thereafter, the permittees shall include in the annual report for each year the actions taken by the permittees to eliminate discharges of pollutants to waters of the U.S., identified by the permittees, at public agency facilities.

## MUNICIPAL CONSTRUCTION PROJECTS/ACTIVITIES

23. This order authorizes the discharge of storm water run-off from construction projects that may result in land disturbance of five (5) acres or more (or less than five acres, if it is part of a larger common plan of development or sale which is five acres or more) that are under ownership and/or direct responsibility of any of the permittees.

24. Prior to commencement of construction activities, the permittees shall notify the Executive Officer of the Regional Board of the proposed construction project. Upon completion of the construction project, the Executive Officer shall be notified of the completion of the project.

25. The permittees shall develop and implement a storm water pollution prevention plan (SWPPP) and a monitoring program that is specific for the construction project prior to the commencement of any of the construction activities. The SWPPP shall be kept at the construction site and released to the public and/or Regional Board staff upon request.

26. The SWPPP and the monitoring program for the construction projects shall be consistent with the requirements of the latest version of the State's General Construction Activity Storm Water Permit.

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27. The permittees shall give advance notice to the Executive Officer of the Regional Board of any planned changes in the construction activity which may result in non-compliance with the latest version of the State's General Construction Activity Storm Water Permit.

28. All other terms and conditions of the latest version of the State's General Construction Activity Storm Water Permit shall be applicable.

## NEW DEVELOPMENT (INCLUDING RE-DEVELOPMENT)

29. Within 90 days of the issuance of this order, the permittees shall begin implementation of the new development BMPs (DAMP, Appendix G, dated September 1993) and BMPs for public works construction (DAMP, Appendix H) that were developed under Order 90-71. Each permittee shall certify to the Regional Board by November 15, 1996, that these guidelines or the equivalent are being implemented and enforced.

30. Within 120 days of the issuance of this order, the permittees shall review their planning procedures and CEQA document preparation processes to insure that storm water-related issues are properly considered. If necessary, these processes shall be revised to include storm water requirements for evaluation of appropriate mitigation measures.

31. The permittees shall, through conditions of approval, insure proper maintenance and operation of any permanent flood control structures installed in new developments. The parties responsible for the maintenance and operation of the facilities shall be identified.

## FISCAL RESOURCES

32. The permittees shall prepare and submit a unified fiscal analyses to the Executive Officer of the Regional Board. The fiscal analysis shall be submitted with the Annual Report document no later than November 15th of each year and shall, at a minimum, include the following:

    a. Each permittee's expenditures for the previous fiscal year,
    b. Each permittee's budget for the current fiscal year,
    c. A description of the source of funds, and
    d. Each permittee's estimated budget for the next fiscal year.

## PERMIT EXPIRATION AND RENEWAL

33. This order expires on March 8, 2001 and the permittees must file a Report of Waste Discharge (permit application) no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements. The Report of Waste Discharge shall, at a minimum, include the following:

    a. Any revisions to the Drainage Area Management Plan including, but not limited to, all the activities the permittees propose to undertake during the next permit

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term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.:

b. Changes in land use and/or population including map updates; and

c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls including map updates of the storm drain systems.

d. To incorporate new or revised program elements and compliance schedule(s) necessary to comply with Section IV of this order.

34. This Order may be modified, revoked or reissued prior to its expiration date for the following reasons:

a. To address significant changes in conditions identified in the technical reports required by the Regional Board which were unknown at the time of the issuance of this order;

b. To incorporate applicable requirements of statewide water quality control plans adopted by the State Water Resources Control Board or any amendments to the Basin Plan approved by the Regional Board, the State Board, and, if necessary, by the Office of Administrative Law; or

c. To comply with any applicable requirements, guidelines, or regulations issued or approved under the Clean Water Act, if the requirements, guidelines, or regulations contain different conditions or additional requirements than those included in this order.

35. This order shall serve as a National Pollutant Discharge Elimination System (NPDES) Permit pursuant to Section 402 (p) of the Clean Water Act, or amendments thereto, and shall become effective ten days after the date of its adoption provided the Regional Administrator of the U. S. EPA has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

36. Order No. 90-71 is hereby rescinded.

I, Gerard Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on March 8, 1996.

Gerard J. Thibeault
Executive Officer

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Order No. 96-31

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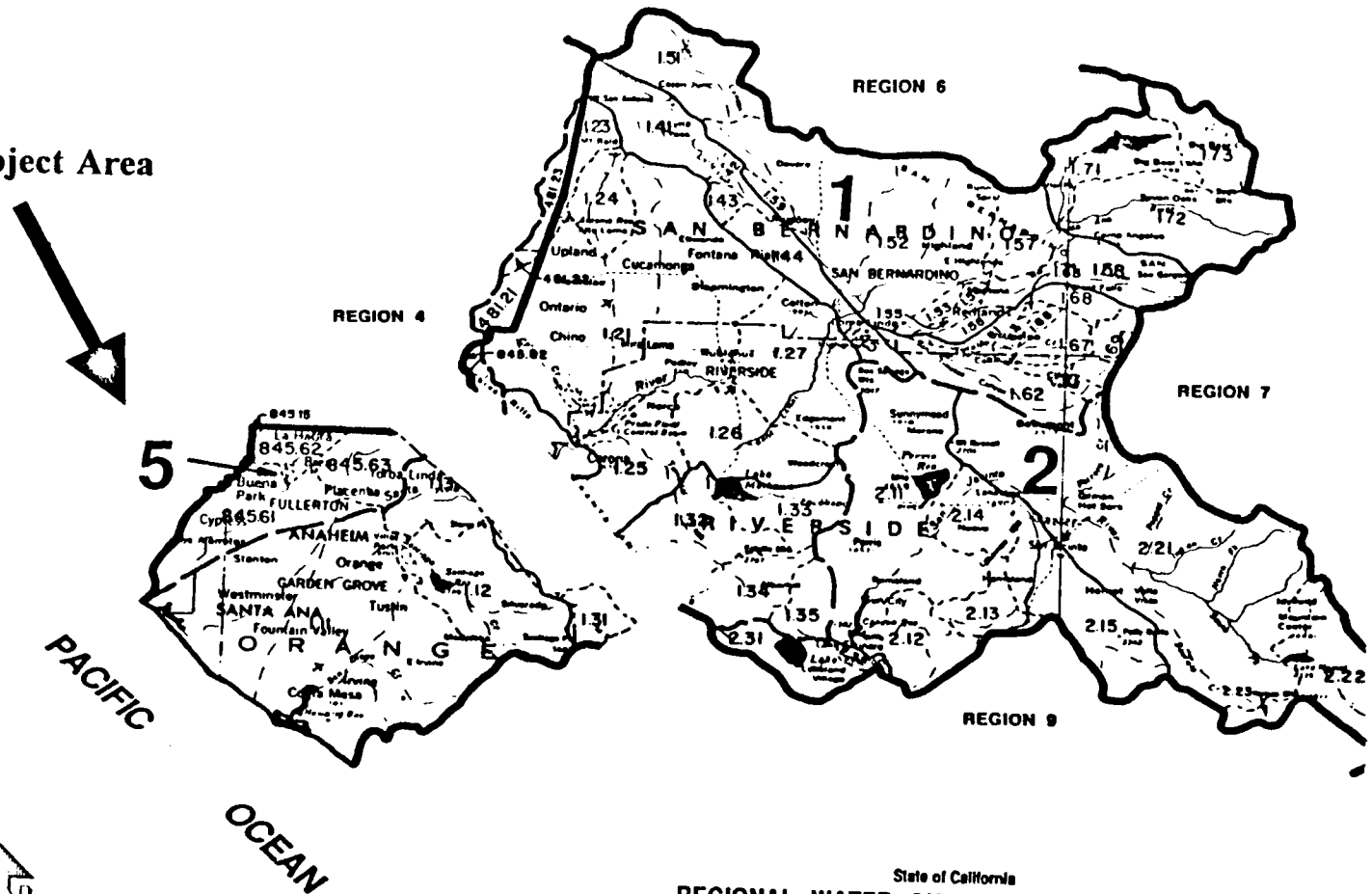


State of California
REGIONAL WATER QUALITY CONTROL BOARD
Santa Ana Region (8)
SANTA ANA HYDROLOGIC BASIN PLANNING AREA (SA)

Scale in miles
0 4 8 16 24 32
Scale 1:500,000

April 1973
Revised: July 1976
Revised: August 1986

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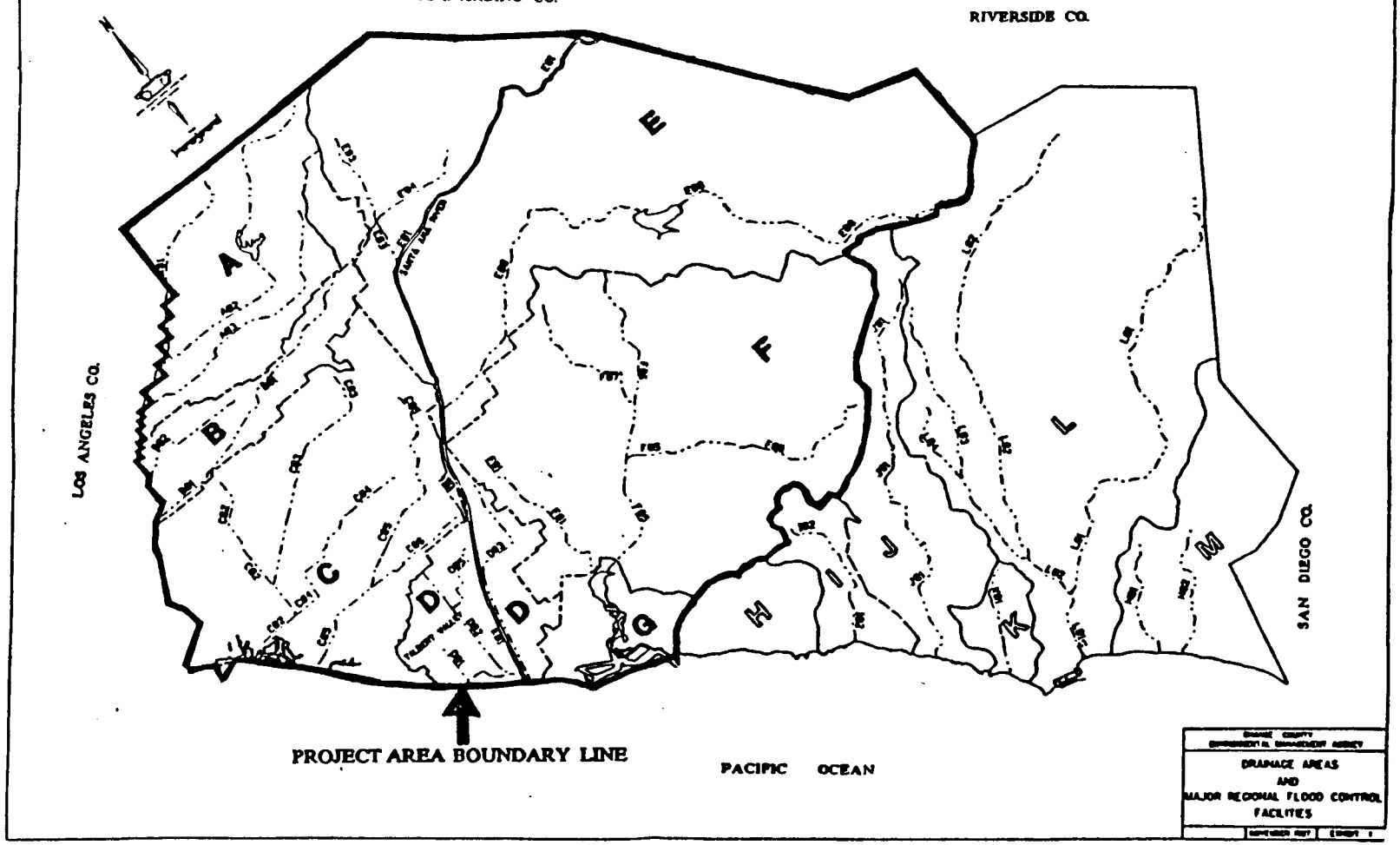


LEGEND

A,B - San Gabriel River Drainage Area
C - Huntington Harbour & Bolsa Bay Drainage Area
D - Greenville-Banning Channel Drainage Area
E - Santa Ana River Drainage Area
F,G - Newport Bay Drainage Area

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Order No. 96-31
Attachment "C"

LIST OF OTHER ENTITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS TO THE ORANGE COUNTY STORM WATER CONVEYANCE SYSTEM

California Department of Transportation (Caltrans), District 12
Southern Pacific Railroad
Atchison, Topeka & Santa Fe Railway Company
Seal Beach Naval Weapons Station
Seal Beach Naval Reserve Center, Los Alamitos
U. S. Marine Corps Air Station, El Toro
National Forest Service

Universities and Colleges

University of California, Irvine
California State University, Fullerton
Chapman College
Coastline College
Cypress College
Fullerton College
Irvine Valley College
Golden West College
Orange Coast College
Rancho Santiago College

School Districts

Anaheim Elementary School District
Anaheim Union High School District
Brea-Olinda Unified School District
Buena Park Joint Union High School District
Centralia Elementary School District
Cypress Elementary School District
Fountain Valley Union High School District
Fullerton Elementary School District
Fullerton Joint Union High School District
Garden Grove Unified School District
Huntington Beach Elementary School District
Huntington Beach Union High School District
Irvine Unified Union High School District
La Habra Joint Union High School District
Los Alamitos Unified School District
Lowell Joint Union High School District
Magnolia Elementary School District

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Newport-Mesa Unified School District
Ocean View Union High School District
Orange Unified School District
Placentia Unified School District
Santa Ana Unified School District
Savanna Union High School District
Tustin Unified School District
Westminster Union High School District
Yorba Linda Joint Union High School District

Hospitals

Anaheim General Hospital
Brea Community Hospital
Chapman General Hospital, Orange
Children's Hospital of Orange County. Orange
Coastal Communities Hospital, Santa Ana
Fairview Hospital
FHP Hospital, Fountain Valley
Fountain Valley Regional Hospital and Medical Center
Hoag Hospital, Newport Beach
Kaiser Foundation Hospital, Anaheim
Orange County Community Hospital, Buena Park
Pacifica Community Hospital, Huntington Beach
Placentia Linda Community Hospital
Santa Ana Hospital and Medical Center
St. Joseph's Hospital, Orange
U.C. Irvine Medical Center
Vencor Hospital of Orange County, Westminster
Whittier Hospital and Medical Center, Buena Park

Water/Wastewater Agencies

Santa Ana Watershed Project Authority
Irvine Ranch Water District
Los Alisos Water District
El Toro Water District
San Bernardino County Flood Control District
Riverside County Flood Control & Water Conservation District
L.A. County Department of Public Works
County Sanitation Districts of Orange County
Orange County Water District
Metropolitan Water District

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California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 96-31
NPDES No. CAS618030

for
the County of Orange, Orange County Flood Control District
and
Incorporated Cities of Orange County Within the Santa Ana Region
Areawide Urban Storm Water Runoff

## I. GENERAL

1. Revisions of the monitoring and reporting program are appropriate to ensure that the permittees are in compliance with requirements and provisions contained in this order. Revisions may be made under the direction of the Executive Officer at any time during the term, and my include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

2. The Executive Officer is authorized to allow the permittees to participate in statewide, national, or other monitoring programs in lieu of this monitoring program.

3. All sample collection, handling, storage, and analysis shall be in accordance with 40 CFR Part 136 or other methods approved by the Executive Officer.

4. The permittees are authorized to complement their monitoring data with other monitoring sources provided the monitoring conditions and sources are similar to those in the Santa Ana Watershed.

5. The permittees shall implement the Orange County Water Quality Monitoring Program (submitted as part of the permit application) until development and implementation of other acceptable monitoring programs.

## II. OBJECTIVES

The overall goal of this monitoring program is to develop and support an effective watershed management program. The following are the major objectives:

1. To develop and support an effective municipal non-point source control program.

2. To define water quality status, trends, and pollutants of concern associated with municipal storm water discharges.

3. To characterize pollutants associated with municipal storm water discharges and to assess the influence of urban land uses on water quality and the beneficial uses of receiving waters.

4. To identify significant water quality problems related to urban storm water discharges.



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5. To identify other sources of pollutants in storm water run-off to the maximum extent possible (e.g., atmospheric deposition, contaminated sediments, other non-point sources, etc.).

6. To identify and prohibit illicit discharges.

7. To identify those waters, which without additional action to control pollution from urban storm water discharges cannot reasonably be expected to attain or maintain applicable water quality standards required to sustain the beneficial uses in the Basin Plan.

8. To evaluate the effectiveness of existing municipal storm water quality management programs, including an estimate of pollutant reductions achieved by the structural and nonstructural BMPs implemented by the permittees.

9. To evaluate costs and benefits of proposed municipal storm water quality control programs to the stakeholders including the public.

The Regional Board recognizes that these objectives may not be attainable during this permit period and authorizes the Executive Officer to evaluate and to determine adequate progress toward meeting each objective.

## III. MONITORING PROGRAM REQUIREMENTS

The permittees shall develop and submit for approval of the Executive Officer an integrated watershed monitoring program geared towards achieving the above stated goals. This program may be developed in cooperation with the permittees from the San Bernardino and Riverside counties. The Executive Officer or his/her designated representative(s) shall facilitate the coordination meetings or subcommittees formed to achieve this goal. The development and implementation of the monitoring program shall be in accordance with the time schedules prescribed by the Executive Officer. At a minimum, the program shall include the following:

1. Uniform guidelines for quality control, quality assurance, data collection and data analysis.

2. A mechanism for the collection, analysis and interpretation of existing data from local, regional or national monitoring programs. These data sources may be utilized to characterize different storm water sources; to determine pollutant generation, transport and fate; to develop a relationship between land use, development size, storm size and the event mean concentration of pollutants; to determine spatial and temporal variances in storm water quality and seasonal and other bias in the collected data; and to identify any unique features of the Santa Ana Watershed. The permittees are encouraged to use data from similar studies, if available.

3. A description of the monitoring program including:

   a. The number of monitoring stations;

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b. Monitoring locations within flood control channels, bays and estuaries, coastal areas, major outfalls, and other receiving waters;

c. Environmental indicators (e.g., ecosystem, biological, habitat, chemical, sediment, stream health, etc.) chosen for monitoring;

d. Parameters selected for field screening and for laboratory work; and

e. Total number of samples to be collected from each station, frequency of sampling during wet and dry weather, short duration or long duration storm events, type of samples (grab, 24-hour composite, etc.), and the type of sampling equipment.

4. A mechanism for analyzing the collected data and interpreting the results including an evaluation of the effectiveness of the management practices, and need for any refinement of the management practices.

5. A description of the responsibilities of all the participants in this program including cost sharing.

## IV. REPORTING

1. All progress reports and proposed strategies and plans required by this order shall be signed by the principal permittee and copies shall be submitted to the Executive Officer of the Regional Board under penalty of perjury.

2. The permittees shall submit an **ANNUAL PROGRESS REPORT** to the Executive Officer of the Regional Board and to the Regional Administrator of the U.S. EPA, Region 9, no later than November 15th, of each year. This progress report may be submitted in a mutually agreeable electronic format. At a minimum, annual progress report shall include the following:

a. A review of the status of program implementation and compliance (or non-compliance) with the schedules contained in this order;

b. An assessment of the effectiveness of control measures established under the illicit discharge elimination program and the Drainage Area Management Plan. The effectiveness may be measured in terms of how successful the program has been in eliminating illicit/illegal discharges and reducing pollutant loads in storm water discharges;

c. An assessment of any storm water management program modifications made to comply with Clean Water Act requirements to reduce the discharge of pollutants to the maximum extent practicable;

d. A summary and analysis of monitoring results from the previous year and any changes to the monitoring program for the following year;

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e. A fiscal analysis progress report as described in Section V., Provision, 25., of this order;

f. A draft workplan which describes the proposed implementation of the DAMP for next fiscal year. The workplan shall include clearly defined tasks, responsibilities, and schedules for implementation of the storm water program and each permittee's actions for the next fiscal year; and

g. Major changes in any previously submitted plan/policies.

3. The permittees shall be responsible for the submittal of all required information/materials needed to comply with this order in a timely manner to the principal permittee. All such submittals shall be signed by a duly authorized representative of the permittee under penalty of perjury.

## V. REPORTING SCHEDULE

All reports required by this order shall be submitted to the Executive Officer of the Regional Board in accordance with the following schedule:

| ITEM | DUE DATE |
|---|---|
| Report on Illicit/Illegal Discharges & Storm Water Program Implementation Agreement | February 28, 1997 |
| Legal Authority & Enforcement Strategy Certification | July 31, 1997 |
| Environmental Performance Report | July 31, 1997 |
| New Development BMP Certification | November 15, 1996 |
| Proposed Monitoring Program | July 31, 1997 |
| Annual Report/Fiscal Analysis | November 15th of each year |

Ordered by_____

Gerard J. Thibeault
Executive Officer
March 8, 1996

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California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 96-31
NPDES No. CAS618030

for
the County of Orange, Orange County Flood Control District,
and
Incorporated Cities of Orange County Within the Santa Ana Region
Areawide Urban Storm Water Run-off

## I. GENERAL

1. Revisions of the monitoring and reporting program are appropriate to ensure that the permittees are in compliance with requirements and provisions contained in this order. Revisions may be made under the direction of the Executive Officer at any time during the term, and my include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

2. The Executive Officer is authorized to allow the permittees to participate in statewide, national, or other monitoring programs in lieu of this monitoring program.

3. All sample collection, handling, storage, and analysis shall be in accordance with 40 CFR Part 136 or other methods approved by the Executive Officer.

4. The permittees are authorized to complement their monitoring data with other monitoring sources provided the monitoring conditions and sources are similar to those in the Santa Ana Watershed.

5. The permittees shall implement the Orange County Water Quality Monitoring Program (submitted as part of the permit application) until development and implementation of other acceptable monitoring programs.

## II. OBJECTIVES

The overall goal of this monitoring program is to develop and support an effective watershed management program. The following are the major objectives:

1. To develop and support an effective municipal non-point source control program.

2. To define water quality status, trends, and pollutants of concern associated with municipal storm water discharges.

3. To characterize pollutants associated with municipal storm water discharges and to assess the influence of urban land uses on water quality and the beneficial uses of receiving waters.

4. To identify significant water quality problems related to urban storm water discharges.



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California Regional Water Quality Control Board
Santa Ana Region

ORDER NO. 96-31
NPDES No. CAS618030

**Waste Discharge Requirements**
**for**
**the County of Orange, Orange County Flood Control District**
**and**
**The Incorporated Cities of Orange County Within the Santa Ana Region**
**Areawide Urban Storm Water Run-off**
**Orange County**

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On December 30, 1994, the County of Orange and the Orange County Flood Control District (OCFCD), in cooperation with the cities of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Lake Forest, Los Alamitos, Newport Beach, Orange, Placentia, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, and Yorba Linda (hereinafter collectively referred to as permittees), submitted National Pollutant Discharge Elimination System (NPDES) Application No. CA 8000180 and a Report of Waste Discharge for reissuance of their areawide storm water NPDES permit.

2. Section 402(p) of the federal Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires NPDES permits for storm water discharges from separate municipal storm drain systems, storm water discharges associated with industrial activity (including construction activities), and designated storm water discharges which are considered significant contributors of pollutants to waters of the United States (U.S.). On November 16, 1990, the United States Environmental Protection Agency (hereinafter US EPA) published regulations (40 CFR Parts 122, 123 and 124) which describe permit application requirements for storm water discharges pursuant to Section 402(p) of the CWA. Prior to EPA's promulgation of the final storm water regulations, the three counties (Orange, Riverside, and San Bernardino) and the incorporated cities within the jurisdiction of the Santa Ana Region requested areawide NPDES permits for urban storm water run-off.

3. On July 13, 1990, the Regional Board adopted Order No. 90-71 for urban storm water run-off from urban areas in Orange County within the Santa Ana Region. The County of Orange was named as the principal permittee and the Orange County Flood Control District (OCFCD) and the incorporated cities were named as the co-permittees. In order to more effectively carry out the requirements of this order, the permittees have agreed that the County of Orange will continue as principal permittee and the OCFCD and the incorporated cities will continue as co-permittees. Order 90-71 expired on July 1, 1995.



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**California Regional Water Quality Control Board**
**Santa Ana Region**
**2010 Iowa Avenue, Suite 100**
**Riverside, CA 92507-2409**

# FACT SHEET

**March 8, 1996**

ITEM: 12

SUBJECT: Waste Discharge Requirements for the County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County within the Santa Ana Region, Storm Water Runoff Management Program, Orange County, Order No. 96-31 (NPDES No. CAS 618030)

## PROJECT

The attached pages contain information concerning an application for renewal of waste discharge requirements and a National Pollutant Discharge Elimination System (NPDES) permit, which prescribes waste discharge requirements for urban storm water runoff from the cities and the unincorporated areas in Orange County within the jurisdiction of the Santa Ana Regional Board. On December 30, 1994, the County of Orange and the Orange County Flood Control District (OCFCD), in cooperation with the cities of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Lake Forest, Los Alamitos, Newport Beach, Orange, Placentia, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, and Yorba Linda (hereinafter collectively referred to as permittees), submitted National Pollutant Discharge Elimination System (NPDES) Application No. CAS 618030 (Report of Waste Discharge) for reissuance of their areawide storm water NPDES permit. The permit application was submitted in accordance with the previous NPDES permit (Order No. 90-71, NPDES No. CA 8000180) which expired on July 1, 1995. Additionally, the permit application follows guidance provided by staff of the State Water Resources Control Board (State Board) and the Regional Water Quality Control Boards (Regional Boards).

## CLEAN WATER ACT REQUIREMENTS

The 1987 amendments to the Clean Water act (CWA) required municipal separate storm drain systems and industrial facilities to obtain NPDES permits for storm water runoff from their facilities. On November 16, 1990, the United States Environmental Protection Agency (EPA) promulgated the final storm water regulations. Prior to EPA's promulgation of the final storm water regulations, the counties of Orange, Riverside and San Bernardino requested for areawide NPDES permits for storm water runoff. On July 13, 1990, the Regional Board issued Order No. 90-71 to the permittees. This areawide NPDES permit is being considered for renewal by the Regional Board in accordance with Section 402 (p) of the CWA and all requirements applicable to an NPDES permit issued under the issuing authority's discretionary authority. The storm water regulations are contained in 40 CFR Parts 122, 123 and 124.



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## PROJECT AREA

The permitted area is delineated by the Los Angeles County-Orange County Boundary line on the northwest, the San Bernardino-Orange County boundary line on the north and northeast, the Riverside County-Orange County boundary line on the east, the Santa Ana Regional Board-San Diego Regional Board boundary line on the southeast, and the Pacific Ocean on the southwest (see Attachment A of the order). The permittees serve a population of approximately 2.6 million, occupying an area of approximately 511 square miles (including both unincorporated areas and the limits of 31 cities). The permittees have jurisdiction over and /or maintenance responsibility for storm water conveyance systems within Orange County. The County's systems include an estimated 400 miles of storm drain systems. A major portion of the urbanized areas of Orange County drains into water bodies within this Regional Board's jurisdiction. Storm water discharges from urbanized areas consist mainly of surface runoff from residential, commercial, and industrial developments. In addition, there are storm water discharges from agricultural land uses, including farming and animal operations. However, the CWA specifically excludes agricultural discharges from regulation under this program. Other areas of the County not addressed or which are excluded by the storm water regulations and areas not under the jurisdiction of the permittees are excluded from the area requested for coverage under this permit application. This includes the following areas and activities:

- Federal lands and state properties, including, but not limited to, military bases, national forests, hospitals, schools, colleges, universities, and highways;
- Native American tribal lands; and
- Utilities and special district properties.

## WATERSHED MANAGEMENT

To efficiently manage the water resources of the Region, it is critical to have a holistic approach. The entire storm drain system in Orange County is not controlled by a single entity; the County of Orange, the OCFCD, several cities, Caltrans, U.S. Army Corps of Engineers and a number of other entities own, operate and/or manage the storm drain systems. In addition to the cities, the County and the OCFCD, there are a number of other significant contributors of storm water runoff to these storm drain systems. These include: large institutions such as the State University facilities, schools, hospitals, etc.; federal facilities such as Department of Defense facilities; State agencies such as Caltrans, water and wastewater management agencies such as Orange County Water District, Metropolitan Water District etc.; the National Forest Service; state parks; and entertainment centers such as Disneyland. The quality and quantity of storm water runoff into and out of Orange County also depends upon runoff from San Bernardino and Riverside County areas which are tributary to Orange County. Some of the runoff from Orange county enters systems controlled by other entities, such as the Los Angeles County Flood Control District, which is under the Los Angeles Regional Board's jurisdiction.

Some of these facilities such as U.S. Marine Corps, Tustin and El Toro Air Stations, Disneyland and Caltrans are already under individual permits for storm water runoff. The Los Angeles and San Diego Regional Boards have also issued areawide storm water permits for areas within their jurisdiction.

Cooperation and coordination among all the stakeholders are essential for efficient and economical management of the watershed. Regional Board staff will facilitate coordination of monitoring and management programs among the various stakeholders.

EXISTING PROGRAMS AND FUTURE DIRECTION

As required under Order No. 90-71, the permittees developed a Drainage Area Management Plan (DAMP) which was approved by the Executive Officer of the Regional Board on April 29, 1994. The DAMP includes a number of best management practices and a very extensive public education program. The monitoring program includes 89 monitoring stations within streams and flood control channels and 21 stations within the bays, estuaries and the ocean. The findings and conclusions from these monitoring stations and monitoring programs of other municipal permittees (Riverside and San Bernardino Counties) may be used to identify problem areas and to evaluate the effectiveness of the DAMPs. The future direction of some of these program elements will depend upon the results of the ongoing studies and holistic approach to watershed management.

Other elements of the storm water management program include identification and elimination of illegal/illicit discharges and establishment of adequate legal authority to control pollutants in storm water discharges. Most of the cities and the County of Orange have completed a survey of their storm drain systems to identify illegal/illicit connections and have adopted appropriate ordinances to establish legal authority. The remaining permittees are in the process of complying with these requirements.

It appears that coordination among the municipal permittees in Orange, Riverside and San Bernardino Counties and a watershed approach to managing storm water are the essential factors in mapping the future course of the storm water program.

BENEFICIAL USES

Storm water flows which are discharged to municipal storm drain systems in Orange County are tributary to various water bodies (inland surface streams, bays and tidal prisms, ocean waters, and lakes and reservoirs) of the state. The beneficial uses of these water bodies include municipal and domestic supply, agricultural supply, industrial service supply, groundwater recharge, navigation, hydropower generation, water contact recreation, non-contact water recreation, commercial and sportfishing, warm freshwater habitat, cold freshwater habitat, preservation of biological habitats of special significance, wildlife habitat, preservation of rare, threatened or endangered species, marine habitat, shellfish harvesting, spawning, reproduction and development of aquatic habitats, and estuarine habitat. The ultimate goal of this storm water management program is to protect the beneficial uses of the receiving waters.

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ANTIDEGRADATION ANALYSIS

The Regional Board has considered whether a complete antidegradation analysis, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, is required for these storm water discharges. The Regional Board finds that the pollutant loading rates to the receiving waters will be reduced with the implementation of the requirements in this order. As a result, the quality of storm water discharges and receiving waters will be improved, thereby protecting the beneficial uses of waters of the United States. This is consistent with the federal and state antidegradation requirements and a complete antidegradation analysis is not necessary.

PUBLIC WORKSHOP

The Regional Board recognizes the significance of Orange County's Storm Water/Urban Runoff Management Program and will conduct, participate, and/or assist with any workshop during the term of this permit to promote and discuss the progress of the storm water management program. The details of the workshop will be published in local newspapers and mailed to interested parties. Persons wishing to be included in the mailing list for any of the items related to this permit may register their name, mailing address and phone number with the Regional Board office at the address given below.

PUBLIC HEARING

The Regional Board will hold a public hearing regarding the proposed waste discharge requirements. The public hearing is scheduled to be held on Friday, March 8, 1996 at 9:30 a.m. at the Newport Beach City Council Chambers, 3300 Newport Boulevard, Newport Beach, CA. Further information regarding the conduct and nature of the public hearing concerning these waste discharge requirements may be obtained by writing or visiting the Santa Ana Regional Board office, 3737 Main Street, Suite 500, Riverside, CA 92501-3339.

INFORMATION AND COPYING

Persons wishing further information may write to the above address or call Laurie Taul at (909) 782-4906. Copies of the application, proposed waste discharge requirements, and other documents (other than those which the Executive Officer maintains as confidential) are available at the Regional Board office for inspection and copying by appointment scheduled between the hours of 10:00 a.m. and 4:00 p.m., Monday through Thursday (excluding holidays).

REGISTER OF INTERESTED PERSONS

Any person interested in a particular application or group for applications may leave his name, address and phone number as part of the file for an application. Copies of tentative waste discharge requirements will be mailed to all interested parties.

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RECOMMENDATION

Adopt Order 96-31, NPDES No. CAS 618030, as presented.

In addition to the permittees, comments were solicited from the following agencies and/or persons:

U. S. Environmental Protection Agency - Robert Wills / Eugene Bromley, Pretreatment, Sludge, and Storm Water Section
U.S. Army District, Los Angeles, Corps of Engineers - Permits Section
NOAA, National Marine Fisheries Service
U.S. Fish and Wildlife Service - Carlsbad
State Water Resources Control Board - Ted Cobb, Office of the Chief Counsel
State Water Resources Control Board - Archie Matthews / Bruce Fujimoto, Division of Water Quality
State Department of Water Resources - Glendale
California Regional Water Quality Control Board, North Coast Region (1) - Nathan Quarles
California Regional Water Quality Control Board, San Francisco Bay Region (2) - Tom Mumley
California Regional Water Quality Control Board, Central Coast Region (3) - Adam White
California Regional Water Quality Control Board, Los Angeles Region (4) - Mark Pumford
California Regional Water Quality Control Board, Central Valley Region (5) - Wayne Pierson / Pamela Barksdale
California Regional Water Quality Control Board, Central Valley Region (5R), Redding - Carole Crowe
California Regional Water Quality Control Board, Central Valley Region (5F), Fresno - Darrel Everson
California Regional Water Quality Control Board, Lahontan Region (6SLT), South Lake Tahoe - John Short
California Regional Water Quality Control Board, Lahontan Region (6V), Victorville - Tom Rheiner
California Regional Water Quality Control Board, Colorado River Basin Region (7) - Orlando Gonzales
California Regional Water Quality Control Board, San Diego Region (9) - Deborah Jayne
State Department of Fish and Game - Long Beach
State Department of Health Services - Santa Ana
State Department of Parks and Recreation - Henry R. Agonia
Orange County Health Care Agency - Robert Merryman
South Coast Air Quality Management District, Diamond Bar - James Lents
Caltrans, District 12, Santa Ana - Praveen Gupta
Southern Pacific Railroad
Atchison, Topeka & Santa Fe Railway Company
Seal Beach Naval Weapons Station
Seal Beach Naval Reserve Center, Los Alamitos
U. S. Marine Corps Air Station, El Toro - Lt. Col. Bevis
National Forest Service

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Uribe And Associates - Pete Uribe
Bill Dendy & Associates - Bill Dendy
Woodward-Clyde - Bob Collacott
The Irvine Company - Sat Tamaribuchi
Building Industry Association - Governmental Affairs Council
Southern California Association of Governments, Los Angeles - Tabi Hiwot

Universities and Colleges (Chancellor)
University of California, Irvine
California State University, Fullerton
Chapman College
Coastline College
Cypress College
Fullerton College
Irvine Valley College
Golden West College
Orange Coast College
Rancho Santiago College

School Districts (Superintendent)
Anaheim Elementary School District
Anaheim Union High School District
Brea-Olinda Unified School District
Buena Park Joint Union High School District
Centralia Elementary School District
Cypress Elementary School District
Fountain Valley Union High School District
Fullerton Elementary School District
Fullerton Joint Union High School District
Garden Grove Unified School District
Huntington Beach Elementary School District
Huntington Beach Union High School District
Irvine Unified Union High School District
La Habra Joint Union High School District
Los Alamitos Unified School District
Lowell Joint Union High School District
Magnolia Elementary School District
Newport-Mesa Unified School District
Ocean View Union High School District
Orange Unified School District
Placentia Unified School District
Santa Ana Unified School District
Savanna Union High School District
Tustin Unified School District
Westminster Union High School District
Yorba Linda Joint Union High School District

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Hospitals (Administrator)
Anaheim General Hospital
Brea Community Hospital
Chapman General Hospital, Orange
Children's Hospital of Orange County. Orange
Coastal Communities Hospital, Santa Ana
Fairview Hospital
FHP Hospital, Fountain Valley
Fountain Valley Regional Hospital and Medical Center
Hoag Hospital, Newport Beach
Kaiser Foundation Hospital, Anaheim
Orange County Community Hospital, Buena Park
Pacifica Community Hospital, Huntington Beach
Placentia Linda Community Hospital
Santa Ana Hospital and Medical Center
St. Joseph's Hospital, Orange
U.C. Irvine Medical Center
Vencor Hospital of Orange County, Westminster
Whittier Hospital and Medical Center, Buena Park

Environmental Organizations
Sierra Club, Orange County Chapter
Sierra Club, Los Angeles Chapter - Dick Hingson
Natural Resources Defense Council (NRDC)
Cousteau Society
Amigos De Bolsa Chica
Audobon Sea & Sage Chapter
Huntington Beach Wetlands Conservancy
Surfrider Foundation

Newspapers
Orange County Register
Los Angeles Times
Press Enterprise

Major Water/Wastewater Agencies
Santa Ana Watershed Project Authority - Neil Cline
Irvine Ranch Water District - General Manager
Los Alisos Water District - General Manager
El Toro Water District - General Manager
San Bernardino County Flood Control District - Naresh Varma
Riverside County Flood Control & Water Conservation District - Jason Christie
L.A. County Department of Public Works - Gary Hildebrand
County Sanitation Districts of Orange County - Blake Anderson
Orange County Water District - Bill Mills
Metropolitan Water District - Ed Means

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PERMIT NO. FLS000004
Major MS4

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# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
# REGION IV

## AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. 1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

**Sarasota County - Municipal Separate Storm Sewer System Permittees:**

**Sarasota County**
**Engineering Department**
**Sarasota, Florida**

**Town of Longboat Key**
**Department of Public Works**
**Longboat Key, Florida**

**City of North Port**
**Roads and Drainage Department**
**North Port, Florida**

**City of Sarasota**
**Department of Public Works**
**Sarasota, Florida**

**City of Venice**
**Department of Public Works**
**Venice, Florida**

**Florida Department of Transportion**
**District One**
**Bartow, Florida**

are authorized to discharge, in accordance with the approved Storm Water Management Program(s), effluent limitations, monitoring requirements, and other provisions as set forth in Parts I, II, III, IV, V, VI, VII, and VIII herein, from all portions of the

**Municipal Separate Storm Sewer System owned or operated by any Permittee listed above,**

**to waters of the United States and all tributaries thereto.**

This permit shall become effective on January 1, 1995.

This permit and the authorization to discharge under the National Pollutant Discharge Elimination System shall expire at midnight, on December 31, 1999.

Date Issued

Robert F. McGhee, Acting Director
Water Management Division

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SARASOTA COUNTY PERMITTEES
NPDES PERMIT FOR
MUNICIPAL SEPARATE STORM SEWER SYSTEMS

SWMP = SB
Permit = Pmt

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SARASOTA COUNTY PERMITTEES
NPDES PERMIT FOR
MUNICIPAL SEPARATE STORM SEWER SYSTEMS

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## PART I.

## DISCHARGES AUTHORIZED UNDER THIS PERMIT

A. **Permit Area.** This permit covers all areas located within the political boundary of Sarasota County and the portion of the Town of Longboat Key within Manatee County served by municipal separate storm sewer systems owned or operated by the permittees identified in Part I.C.

B. **Authorized Discharges.** Except for discharges prohibited under Part I.D., this permit authorizes all existing or new storm water point source discharges to waters of the United States from those portions of the Municipal Separate Storm Sewer System (MS4) owned or operated by the permittees.

C. **Permittees.**

The following entities are permittees subject to the conditions of this permit:

- **Sarasota County**
- **Town of Longboat Key***
- **City of North Port**
- **City of Sarasota**
- **City of Venice**
- **Florida Department of Transportation, District One**

* *Permit coverage includes the entire Town of Longboat Key which is located in both Sarasota and Manatee Counties*

References to "permittee" in this permit includes each of the entities above.

1. Each permittee is individually responsible for:

   a. Compliance with permit conditions relating to discharges from portions of the MS4 where they are the operator;

   b. Storm water management program implementation on portions of the MS4 where they are the operator;

   c. Where permit conditions are established for specific portions of the MS4, the permittee need only comply with the permit conditions relating to those portions of the MS4 for which they are the operator; and

   d. A plan of action to assume responsibility for implementation of storm water management and monitoring programs on their portions of the MS4 should inter-jurisdictional agreements allocating responsibility between permittees be dissolved or in default. (See Part II.G.3., page 20 of this permit also.)



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2. Each permittee is jointly responsible for:

   a. Submission of annual reporting requirements as specified in Part V.C. (ANNUAL REPORT), page 49;

   b. Collection of monitoring data as required by Part V.B., page 47, according to such agreements as may be established between permittees;

   c. Insuring implementation of system-wide management program elements, including any system-wide public education efforts.

3. Specific permittees are jointly liable for permit compliance on portions of the MS4:

   a. Where operational or storm water management program implementation authority over portions of the MS4 has been transferred from one permittee to another in accordance with legally binding interagency or inter-jurisdictional agreements, both the owner and operator are jointly responsible for permit compliance on those portions of the MS4, unless specific responsibility provisions have been otherwise outlined in said agreements.

D. Limitations on Coverage. Section 402(p)(3)(B)(ii) of the Clean Water Act specifically requires EPA to include within this permit an effective prohibition on non-storm water entering the MS4. The following discharges are not authorized by this permit:

1. *Non-storm Water:* discharges of non-storm water, except where such discharges are:

   a. in compliance with a separate NPDES permit (or the discharger has applied for such permit); or

   b. identified by and in compliance with Part II.A.7.a., page 9 of this permit.

2. *Spills*: discharges of material resulting from a spill, except where such discharges are:

   a. the result of an Act of God where reasonable and prudent measures have been taken to minimize the impact of the discharge; or

   b. an emergency discharge required to prevent imminent threat to human health or prevent severe property damage, provided reasonable and prudent measures have been taken to minimize the impact of the discharge.



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G. **Storm Water Management Program Review and Modification.**

1. *Program Review:* Each permittee shall participate in an annual review of the current Storm Water Management Program (SWMP) in conjunction with preparation of the ANNUAL REPORT required under Part V.C. of the permit.

2. *Program Modification:* The permittee(s) may modify the SWMP during the life of the permit in accordance with the following procedures:

   a. Modifications adding (but not subtracting nor replacing) components, controls, or requirements to the approved SWMP may be made by the permittee(s) at any time. A description of the modification shall be included within the subsequent ANNUAL REPORT.

   b. Modifications replacing an ineffective or unfeasible BMP specifically identified in the SWMP with an alternate BMP may be made by the permittee(s) at any time. A description of the replacement BMP shall be included in the subsequent ANNUAL REPORT along with the following information:

      (1) an analysis of why the former BMP was ineffective or infeasible (including cost prohibitive);

      (2) expectati n the effectiveness of the replacement BMP; and

      (3) an analysis of why the replacement BMP is expected to achieve the goals of the BMP which was replaced.

   c. Modifications to adjust the schedule for maintenance activities or the frequency of inspections or monitoring identified in the SWMP may be made by the permittee(s) on an annual basis. The permittees must include in the subsequent ANNUAL REPORT a description of the schedule adjustment along with the following information:

      (1) an analysis of why the former schedule was ineffective or infeasible;

      (2) expectations on the effectiveness of the replacement schedule; and

      (3) an analysis, if applicable, of why the replacement schedule will ensure the optimization of equipment use.

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d. Modifications subtracting components, controls, or requirements of the SWMP may not be made by the permittee(s) UNLESS it can be clearly demonstrated that with the elimination of this component, the SWMP will continue to achieve a reduction in pollutants to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream. In the case where this type of modification is appropriate, the permittee(s) may make the required modification and shall include in the subsequent ANNUAL REPORT a description of the component which has been eliminated along with the following information:

(1) an analysis of why the component was ineffective or infeasible, and

(2) a detailed explanation of why, with the elimination of this component, the SWMP will continue to achieve a reduction in pollutants to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream.

e. Modifications included within the ANNUAL REPORT shall be signed in accordance with Part VI.H. by all directly affected permittees, and shall include a certification that all affected permittees were given an opportunity to comment on proposed changes.

3. *Transfer of Ownership, Operational Authority, or Responsibility for Storm Water Management Program Implementation:* The permittee(s) shall implement the SWMP on all new areas added to their portion of the municipal separate storm sewer system (or for which they become responsible for implementation of storm water quality controls) as expeditiously as practicable. Implementation of the program in any new area shall consider the plans in the SWMP of the previous MS4 ownership.

Prior to land annexation, the permittee shall include a schedule for extending the SWMP to the annexed areas. At least 30 days prior to transfer of operational authority or responsibility for SWMP implementation, all parties shall prepare a schedule for transfer of responsibility for SWMP implementation on the affected portions of the MS4. This schedule shall be included in the ANNUAL REPORT.



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## PART C SCHEDULES FOR IMPLEMENTATION AND COMPLIANCE

The permittee(s) shall comply with the following schedules for Storm Water Management Program implementation and augmentation, and for permit compliance.

### A. IMPLEMENTATION AND AUGMENTATION OF STORM WATER MANAGEMENT PROGRAMS

| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 1. *Operation and Maintenance of Structural Controls and Storm Water Collection System* | Sarasota County<br>City of Sarasota<br>City of Venice<br>City of North Port<br>FDOT | Perform inspections and maintenance of structural controls. Maintain an internal record keeping system to track inspections and maintenance activities performed during the permit. Conduct an annual assessment of the effectiveness of inspection & maintenance schedule and provide a summary of the assessment in each ANNUAL REPORT. | Annual Requirement |
| | ALL | Identify and inventory each privately-owned and maintained storm water management facility which discharges into the MS4. | Within 12 Months of the Effective Date of the Permit |
| | | Develop a revolving inspection program for privately-owned and maintained storm water treatment systems which discharge into the MS4 to determine compliance with local permit conditions and/or local ordinances. Program developed shall include a description of the enforcement provisions for non-compliance.<br><br>Following development, include a summary of the inspection program & schedule in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 12 Months of the Effective Date of the Permit |
| | | Implement revolving inspection program for privately-owned and maintained storm water treatment systems which discharge into the MS4. | Within 24 Months of the Effective Date of the Permit. |



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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 1. *Operation and Maintenance of Structural Controls and Storm Water Collection System*<br><br>(continued) | Sarasota County | Complete Florida Water & Pollution Control Operators Association (FW&PCOA) course or equivalent. | 5 employees / year |
| | ALL OTHERS **except for** FDOT | | 1 employee / permit |



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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 2. *Control of Discharges from Areas of New Development and Significant Redevelopment* | ALL **except for** City of North Port and FDOT | Adopt as local ordinances storm water quality treatment criteria consistent, but not necessarily similar to the State of Florida Storm Water Treatment Regulations (F.A.C. 40D-4, 40D-40, 62-25). | Prior to the end of the Permit Term |
| | FDOT | Employ new FDOT Drainage Connection Permit requirements which include a "certification of water quality" to be provided by the connecting entity. | Effective Date of Permit |
| | ALL **except for** FDOT | Continue on the current schedule to perform master basin studies on the major watersheds identified in Table 1 on page 4A-34 of Appendix A. Develop a course of action for each as they are completed.<br><br>Include in each ANNUAL REPORT a brief summary of each basin study completed during the permit year and the resulting course of action. | Effective Date of the Permit |
| | ALL **except for** City of North Port and FDOT | Evaluate land development practices to reduce the amount of impervious surfaces in future development.<br><br>After completing the evaluation, include a summary of the resulting course of action in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 36 Months of the Effective Date of Permit |
| | | Implement appropriate land development practices & incentives for the reduction of impervious surfaces. | As Determined by the Evaluation - Prior to the end of the Permit Term |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 3. *Operation and Maintenance of Public Streets, Roads, and Highways* | Sarasota County<br>City of Sarasota<br>City of Venice | Provide a description of the municipally-operated Litter Control Program(s) for highways and streets within jurisdictional area for incorporation into the permit. | Provide in First ANNUAL REPORT |
| | ALL **except for** City of North Port and FDOT | Implement Litter Control Program(s) for highways and streets within jurisdictional area and properly dispose of collected material. | Effective Date of the Permit |
| | FDOT | Implement Litter Control Program for highways and streets within jurisdictional area and properly dispose of collected material. Report in each ANNUAL REPORT the approximate frequency of litter collection services performed under contractual agreements during the permit year. | Effective Date of the Permit |
| | ALL **except for** North Port WCD City of North Port & FDOT | Implement street sweeping program within jurisdictional area and properly dispose of collected material. | Effective Date of the Permit |
| | FDOT | Implement street sweeping program within jurisdictional area and properly dispose of collected material. Report in each ANNUAL REPORT the approximate frequency of street sweeping services performed under contractual agreements during the permit year. | |
| | Sarasota County | Provide the maintenance schedule for storm water structures (i.e., catch basins) and roadside ditches. | Provide in First ANNUAL REPORT |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 3. *Operation and Maintenance of Public Streets, Roads, and Highways*<br><br>(continued) | ALL | Perform scheduled maintenance on catch basins, grates, and other storm water structures and roadside ditches and properly dispose of accumulated sediments.<br><br>Maintain an internal log documenting maintenance activities. | Effective Date of the Permit |
| | ALL **except for** City of North Port | As described in Part II.3.a. on page 7 of the permit, develop practices to reduce to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream regarding the pollutants from road repair and from all municipal equipment yards & maintenance shops.<br><br>After development, include a summary of the practices in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 12 months of the Effective Date of the Permit |
| | | Implement developed practices to reduce to the MEP pollutants from road repair and municipal yards. | Within 24 months of the Effective Date of the Permit |
| | FDOT | Coordinate the "Adopt A Highway" program for local organizations to be identified with specific highway cleanup and beautification projects. | Within 24 months of the Effective Date of the Permit |
| | | Conduct annual routine inspections of each FDOT maintenance facility to ensure that BMPs are operational. The FDOT NPDES Coordinator or his/her representative shall perform this activity. | |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 4. *Ensure Flood Control Projects Comply With State Storm Water Quality Requirements* | ALL **except for** FDOT | Develop a priority list and construction schedule for the retrofit projects recommended by the master basin studies completed to date. | Within 12 Months of the Effective Date of the Permit |
| | | Include a copy of the prioritized project list and construction schedule in the ANNUAL REPORT for incorporation into the permit. Provide updates to this list in future ANNUAL REPORTS as additional master basin studies are completed. | |
| | FDOT | Present a retrofitting program to the local Metropolitan Planning Organizations (MPO) for consideration which focuses on water quality improvement. | Within 12 Months of the Effective Date of the Permit |
| | | Submit within the ANNUAL REPORT the list of approved retrofit projects in the MPO's work program for District One. Also provide the construction schedule for these approved projects. Provide updates to this list in future ANNUAL REPORTS as additional projects are approved. | Within 24 Months of the Effective Date of the Permit |
| | | Begin retrofit priority projects as per the construction schedule in the approved work program for District One. | |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 5. *Identification, Monitoring, and Control of Discharges from Municipal Waste Treatment, Storage, or Disposal Facilities not covered by an NPDES Storm Water Permit* | Sarasota County<br><br>City of Sarasota<br><br>City of North Port | Develop program to evaluate, through inspections and monitoring, the municipally-operated solid waste transfer station(s), maintenance and storage yards for waste transportation fleets, POTWs, and sludge application and/or disposal sites. The goals of the evaluation program shall be to identify these facilities, determine the necessary control measures & procedures to be employed at each, and administer an appropriate implementation schedule.<br><br>After developing the evaluation program, submit a program summary in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | | Implement developed program to reduce pollutants in storm water discharges to the MEP and shall not cause or contribute to violations of State water quality standards of the receiving stream from these facilities. | Within 36 Months of the Effective Date of the Permit |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 6. *Control of Pollutants Related to Application of Pesticides, Herbicides, and Fertilizers* | ALL | Provide the details, for incorporation into the permit, of the specific public education program(s) designed to encourage the public to reduce their use of pesticides, herbicides and fertilizers. | Provide in First ANNUAL REPORT |
| | | Implement public education program(s). | Effective Date of the Permit |
| | ALL **except for** FDOT | Evaluate current training requirements & certification procedures for employees who handle pesticides, herbicides and fertilizers.<br><br>After completing the evaluation, include a summary of the results in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Implement any revised procedures for the training & certification of these employees. | As Necessary - Within 36 Months of the Effective Date of the Permit |
| | ALL | Require evidence of proper certification and licensing for all applicators contracted to apply pesticides, herbicides, and fertilizers on municipal and FDOT property. | Effective Date of the Permit |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 6. *Control of Pollutants Related to Application of Pesticides, Herbicides, and Fertilizers*<br><br>(continued) | ALL **except for** FDOT | Develop a program with procedures to minimize the use of pesticides, herbicides, and fertilizers and to properly store and mix these products. The program developed should also consider including components such as providing xeriscape planning assistance and promoting voluntary use of native Florida plantings and slow-release fertilizers.<br><br>After development, include a summary of the procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | ALL **except for** FDOT | Employ program procedures to minimize the use of pesticides, herbicides, and fertilizers and to properly store and mix these products. | Within 36 Months of the Effective Date of the Permit |
| | FDOT | | Effective Date of the Permit |



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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 7. *Illicit Discharges and Improper Disposal* | | | |
| a.) *Inspections, ordinances, and enforcement measures* | ALL **except for** City of North Port and FDOT | Complete the assessment of non-storm water discharges allowed to be discharged to the MS4 as detailed on page 9 of the permit.<br><br>After completing the assessment, include a summary of the results in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 18 Months of the Effective Date of the Permit |
| | ALL **except for** City of North Port and FDOT | Develop an inspection program to enforce ordinances which prohibit illicit connections and illegal dumping into the MS4.<br><br>After development, include a summary of the inspection program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | Sarasota County | Implement inspection program to enforce ordinances which prohibit illicit connections and illegal dumping into the MS4. Maintain an internal log documenting inspections and enforcement actions performed and provide a summary of these reports in each ANNUAL REPORT. | Within 36 Months of the Effective Date of the Permit |
| | ALL OTHERS **except for** City of North Port and FDOT | | Within 36 Months of the Effective Date of the Permit |

| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 7. *Illicit Discharges and Improper Disposal* | | | |
| a.) *Inspections, ordinances, and enforcement measures*<br><br>(continued) | FDOT | Develop a program to inspect drainage connections after project completion to ensure continued compliance with drainage connection permit requirements and to ensure that no illicit or non-permitted connections have been made. In cases where another regulatory agency requires a periodic certification of compliance, the program developed may allow FDOT to accept this certification of compliance in lieu of further inspections by FDOT.<br><br>After development, include a summary of the inspection program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 21 Months of the Effective Date of the Permit |
| | | Implement developed program to inspect drainage connections after project completion. Maintain an internal log documenting inspections and enforcement actions performed and provide a summary of these records in each ANNUAL REPORT. | Within 30 Months of the Effective Date of the Permit |
| | Sarasota County<br>Longboat Key<br>City of Sarasota | Provide photocopies of signed adopted storm water ordinances as identified in Table II.A.7.a.(3) on page 10 of the permit. | Provide in First ANNUAL REPORT |
| | City of North Port<br>City of Sarasota<br>City of Venice | Amend ordinances as identified in Table II.A.7.a.(4) on page 11 of the permit to reflect correct citation for *"industrial activity"* {40 CFR 122.26(b)(14)}<br><br>Include a copy of the amended ordinances in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 12 Months of the Effective Date of the Permit |



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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 7. *Illicit Discharges and Improper Disposal* (continued) | | | |
| *b.) Field Screening* | ALL | Conduct field screening of the MS4 for illicit discharges and improper disposal as shown in Table II.A.7.b. on page 12 of this permit.<br><br>Collect inventory information on outfalls and on portions of MS4 not mapped and update database system on an ongoing basis.<br><br>Maintain an internal log documenting the results of all field screening performed. | At least ⅓ of Grid Areas Screened in Permit Years Three, Four and Five with Entire MS4 Screened Once / 5 years |
| *c.) Investigation of Suspected Illicits and/or Improper Disposal* | **ALL except for FDOT** | Develop standard investigative procedures to identify and terminate the source(s) of illicit connections or discharges to the MS4.<br><br>After development, include a summary of the investigative procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Implement standard investigative procedures to identify and terminate the source(s) of illicit connections or discharges to the MS4. | Within 30 Months of the Effective Date of the Permit |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 7. *Illicit Discharges and Improper Disposal* (continued) | | | |
| c.) *Investigation of Suspected Illicits and/or Improper Disposal* (continued) | FDOT | Develop standard investigative procedures to identify and report the source(s) of illicit connections or discharges. These procedures shall include notification to FDEP and EPA of illicit connections.<br><br>After development, include a summary of the investigative procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Implement standard investigative procedures to identify the sources(s) of illicit connections or discharges to the MS4. | Within 30 Months of the Effective Date of the Permit |
| d.) *Spill Prevention and Response* | Sarasota County<br><br>FDOT | Provide a copy of the applicable portions of Sarasota County's *Hazardous Materials Emergency Plan* and FDOT's *Emergency Operations Procedures* which effectively mitigate potential pollutant discharges to surface waters. | Provide in First Annual Report |
| | ALL **except for** Sarasota County and FDOT | Adopt Sarasota County's *Hazardous Materials Emergency Plan*, FDOT's *Emergency Operations Procedures*, or a comparable plan and procedures which effectively mitigate potential pollutant discharges to surface waters. | Within 12 Months of the Effective Date of the Permit |



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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 7. *Illicit Discharges and Improper Disposal* (continued) | | | |
| *e.) Public Notification* | ALL | Develop a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges and improper disposal of materials into the MS4.<br><br>After development, include a summary of the public program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | | Implement public reporting program. | Within 36 Months of the Effective Date of the Permit |
| | | Maintain a citizen complaint log documenting all reports of illicit discharges and what actions were taken to investigate and resolve the problem. Include a summary of this log in each ANNUAL REPORT. | Within 36 Months of the Effective Date of the Permit |
| | FDOT | Establish a direct dial local telephone number at the District Office to be used for the reporting of illicit connections, accidental spills, illegal dumping, or other water quality violations and action as needed. This requirement may be satisfied through cooperative efforts with other permittees. | Within 36 Months of the Effective Date of the Permit |

| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 7. *Illicit Discharges and Improper Disposal* (continued) | | | |
| *f.) Oils, Toxics, and Household Hazardous Waste Control* | ALL **except for** FDOT | Support and promote on a regular basis the six (6) oil recycling site locations within Sarasota County and the two (2) permanent collection centers for household hazardous waste materials.<br><br>Continue Amnesty Days program.<br><br>Document the total annual amount of household hazardous waste materials collected. | Effective date of Permit |
| | | Actively promote and support a voluntary stenciling program for all storm sewer inlets which discharge directly or indirectly into surface waters. | Within 12 Months of the Effective Date of the Permit |
| | FDOT | With each FDOT Drainage Connection Permit, include information on used oil recycling, proper hazardous waste disposal, storm water regulations, and spill reporting. | Within 12 Months of the Effective Date of the Permit |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 7. *Illicit Discharges and Improper Disposal* (continued) | | | |
| g.) *Limitation of Sanitary Sewer Seepage* | ALL **except for** City of North Port and FDOT | Develop procedures to limit the infiltration of sanitary seepage into the MS4, in areas where wastewater infiltration is suspected.<br><br>After development, include a summary of the procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | | Implement developed procedures to limit the infiltration of sanitary seepage into the MS4. | Within 36 Months of the Effective Date of the Permit |
| | ALL | Advise appropriate utility owner of violation if constituents common to wastewater contamination are discovered in the MS4 during dry weather field screening. | Effective Date of the Permit |
| | | Identify areas served by septic tanks. Advise appropriate State Agency of violation if constituents common to wastewater contamination due to malfunctioning septic tank systems are discovered in the MS4 during dry weather field screening. | Within 12 Months of the Effective Date of the Permit |



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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 8. *Industrial and High Risk Runoff* | | | |
| a.) *Identification of Priorities and Procedures for Inspections* | ALL | Develop an inventory of all existing high risk facilities discharging into the MS4. This inventory shall identify the outfall and surface waterbody into which each high risk facility drains. | Within 24 Months of the Effective Date of the Permit |
| | | Based upon historical information and available monitoring & screening data, prioritize the identified high risk facilities. | Within 24 Months of the Effective Date of the Permit |
| | ALL **except for** FDOT | Develop procedures for inspecting high risk facilities and establish an inspection schedule.<br><br>After development, include a summary of the procedures & inspection schedule in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | FDOT | Develop procedures for the inspection of high risk facilities which hold FDOT drainage connection permits to ensure compliance with permit requirements. In cases where another regulatory agency requires a periodic certification of compliance, the program developed may allow FDOT to accept this certification of compliance in lieu of further inspections by FDOT.<br><br>After development, include a summary of the procedures & inspection schedule in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | ALL | Begin inspections of identified high risk facilities. Maintain an internal log documenting the results of the inspections performed. | Within 36 Months of the Effective Date of the Permit |

| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 8. *Industrial and High Risk Runoff* (continued) | | | |
| a.) *Identification of Priorities and Procedures for Inspections* (continued) | ALL | Maintain a list of all industrial storm water sources discharging to MS4 & update in ANNUAL REPORTS. | Effective Date of the Permit |
| b.) ***Monitoring for High Risk Industries*** | ALL **except for** FDOT | Develop a monitoring (or self monitoring) program for high risk industrial facilities. Include a description of the specific enforcement steps to be taken to require compliance with local storm water ordinances if violations are identified.<br><br>After development, include a summary of the monitoring program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | FDOT | Develop a monitoring (or self monitoring) program for high risk industrial facilities which hold FDOT drainage connection permits. Include a description of the specific enforcement steps to be taken to require compliance with permit conditions if violations are identified.<br><br>After development, include a summary of the monitoring program in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | ALL | Implement the monitoring program for high risk industrial facilities. | Within 36 Months of the Effective Date of the Permit |



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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 9. *Construction Site Runoff* | | | |
| *a.) Site Planning & Structural and Non-structural Controls* | ALL **except for** City of North Port and FDOT | Review erosion and sediment control requirements to determine modifications necessary to correlate with SWFWMD's requirements and EPA's NPDES Construction Activity General Permit.<br><br>Summarize the necessary modifications in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 12 Months of the Effective Date of the Permit |
| | | Incorporate necessary modifications to the erosion and sediment control requirements. | Within 36 Months of the Effective Date of the Permit |
| | | In land development regulations, incorporate guidelines and recommendations for reducing the amount of sediment leaving construction sites. | Within 36 Months of the Effective Date of the Permit |
| | | Track construction projects required to install erosion and sediment controls. Document the installation, maintenance, and effectiveness of the controls. Integrate these records with the education program for training the site contractors. | Within 18 Months of the Effective Date of the Permit |
| | FDOT | Employ new FDOT Drainage Connection Permit requirements which direct connecting entities subject to the NPDES storm water regulations to submit a copy of their NPDES Storm Water Pollution Prevention Plan to FDOT. | Effective Date of the Permit |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 9. *Construction Site Runoff* (continued) | | | |
| *b.)* *Inspection and Enforcement* | ALL **except for** City of North Port and FDOT | Review existing inspection policies and code enforcement programs to first identify all agencies conducting site inspections and then to determine which agency is responsible for issuing enforcement actions for which code violations.<br><br>Summarize results and include in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Train inspectors (regardless of specialty) who are likely to be on-site during earth moving activities in erosion control techniques. | 1 Inspector / Year |
| | | Implement the use of an erosion & sediment control checklist for all inspectors. Include verification that construction sites subject to the NPDES Storm Water Regulations have NPDES permit coverage and a Storm Water Pollution Prevention Plan on site.<br><br>Include developed checklist in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | ALL **except for** City of North Port | Develop a program to inspect construction projects for compliance with local storm water ordinances and/or local permits. | Within 24 Months of the Effective Date of the Permit |
| | ALL **except for** City of North Port and FDOT | Implement program developed to inspect construction projects for compliance with local storm water ordinances and/or local permits. | Within 36 Months of the Effective Date of the Permit |

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| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| 9. *Construction Site Runoff* (continued) | | | |
| *b.) Inspection and Enforcement*<br><br>(continued) | FDOT | Implement program developed to inspect construction projects that propose to directly discharge storm water to the FDOT MS4 and have been granted an FDOT drainage connection permit for compliance with FDOT permit conditions. Require connection entities, who are found or suspected of discharging storm water of unacceptable quality during or following construction, to sample and test the discharge to prove compliance with FDOT permit conditions. | Within 36 Months of the Effective Date of the Permit |
| *c.) Site Operator Training* | ALL **except for** City of North Port and FDOT | Implement an annual NPDES workshop for design professionals, land developers, inspectors and contractors, including earth moving contractors. Topics to include are measures to reduce pollutants from sites, awareness of the NPDES program requirements for construction activities, and solutions to erosion and sediment problems commonly found by the inspectors during construction. | Within 24 Months of the Effective Date of the Permit |
| | | Evaluate the feasibility of an erosion & sediment control certification program for construction site operators (contractors and developers), plan reviewers, and inspectors that work on sites that discharge to the MS4.<br><br>Upon conclusion of the evaluation, include a summary of the findings in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 30 Months of the Effective Date of the Permit |
| | | If certification program is deemed feasible, implement program for construction site operators, plan reviewers, and inspectors. | If Deemed Feasible - Within 36 Months of the Effective Date of the Permit |

| STORM WATER MANAGEMENT PROGRAM | PERMITTEE(S) | ACTIVITY | DATE DUE / FREQUENCY |
|---|---|---|---|
| c.) *Site Operator Training*<br><br>(continued) | ALL **except for** City of North Port and FDOT | Develop a procedure to notify building permit applicants in developments which, because of the amount of land area disturbed, are subject to the NPDES storm water regulations of their application responsibilities under the NPDES permitting program for construction site runoff.<br><br>After development, include a summary of procedures in the subsequent ANNUAL REPORT for incorporation into the permit. | Within 24 Months of the Effective Date of the Permit |
| | | Implement developed procedures to notify building permit applicants in developments which, because of amount of land area disturbed, are subject to the NPDES storm water regulations of their application responsibilities under the NPDES permitting program for construction site runoff. | Within 30 Months of the Effective Date of the Permit |
| | | Conduct presentations to local professional organizations which are associated with the construction industry to discuss proper construction site management for water quality. | Ongoing |

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B. COMPLIANCE WITH EFFLUENT LIMITATIONS.

NONE

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## PART IV. NUMERIC EFFLUENT LIMITATIONS

**NONE**

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## PART V. MONITORING AND REPORTING REQUIREMENTS

A. <u>Seasonal Loadings and Event Mean Concentrations.</u>

1. As per 40 CFR 122.26(d)(2)(iii)(C), the permittees shall provide estimates of the seasonal pollutant load and of the event mean concentration of a representative storm for the parameters listed in Table V.A.1. for each "major outfall" within the MS4. These constituents were detected in the sampling data reported in the Part 2 application. The location of all known major outfalls shall be inventoried in the ANNUAL REPORT for Year One of the permit, with updates describing any additionally identified major outfalls in each sequent ANNUAL REPORT. The seasonal pollutant load and event mean concentration for each major outfall may be estimated from the representative monitoring locations, from regional NURP or State data, or from pooling results from other nearby Florida MS4 monitoring activities and shall take into consideration land uses and drainage areas for the outfall. The estimates of seasonal loadings and event mean concentrations shall be included in the ANNUAL REPORT for Year Four of the permit. For the purposes of this permit, a "major outfall"is defined as follows:

   - a pipe (or closed conveyance) system with a cross-sectional area equal to or greater than 7.07 square feet (e.g., if a single circular pipe system, an inside diameter of 36 inches or greater);
   - a single conveyance other than a pipe, such as an open channel ditch, which is associated with a drainage area of more than 50 acres;
   - a pipe (or closed conveyance) system, draining *"industrial land use,"* with a cross-sectional area equal to or greater than 0.79 square feet (e.g., if a single circular pipe system, an inside diameter of 12 inches or greater); or
   - a single conveyance other than a pipe, such as an open channel ditch, which is associated with a *"industrial land use"* drainage area of more than 2 acres;

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| TABLE V.A.1. | |
|---|---|
| PARAMETERS | |
| Biochemical Oxygen Demand ($BOD_5$) (mg/l) | Oil & Grease (mg/l) |
| Chemical Oxygen Demand (COD) (mg/l) | Total Recoverable Cadmium (mg/l) |
| Total Suspended Solids (TSS) (mg/l) | Total Recoverable Chromium (mg/l) |
| Total Dissolved Solids (TDS) (mg/l) | Total Recoverable Copper (mg/l) |
| Total Kjeldahl Nitrogen (as N) (mg/l) | Total Recoverable Lead (mg/l) |
| Nitrate plus Nitrite (as N) (mg/l) | Total Recoverable Zinc (mg/l) |
| Total Phosphorus (mg/l) | Dissolved Phosphorus (mg/l) |

2. The permittees listed in Table V.A.2. below shall conduct an investigation of the identified drainage basins to determine the sources of the following organic pollutants detected in the Part 2 application sampling data. A report summarizing the conclusions of this investigation shall be included in the ANNUAL REPORT for Year Three of the permit.

| TABLE V.A.2. | | |
|---|---|---|
| PARAMETERS | BASIN | PERMITTEE(S) |
| Benezo(a)anthracene | Indian Ave. - Site #5 | City of Venice |
| Benezo(k)fluoranthene | Indian Ave. - Site #5 | City of Venice |
| 3,4-Benzofluoranthene | East Ave. - Site #2 | City of Sarasota |
| | Indian Ave. - Site #5 | City of Venice |
| Bis(2-ethylhexyl)phthalate | Longboat Key - Site #1 | Longboat Key |
| | East Ave. - Site #2 | City of Sarasota |
| | Indian Ave. - Site #5 | City of Venice |
| | Richardson Rd. - Site #3 | Sarasota County |
| Chrysene | East Ave. - Site #2 | City of Sarasota |
| | Indian Ave. - Site #5 | City of Venice |
| 4,4'-DDE | East Ave. - Site #2 | City of Sarasota |
| | Indian Ave. - Site #5 | City of Venice |

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B. **Monitoring Data Collection.** According to the agreements established between permittees, the following monitoring program shall be developed and implemented:

1. *Monitoring:* Establish local monitoring stations in conjunction with the State of Florida's *Surface Water Ambient Monitoring Program*. (See definition of the *Surface Water Ambient Monitoring Program* in Part VIII for description of program goals and monitoring strategies.) The selection of the monitoring stations shall be the result of a cooperative effort between the permittees, EPA, and the Bureau of Surface Water Management, Florida Department of Environmental Protection (FDEP). Acceptance of the monitoring program components proposed by the permittees in the July 23, 1993, Part 2 application submittal shall be explored before any alternative monitoring programs are introduced. The number of monitoring stations as well as the type of sampling performed shall be established in accordance with the following:

   a.) The costs associated with the monitoring program developed shall not exceed the projected costs for the monitoring program proposed by the permittees in the July 23, 1993, Part 2 application submittal.

   b.) The monitoring program developed shall assist in determining the impact of storm water discharges on receiving waters located in the geographical area covered by this permit.

   c.) The monitoring program developed shall assist in determining the effectiveness of the storm water management programs being implemented under this permit and shall assist in identifying and prioritizing portions of the MS4 requiring additional controls.

   d.) The monitoring program developed shall be designed to help identify local sources and impacts of specific pollutants considered a problem in the geographic area covered by this permit. Once the source and the impacts are identified, these pollutants may be more effectively reduced or eliminated.

   e.) The selection of the monitoring stations and sampling program schedule shall be agreed upon by the permittees and the Bureau of Surface Water Management, FDEP and EPA. The monitoring program developed shall be implemented by the permittees within 24 months of the effective date of this permit or within 12 months of the date of program development, whichever is later. The details of the monitoring program shall be submitted to EPA in the subsequent ANNUAL REPORT; status reports shall be given in any Annual Reports prior to this one.

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It is the intent of EPA to use the monitoring information collected to evaluate any trends in the reduction in pollutant loads discharged to waters of the U.S during the term of the permit. The pollutant loading trends will be used to evaluate the effectiveness of the permittees' Storm Water Management Program to reduce the discharge of pollutants to the MEP and to shall not cause or contribute to violations of State water quality standards of the receiving stream.

2. *Monitoring Data:* For Part V.B.1., records shall be maintained of all analytical results. Additionally, for the monitoring program developed under Part V.B.1. which involves storm event sampling, the records maintained shall include: the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches or centimeters) of the storm event which generated the sampled runoff; the duration (in hours) between the storm event sampled and the end of the previous measurable (greater than 0.1 inch or 0.25 centimeter rainfall) storm event; and an estimate of the total volume (in gallons or liters) of the discharge sampled.

3. *Sample Analysis:* All samples collected for Part V.B.1. shall be analyzed in accordance with the methods specified at 40 CFR Part 136.

4. *Sampling Waiver.* When a discharger is unable to collect samples required by Part V.B.1. due to adverse climatic conditions, the discharger must submit in lieu of sampling data, a description of why samples could not be collected, including available documentation of the event. Adverse climatic conditions which may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, etc.).

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C. **Annual Report.** Each permittee shall contribute to the preparation of an annual system-wide report to be submitted by no later than six months following the period covered by the report. The ANNUAL REPORT shall cover the 12 month period beginning on the effective date of this permit and annually thereafter.

The preparation and submittal of a system-wide ANNUAL REPORT shall be coordinated by a *"committee."* The *"committee"* shall include a member or designated representative from each municipal entity covered by this permit. Each permittee shall be individually responsible for providing information on the portions of the MS4 for which they are the operator and for providing information for the system-wide report in a timely manner. Joint responsibility for the ANNUAL REPORT submission shall be limited to the following: (1) participation in preparation of the overview for the entire system; and (2) inclusion of the identity of any permittee who failed to provide input to the report. Each permittee shall sign and certify the ANNUAL REPORT in accordance with Part VI.H. & VI.I. of this permit, and shall include a statement or resolution that the permittee's governing body or agency (or delegated representative) has reviewed or has been appraised of the content of the ANNUAL REPORT.

The ANNUAL REPORT shall include the following sections:

- Contacts List
- SWMP Evaluation
- Summary Table
- Narrative Report
- Monitoring Section
- Summary of SWMP and Monitoring Modifications
- Fiscal Analysis
- FDOT District Report
- Appendices

The following items describe in more detail the specific requirements for the ANNUAL REPORT.

1. Provide a list of contacts and responsible parties (e.g.: agency, name, phone number) who had input to and are responsible for the preparation of the ANNUAL REPORT.

2. Provide an overall evaluation of the Storm Water Management Program including: Objective of Program; Major Findings (e.g.: water quality improvements or degradation); Major Accomplishments; Overall Program Strengths / Weaknesses; and Future Direction of Program.



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3. Provide a Summary Table of Storm Water Management Program Elements.

a. A Summary Table of appropriate SWMP annual activities for each permittee shall be provided. The purpose of the Summary Table is to document in a concise form the program activities and permittees' compliance status with quantifiable permit requirements. Program elements that are administrative (e.g.: planning procedures, program development and pilot studies) are inappropriate for the summary table and shall be discussed in the narrative section of the ANNUAL REPORT. The following are examples of SWMP activities to be included in the Summary Table:

(1) Structural Controls - maintenance and/or inspection activities of existing structural controls

(2) Roadway Maintenance - street sweeping, litter control activities, and maintenance on storm water structures & roadside ditches

(3) Municipal Waste TSD Facilities - inspections, monitoring, and implementation of control measures

(4) Pesticide, Herbicide, and Fertilizer Application - certification training and public education

(5) Illicits - facility inspections, investigations, enforcement actions, illicit (dry weather) screening, illicit public reporting, oil/household hazardous waste collection, and storm sewer inlet stencilling

(6) High Risk Industrial Facilities - inspection activities and monitoring

(7) Construction - training of inspectors, certification of construction site operators, inspections, and enforcement actions

(8) Storm Water Treatment Projects - description of municipal storm water treatment projects that have been completed, including a brief description of the affected drainage basin

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b. The Summary Table shall indicate each permittee's SWMP activities and accomplishments. The format for this information shall adhere to the example shown in Table V.C.1. on page 55. Items to be reported include:

(1) Activity description;

(2) Number of activities (with frequency) that were scheduled for implementation and/or accomplishment in program element discussion (i.e., once/6 months, 100%/5 years, 6 sites monitored once/year, all sites inspected/permit term). Enter "Not Applicable" (N/A) if no specific schedule was specified;

(3) Status of schedule for year ("yes" for schedule was adhered to, or "no" for schedule was not adhered to);

(4) Number of activities which were accomplished; and

(5) The availability of documentation (i.e., inspection reports) for those activities which were accomplished and comments describing the reason(s) for any non-compliance.

4. The ANNUAL REPORT shall contain a Narrative Report to succinctly discuss the SWMP Elements which were not included within the SWMP Summary Table. Those SWMP Elements required to be developed under Parts II and III of the permit shall be discussed within this section of the ANNUAL REPORT following development.

a. The permittees shall include a brief discussion of the following applicable SWMP Elements:

(1) Structural Controls Maintenance
(2) Development Planning Procedures
(3) Roadway Maintenance
(4) Flood Management
(5) Municipal Facilities
(6) Pesticides, Herbicides, and Fertilizers
(7) Illicits Inspection/Investigation/Enforcement
(8) Field Screening
(9) Spill Response

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(10) Public Reporting of Illicit Discharges
(11) Oil and Household Hazardous Waste
(12) Sanitary Sewer Seepage
(13) High Risk Industrial Facility Inspection
(14) Construction Planing Procedures
(15) Construction Inspections
(14) Education Activities
(15) Monitoring Activities
(16) Any additional elements of Storm Water Management Program

b. The format for the Narrative Report section of the ANNUAL REPORT shall be a brief discussion of the SWMP Element. The aspects of each permittee's activities concerning a SWMP Element shall be succinctly discussed in the section of the Narrative Report dedicated to that Element. The discussion shall include the following:

(1) Objective of SWMP Element,

(2) SWMP Element activities completed and those in progress,

(3) General discussion of Element. Explanation of all Element activity deficiencies (e.g.: activities described in the program that have not been fully implemented or completed). Results of activities shall be summarized and discussed (e.g.: maintenance caused by inspection, pollutants detected by monitoring, investigations as a result of dry and wet weather screening, number and nature of enforcement items, education activities participation),

(4) Status of SWMP Element with compliance, implementation, and augmentation schedules in Part III of the permit,

(5) SWMP Element strengths and weaknesses,

(6) Assessment of controls, and

(7) Discussion of Element revisions that are summarized elsewhere in the ANNUAL REPORT.

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5. The ANNUAL REPORT shall contain a Monitoring Section which discusses the progress and results of the monitoring programs required under Part V of the permit.

   a. The Monitoring Section of the ANNUAL REPORT shall include a summary of the monitoring program developed and implemented under Part V.B.1. of the permit. The details to be discussed include:

      (1) Brief summary statement of the objective of each monitoring project included under the program,

      (2) Summary chart of the data from the monitoring completed,

      (3) Discussion of any results or conclusions derived from the monitoring completed,

      (4) Status of monitoring with respect to the compliance schedule in Part V.B.1. of the permit, and

      (5) Discussion of monitoring program revisions that are summarized elsewhere in the ANNUAL REPORT.

   b. The Monitoring Section of the ANNUAL REPORT shall include the following information as required in Part V.A. of the permit:

      (1) The ANNUAL REPORT for Year One of the permit shall contain an inventory of all known major outfalls, with updates describing additionally identified major outfall in each sequent ANNUAL REPORT.

      (2) The ANNUAL REPORT for Year Three of the permit shall include the investigation of the sources of the organic pollutants detected in the Part 2 application sampling data as required in Part V.A.2. of the permit.

      (3) The ANNUAL REPORT for Year Four of the permit shall include estimates of seasonal pollutant loadings and event mean concentrations (EMC) for each major outfall required by Part V.A.1.

6. Provide a summary of SWMP and Monitoring Modifications made during the permit year.



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7. Provide a complete fiscal analysis for each permittee's program implementation, both for the past calendar year and the next. The analysis shall indicate budgets and funding sources.

8. FDOT shall report on the status of the FDOT statewide Storm Water Management Program elements as shown in Table V.C.8.a. on page 56 and shall indicate whether the resulting program modifications have been implemented at the District Office. In addition, FDOT shall also indicate the number of District employees included in the training courses described in Table V.C.8.b. on page 57.

9. The following information shall be included as Appendices within the ANNUAL REPORT for Year Five of the permit:

   a. Analytical data collected from the monitoring program.

   b. Results of illicit connections screening or dry weather screening.

   c. Any other data specifically requested by EPA to substantiate statements and conclusions reached in the ANNUAL REPORTS.

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Table V.C.1. - EXAMPLE Summary Table for Storm Water Management Program Element Status/Compliance (EXAMPLE ONLY)

| PROGRAM ELEMENT | PERMITTEE | REQUIREMENT | ACTIVITY SCHEDULE | | | COMMENTS |
|---|---|---|---|---|---|---|
| | | | Activities Required by SWMP | Complied with | Activities Accomplished during calendar year | |
| Structural Controls | Permittee 1 | Major Channels Inspected | 15 Channels, once/6 mos. | YES | 15 Channels, once/6 mos | Copies of Inspection Report Forms - Available Upon Request |
| | | Major Channels Maintained | As needed | N/A | 7 Channels maintained | |
| | | Grate Inlets Inspected | 1500 Inlets, once/year | NO | 1000 Inlets | Ambitious projection. Reducing to 1000 next year due to resources. |
| | Permittee 2 | Detention Ponds Maintained | 1 Pond, once/month | YES | 1 Pond once/month | Sediment removed after spring rains. |
| | | Storm Drain Inlets Inspected | 35 Inlets, once/6 mos. | YES | 35 Inlets once/6 mos. | Copies of Inspection Report Forms - Available Upon Request |
| Monitoring | Permittee 1 | Municipal - Landfills | 2 Facilities, once/6 mos. | YES | 2 Facilities once/6 mos. | Copies of Monitoring Data - Available Upon Request |
| | | POTW | 3 Facilities, once/year | NO | 2 Facilities | Copies of Monitoring Data - Available Upon Request |
| | | Industrial - Hazardous | 5 Facilities, once/6 mos. | YES | 5 Facilities, once/6 mos. | Copies of Monitoring Data - Available Upon Request |
| | | Title III | 3 Facilities, once/6 mos. | YES | 3 Facilities, once/6 mos. | Copies of Monitoring Data - Available Upon Request |
| | | Others | 2 Facilities, once/year | YES | 2 Facilities | Copies of Monitoring Data - Available Upon Request |
| | | Dry Weather Screening | 100% system, once/5 yrs. | YES | 20% system | Copies of Screening Field Reports - Appendix B. |
| | | Floatable Assessment | 100 sections surveyed/yr. | YES | 140 sections surveyed | Copies of Field Survey - Available Upon Request |



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Table V.C.8.a. - Table for FDOT Statewide Storm Water Management Program Element Status

| FDOT STATEWIDE STORM WATER MANAGEMENT PROGRAM ELEMENT (To Be Conducted at State Office) | ACTIVITY ACCOMPLISHED DURING THE PERMIT YEAR? | DESCRIPTION OF RESULTING PROGRAM MODIFICATIONS | PROGRAM POLICY INCORPORATED AT DISTRICT OFFICE? |
|---|---|---|---|
| Evaluate the feasibility of the FDOT drainage connection permit becoming an operating permit requiring long-term storm water facility management by the connecting entity. | YES / NO (If no, list anticipated completion date) | | YES / NO (If no, list reason and/or anticipated implementation date.) |
| Add information specific to storm water runoff protection and reduction of chemical usage to the FDOT's *Turf Management Manual* and *Chemical Weed and Grass Control Manual*. | YES / NO (If no, list anticipated completion date) | | YES / NO (If no, list reason and/or anticipated implementation date.) |
| Evaluate, on an ongoing basis, innovative structural and non-structural BMPs and new technologies as they evolve to determine their efficiency and cost effectiveness in the field. Comment on those which are found suitable & adopted for use in FDOT projects in the District. | ONGOING ACTIVITY | | Describe new BMPs adopted for use in the District. |
| Identify those of the non-storm water discharges listed under Part II.A.7.a. on page 9 of the permit, as well as any other non-storm water discharges, which will be allowed to be discharged into the FDOT MS4. | YES / NO (If no, list anticipated completion date) | | YES / NO (If no, list reason and/or anticipated implementation date.) |

Table V.C.8.b. - Table for FDOT Statewide Storm Water Management Program Training Status

| FDOT STATEWIDE STORM WATER MANAGEMENT PROGRAM TRAINING (Conducted through State Office) | TRAINING CONDUCTED DURING THE PERMIT YEAR? | DESCRIPTION OF TRAINING COURSE | NO. OF DISTRICT EMPLOYEES COMPLETING TRAINING COURSE? |
|---|---|---|---|
| Conduct training for FDOT maintenance and construction inspectors in the identification and detection of potential storm water related problems, signs of illegal dumping and illicit connections, proper containment methods, and reporting procedures. | YES / NO (If no, give anticipated schedule.) | | |
| Conduct training for the FDOT Emergency Coordinator assigned to each FDOT maintenance facility. Training shall not only educate the FDOT Emergency Coordinator in the proper containment of spills and spill reporting procedures, but shall include storm water remediation activities, storm water regulations, and storm water retrofitting necessary to eliminate polluted storm water discharges from FDOT maintenance facilities. | YES / NO (If no, give anticipated schedule.) | | |
| Conduct training for all FDOT personnel involved in the chemical weed and grass control program to ensure a safe and effective program. Incorporate into the training of these applicators an emphasis on storm water implications of the use of pesticides, herbicides, and fertilizers. | YES / NO (If no, give anticipated schedule.) | | |
| Conduct training for all FDOT personnel involved in hazardous waste handling. Incorporate into the training a segment on the identification, detection, and reporting of illicit storm water connections and potential storm water related problems such as visible water quality degradation and signs of illegal dumping. | YES / NO (If no, give anticipated schedule.) | | |



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D. **Certification and Signature of Reports.**

All reports required by the permit and other information requested by the Director shall be signed and certified in accordance with Parts VI.H. & VI.I. of the permit.

E. **Reporting: Where and When to Submit.**

1. As required by Part V.C., monitoring results obtained during the reporting period running from the 12 month term beginning on the effective date of this permit and annually thereafter shall be submitted on Discharge Monitoring Report Form(s) in the ANNUAL REPORT for Year Five of the permit. A separate Discharge Monitoring Report Form is required for each event monitored.

2. Signed copies of the ANNUAL REPORT required by Part V.C. and all other reports required herein, shall be submitted to:

U.S. EPA, Region IV
Water Management Division
Water Permits and Enforcement Branch (WPEB-7)
345 Courtland Street, N.E.
Atlanta, Georgia 30365

F. **Additional Notification.**

In addition, the permittees shall provide a copy of each ANNUAL REPORT to:

Florida Department of Environmental Protection
Bureau of Surface Water Management
Storm Water Section
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

G. **Retention of Records.**

The permittees shall retain the latest version of the Storm Water Management Program developed in accordance with Part II of this permit for at least three years after the expiration date of this permit. The permittees shall retain all records of all monitoring information, copies of all reports required by this permit, and records of all other data required by or used to demonstrate compliance with this permit, until at least three
years after the expiration date of this permit. This period may be explicitly modified by alternative provisions of this permit or extended by request of the Director at any time.



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## PART VI. STANDARD PERMIT CONDITIONS

A. Duty to Comply. The permittees must comply with all conditions of this permit insofar as those conditions are applicable to each permittee, either individually or jointly. Any permit noncompliance by a permittee constitutes a violation of the CWA and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application for the non-complying permittee.

B. Penalties for Violations of Permit Conditions.

1. Criminal

a. Negligent Violations The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. Knowing Violations The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Knowing Endangerment The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 year, or both.

d. False Statement The CWA provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309(c)(4) of the Clean Water Act).

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2. Civil Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation.

3. Administrative Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

   a. Class I penalty Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

   b. Class II penalty Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

C. **Duty to Reapply**. If a permittee(s) wishes to continue an activity regulated by this permit after the permit expiration date, the permittee(s) must apply for and obtain a new permit. The application shall be submitted at least 180 days prior to expiration of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR 122.6 and any subsequent amendments.

D. **Need to Halt or Reduce Activity Not a Defense**. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

E. **Duty to Mitigate**. Each permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. **Duty to Provide Information**. Each permittee shall furnish to the Director, within a time specified by the Director, any information which the Director may request to determine compliance with this permit. The permittees shall also furnish to the Director upon request copies of records required to be kept by this permit.

G. **Other Information**. When a permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in any report to the Director, he or she shall promptly submit such facts or information.

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H. Signatory Requirements. All Discharge Monitoring Reports, storm water management programs, reports, certifications or information either submitted to the Director or that this permit requires be maintained by the permittees, shall be signed by:

1. Either a principal executive officer or ranking elected official; or

2. A duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director, and

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

   If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new written authorization satisfying the requirements of this paragraph must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

I. Certification. Any person signing documents under this section shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

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J. **Penalties for Falsification of Reports.** Section 309(c)(4) of the Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or by both.

K. **Penalties for Falsification of Monitoring Systems.** The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the CWA.

L. **Oil and Hazardous Substance Liability.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittees from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA or section 106 of CERCLA.

M. **Property Rights.** The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

N. **Severability.** The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

O. **Requiring an Individual Permit.**

1. The Director may require any permittee authorized by this permit to obtain an individual NPDES permit. Any interested person may petition the Director to take action under this paragraph. The Director may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form (as necessary), a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit, coverage under this permit shall automatically terminate. Individual permit applications shall be submitted to the address of the appropriate Regional Office shown in Part V.E.2. of this permit. The Director may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application as required by the Director, then the applicability of this permit to the individual NPDES permittee is automatically terminated at the end of the day specified for application submittal.

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2. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application as specified by 40 CFR 122.26(d) with reasons supporting the request to the Director. Individual permit applications shall be submitted to the address of the appropriate Regional Office shown in Part V.E.2. of this permit. The request may be granted by the issuance of a individual permit if the reasons cited by the owner or operator are adequate to support the request.

**P.** **State/Environmental Laws.**

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

**Q.** **Proper Operation and Maintenance**. Each permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water management programs. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

**R.** **Monitoring and Records.**

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. The permittees shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

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3. Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;

   b. The initials or name(s) of the individual(s) who performed the sampling or measurements;

   c. The date(s) analyses were performed;

   d. The time(s) analyses were initiated;

   e. The initials or name(s) of the individual(s) who performed the analyses;

   f. References and written procedures, when available, for the analytical techniques or methods used; and

   g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

S. Monitoring Methods. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

T. Inspection and Entry. The permittee shall allow the Director or an authorized representative of EPA, or the State, upon the presentation of credentials and other documents as may be required by law, to:

   1. Enter the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

   2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

   3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

U. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

V. Additional Monitoring by the Permittee(s). If the permittees monitor more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased monitoring frequency shall also be indicated on the DMR.



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## PART VII. PERMIT MODIFICATION

A. **Modification of the Permit:** The permit may be reopened and modified during the life of the permit to:

1. Incorporate into the permit the finalized pollutant load reduction goals agreed to by the permittees and the National Estuary Program (NEP) in the National Estuary Program Comprehensive Conservation and Management Plan for the geographical area covered by this NPDES permit;

2. Address impacts on receiving water quality caused, or contributed to, by discharges from the MS4;

3. Address changes in State or Federal statutory or regulatory requirements;

4 Include the addition of a new permittee who is the owner or operator of a portion of the Municipal Separate Storm Sewer System; or

5. Include other modifications deemed necessary by the Director to comply with the goals and requirements of the Clean Water Act.

All modification to the permit will be made in accordance with 40 CFR 122.62, 122.63, and 124.5.

B. **Termination of Coverage for a Single Permittee**

Permit coverage may be terminated, in accordance with the provisions of 40 CFR 122.64 and 124.5, for a single permittee without terminating coverage for other permittees.

C. **Modification of Storm Water Management Program(s)**

Only those portions of the Storm Water Management Programs specifically required as permit conditions shall be subject to the modification requirements of 40 CFR 124.5. Replacement of an ineffective or infeasible BMP implementing a required component of the Storm Water Management Program with an alternate BMP expected to achieve the goals of the ineffective or infeasible BMP shall be considered minor modifications to the Storm Water Management Program and not modifications to the permit. (See also Part II.G.)



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D. **Changes in Monitored Outfalls**

This permit is issued on a system-wide basis in accordance with CWA §402(p)(3)(i) and authorizes discharges from all portions of the Municipal Separate Storm Sewer System. Since all outfalls are authorized, changes in monitoring outfalls, other than those with specific numeric effluent limitations, if any, shall be considered minor modifications to the monitoring program and not modifications to the permit. (See also Part V.B.1. and V.C.6.) Changes in monitoring outfalls with specific numeric effluent limitations shall be considered modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.62.

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## PART VIII. DEFINITIONS

All definitions contained in Section 502 of the CWA shall apply to this permit and are incorporated herein by reference. Unless otherwise specified in this permit, additional definitions of words or phrases used in this permit are as follows:

A. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

B. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility, which is not a designed or established operating mode for the facility.

C. "CWA" means Clean Water Act, also referred to as "the Act" (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq., as amended by the WQA of 1987, P.L. 100-4, the "Act."

D. "Director" means the EPA Regional Administrator or an authorized representative.

E. "Discharge" for the purpose of this permit, unless indicated otherwise, refers to discharges from the Municipal Separate Storm Sewer System (MS4).

F. "Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge at the time of sampling.

G. "Illicit connection" means any man-made conveyance connecting a non-storm water discharge directly to a municipal separate storm sewer system.

H. "Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and other discharges listed in Part II. A.7.a. of this permit.

I. "Industrial Land Use" means land utilized in connection with manufacturing, processing, or raw materials storage at facilities identified under 40 CFR 122.26(b)(14).

J. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.



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K. "Large Municipal Separate Storm Sewer System" means all municipal separate storm sewers that are either:

(i) located in an incorporated place (city) with a population of 250,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or

(ii) located in the counties with unincorporated urbanized populations of 250,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or

(iii) owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the large municipal separate storm sewer system.

L. "Medium Municipal Separate Storm Sewer System" means all municipal separate storm sewers that are either:

(i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or

(ii) located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or

(iii) owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the medium municipal separate storm sewer system.

M. "MEP" is an acronym for "Maximum Extent Practicable," the technology-based discharge standard for Municipal Separate Storm Sewer Systems established by CWA §402(p).

N. "MS4" is an acronym for "municipal separate storm sewer system" and is used to refer to either a Large or Medium Municipal Separate Storm Sewer System (e.g. "the Atlanta MS4").

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O. "Municipal Separate Storm Sewer" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, and storm drains):

(i) owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian Tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) designed or used for collecting or conveying storm water;

(iii) which is not a combined sewer; and

(iv) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

P. "Permittee" means each individual co-applicant for an NPDES permit who is only responsible for permit conditions relating to the discharge that they own or operate. (Also, See 40 CFR 122.2)

Q. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

R. "Severe property damage" means substantial physical damage to property, damage to the treatment facility which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

S. "State Storm Water Quality Standards", is defined at Section 403.0891 of the Florida Statutes, and State Water Policy, Chapter 62-40, Florida Administrative Code.

T. "Storm Sewer", unless otherwise indicated, refers to a municipal separate storm sewer.

U. "Storm Water" means storm water runoff, snow melt runoff, surface runoff and drainage.

V. "Storm Water Discharge Associated with Industrial Activity" is defined at 40 CFR 122.26(b)(14). (Also, See Fact Sheet for this Permit.)



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W. "Storm Water Management Program" refers to a comprehensive program to manage the quality of storm water discharged from the municipal separate storm sewer system. For the purposes of this permit, the Storm Water Management Program is considered a single document, but may actually consist of separate programs (e.g. "chapters") for each permittee.

X. "Surface Water Ambient Monitoring Program" refers to a comprehensive program implemented by the Florida Department of Environmental Protection, Bureau of Surface Water Management, which is designed to accomplish the following goals:

1. Identify and document the existing condition of the surface waters of the State,

2. Document potential problem areas,

3. Establish stream ecoregion reference sites for comparison purposes,

4. Collect biological data at ecoregion reference sites to establish preliminary biological integrity measurements techniques, and

5. Establish a Statewide ambient monitoring network which will eliminate duplication, share data, increase efficiency, and improve assessment and management capabilities.

To date, the monitoring strategies included within the State of Florida's Surface Water Ambient Monitoring Program have been based on:

- Ecoregion Subregionalization and the associated stream Community Bioassessment Protocols (CBA) developed for the nonpoint source program,

- Chemistry Trend Network to fulfill the need to evaluate the State's water quality over time,

- Chemistry Status Network with emphasis on water bodies with fair or poor water quality or areas which have not been recently sampled, and

- Lake Ecoregion and Community Bioassessment Projects.

Y. "SWMP" is an acronym for "Storm Water Management Program."

Z. "Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

AA. "Waters of the United States" is defined at 40 CFR 122.2.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: WD-134

FEB 1 1995

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

Janice Adair, Regional Administrator
Alaska Department of Environmental Conservation
Southcentral Regional Office
3601 C Street, Suite 1334
Anchorage, AK 99503

Re: NPDES Permit No. AKS052426
Port of Anchorage NPDES Municipal Storm Water Permit

Dear Ms. Adair:

A National Pollutant Discharge Elimination System (NPDES) permit has been issued to the referenced facility. Enclosed is a copy of the transmittal letter, permit, and list of changes made from the draft to the final permit.

There were no significant comments received during the public notice period. The permit will be effective 30 days after the issuance unless a request for evidentiary hearing is received.

Sincerely,

Charles E. Findley
Director, Water Division

Enclosures

cc: Office of Management and Budget, Anchorage

LOS ANGELES REGION

0679

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

VOL 22

Reply To
Attn Of: WD-134

FEB 1 1995

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

Don Dietz, Director
Port of Anchorage
2000 Anchorage Port Road
Anchorage, Alaska 99501

Re: NPDES Permit No. AKS052426
Port of Anchorage NPDES Municipal Storm Water Permit

Dear Mr. Dietz:

We are issuing the above referenced National Pollutant Discharge Elimination System (NPDES) permit. The enclosed document is your official copy of the permit and demonstrates that the referenced facility is authorized to discharge to waters of the United States subject to certain specified requirements. Stipulations of the state's water quality certification and Coastal Management Program consistency determination have been incorporated into the permit. More specifically, the stipulations revising the monitoring conditions are in Part IV of the permit.

There were no significant comments received during the public notice period. This permit will become effective 30 days after the issuance date unless a request for an evidentiary hearing which meets the requirements of 40 CFR 124.74 is received. A copy of these requirements is enclosed for your information.

Sincerely,

Charles E. Findley
Director, Water Division

Enclosures

cc: State Regional Office, Anchorage
State District Office, Anchorage
Office of Management and Budget, Anchorage

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## CHANGES TO DRAFT PERMIT

The following changes to the draft permit have been made for this final permit:

1) The Port of Anchorage commented that the outfall previously labelled 001, Transit Area A, was discovered by its consulting engineers to no longer exist, and asked that it be deleted from the application.

   EPA has deleted this outfall and re-numbered the remaining three outfalls as 001, 002, and 003 (see Table V.A.1.b).

2) Special requirements stipulated as part of the State of Alaska water quality certification are contained in Part IV of the permit. These special requirements include changes in monitoring, analytical test methods, and reporting requirements. Specifically:

   - The monitoring parameter "Total Aqueous Hydrocarbons" has been substituted for the parameter "Oil and Grease" found in Part II.B.9.b.

   - The analytical test methods EPA 602 and EPA 610 will be used to determine the presence of "Total Aqueous Hydrocarbons".

   - Copies of all documents, reports, and requests, required in the permit will be sent to the state offices as stipulated.

   In addition, the following changes to the permit have been made pursuant to the water quality stipulations and comments from the State:

   - Part II.A.1 has been expanded to include a statement on emphasizing source reduction techniques as a means to reduce the discharge of pollutants.

   - In Part II.B.4 the permittee is now directed to operate and maintain parking and cargo storage/staging areas in a manner to reduce, to the Maximum Extent Practicable, discharge of pollutants.

   - In Part II.B.11 the following was added as paragraph (d): a program to promote, publicize and facilitate implementation of technologies and techniques to prevent pollution through source reduction and recycling.

   - In Part II.B.7.b the items numbered 8, 12, and 13 now specify that the water be uncontaminated as found in #6.

   - The term "co-permittees" in Part II.C has been deleted.

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- In Part II.C.1 the term "port vehicles" has been clarified to mean those vehicles owned or operated by The Port.

- The citation in Part H.1 has been changed to correctly read Part II.I.

- The phrase "at the permittees option" in Part V.A.4.b has been deleted.

- The reference in Part V.B.1 has been changed to correctly read Part III.A.

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COVER PAGE

Permit No.: AKS052426

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

**Port of Anchorage**

is authorized to discharge from a Municipal Separate Storm Sewer System located at Port of Anchorage, 2000 Anchorage Port Road, Anchorage, Alaska,

to receiving waters named Cook Inlet,

in accordance with discharge point(s), an approved storm water management plan, monitoring requirements, and other conditions set forth herein.

This permit shall become effective March 3, 1995.

This permit and the authorization to discharge shall expire at midnight, March 3, 2000.

Signed this 1st day of February, 1995.

Director, Water Division, Region 10
U.S. Environmental Protection Agency

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NPDES PERMIT
MUNICIPAL SEPARATE STORM SEWER SYSTEM
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## PART I. DISCHARGES AUTHORIZED UNDER THIS PERMIT

A. **Permit Area**
This permit covers all areas within the jurisdictional boundary of the Port of Anchorage within the Municipality of Anchorage, Alaska, served by, or otherwise contributing to discharges from, municipal separate storm sewers (MS4s) owned or operated by the permittee listed in Part I.C.

B. **Authorized Discharges**
This permit authorizes all existing or new storm water point source discharges to waters of the United States from the MS4. This permit also authorizes the discharge of storm water commingled with flows contributed by process wastewater, non-process wastewater, or storm water associated with industrial activity provided such discharges are authorized under separate NPDES permits. This permit will consider any and all activities conducted by lessees of the Port of Anchorage while within the jurisdictional boundaries of the Port, and which activity leads to a discharge either to or from the MS4s for which this permit is written, to be the activity of the Port and subject to the conditions of this permit.

C. **Limitations on Coverage**
The following discharges are not authorized by this permit:

1. *Non-storm Water:* storm water discharges that are mixed with non-storm water or storm water associated with industrial activity except where such discharges are:

   a. in compliance with a separate NPDES permit; or

   b. identified by and in compliance with Part II.B.7 of this permit.

2. *Endangered Species Protection:* storm water discharges whose direct, indirect, interrelated, interconnected, or interdependent impacts would jeopardize a listed endangered or threatened species or adversely modify designated critical habitat.

3. *Historic Preservation:* storm water discharges, or the permittee construction activities or implementation of storm water management controls, which adversely effect properties listed or eligible for listing in the National Register of Historic Places, unless the permittee is in compliance with requirements of the National Historic Preservation Act and has coordinated any necessary activities to avoid or minimize impacts with the appropriate State Historic Preservation Officer; and

4. *Coastal Zone Management:* storm water discharges not in compliance with any applicable requirements of a State's Coastal Zone Management Plan.



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## PART II. STORM WATER POLLUTION PREVENTION & MANAGEMENT PROGRAMS

The permittee is required to develop and implement a storm water pollution prevention and management program designed to limit, to the maximum extent practicable, the discharge of pollutants from the MS4. Either collectively, or separately, the permittee's storm water pollution prevention and management program shall satisfy the requirements of paragraphs A through I, below for all portions of the MS4 authorized to discharge under this permit.

A. **POLLUTION PREVENTION REQUIREMENTS**
The permittee shall develop and implement the following pollution prevention measures:

1. The permittee shall include requirements to consider water quality impacts of new and significant re-development in its comprehensive master planning process. The goal of such requirements shall be limiting, to the maximum extent practicable, the discharge of pollutants to pre-development levels.

2. The permittee shall ensure the establishment or availability of a program to collect used motor vehicle fluids (including oil and antifreeze) and batteries for recycle or reuse. Such program shall be readily available to all lessees. This program shall be publicized and promoted on a regular basis, but at least anually.

3. The permittee shall ensure the establishment or availability of a program to collect commonly-used hazardous materials (including paint, pesticides, herbicides, cleaners, solvents, and similar hazardous materials) for recycle, reuse, or safe disposal. The program shall be readily available to all lessees and include information on locations accepting such materials on a continuous basis. This program shall be publicized and promoted on a regular basis, but at least anually.

4. The permittee shall ensure the establishment of a program, including structural controls where necessary, to reduce the discharge of floatables (including solid wastes) to the maximum extent practicable.

B. **SWMP SYSTEM-WIDE REQUIREMENTS**
The permittee shall operate a Storm Water Management Program (SWMP) in accordance with Section 402(p)(3)(B) of the Clean Water Act, the storm water regulations (40 CFR Part 122.26) and the approved SWMP plan to be submitted to EPA by the permittee. SWMP controls and activities identified in the SWMP plan shall clearly identify areas of applicability on a system-wide basis, jurisdiction-wide basis, or specific-area basis. The SWMP, and all approved updates, are hereby incorporated into this permit by reference and shall be implemented in a manner consistent with the following requirements:



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1. *Statutory Requirements:* SWMPs shall include controls necessary to reduce the discharge of pollutants from the MS4 to the Maximum Extent Practicable (MEP). Controls may consist of a combination of best management practices, control techniques, system design and engineering methods, and such other provisions as the permittee, Administrator or the State determines appropriate. The various components of the SWMP, taken as a whole (rather than individually), shall be sufficient to meet the statutory MEP standard. The SWMP shall be updated as necessary to ensure conformance with the statutory requirements of Clean Water Act §402(p)(3)(B)(ii) and (iii).

2. *Structural Controls:* The permittee shall operate and maintain any storm water structural controls over which it has jurisdiction, in a manner so as to reduce the discharge of pollutants (including floatables) to the MEP.

3. *Areas of New Development:* The Port of Anchorage shall utilize a comprehensive master planning process to develop, implement, and enforce controls to reduce, to the MEP, the discharge of pollutants from areas of new development and significant redevelopment after construction is completed.

4. *Roadways:* The permittee shall operate and maintain public streets, roads, highways, parking areas, and cargo storage/staging areas under its jurisdiction in a manner so as to reduce, to the MEP, discharge of pollutants (including those related to deicing or sanding activities).

5. *Flood Control Projects:* The permittee shall ensure any flood control project it undertakes assesses and minimize to the MEP the impacts on water quality of the receiving waters. The permittee shall also evaluate the feasibility of retro-fitting existing structural flood control devices to provide additional pollutant removal from storm water. If retro-fitting is found to be feasible, the permittee shall implement the retro-fitting of existing structural devices within 3 years of such determination of feasibility.

6. *Pesticide, Herbicide, and Fertilizer Application:* The permittee shall implement controls to reduce, to the MEP, the discharge of pollutants related to application of pesticides, herbicides, and fertilizers applied by Port employees, contractors, or lessees to public right of ways, parks, and all port lands and facilities.

7. *Illicit Discharges and Improper Disposal:* The permittee shall implement an ongoing program to detect and eliminate illicit discharges and improper disposal into the storm sewer. The permittee may chose to require the discharger to the MS4 to eliminate the illicit discharges or obtain a separate NPDES permit for such discharges.



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a. The permittee shall effectively prohibit non-storm water discharges to the MS4.

b. Unless identified by either the permittee, the Administrator, or the State as significant sources of pollutants to waters of the United States, the following non-storm water discharges need not be prohibited from entering the MS4, provided the necessity of such discharge(s) and appropriate control measures (if needed) to minimize the impacts of such sources, are developed under the SWMP:

(1) water line flushing;
(2) landscape irrigation;
(3) diverted stream flows;
(4) rising ground waters;
(5) uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers;
(6) uncontaminated pumped ground water;
(7) discharges from potable water sources;
(8) uncontaminated foundation drains;
(9) air conditioning condensate;
(10) irrigation water;
(11) springs;
(12) uncontaminated water from crawl space pumps;
(13) uncontaminated footing drains;
(14) lawn watering;
(15) individual residential car washing;
(16) flows from riparian habitats and wetlands;
(17) dechlorinated swimming pool discharges;
(18) street wash waters;
(19) NPDES permitted non-contact cooling waters and remediated ground waters, provided appropriate management practices are implemented and the discharges are in accordance with the Municipality's storm water management program; and,
(20) discharges or flows from emergency fire fighting activities.

c. The permittee shall prevent discharges of dry and wet weather overflows from sanitary sewers into the MS4. The permittee shall limit, to the maximum extent practicable, the infiltration of seepage from sanitary sewers into the MS4.

d. The permittee shall prohibit the discharge or disposal of all motor vehicle fluids and chemical wastes into separate storm sewers.

e. The permittee shall require the elimination of illicit connections as expeditiously as possible and the immediate cessation of improper disposal practices upon identification of responsible parties. Where elimination of an illicit connection within seven (7) days is not possible, the Port of Anchorage shall require an expeditious



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schedule for elimination of the discharge. In the interim, the Port of Anchorage shall require the operator of the illicit connection to take all reasonable and prudent measures to minimize the discharge of pollutants to the MS4. Elimination schedules should not exceed ninety (90) days, except for capital intensive projects which shall not exceed 455 days (one year ninety days).

8. *Spill Prevention and Response:* The permittee shall implement a program to prevent, contain, and respond to spills that may discharge into the MS4. The spill response program may include a combination of spill response actions by the permittee and its lessees.

9. *Industrial & High Risk Runoff:* The permittee shall implement a program to identify, monitor, and control pollutants in storm water discharges to the MS4 from: hazardous waste treatment, storage and disposal facilities that are subject to EPCRA Title III, Section 313; bulk storage facilities; and, any other industrial or commercial discharges the permittee determines are contributing a substantial pollutant loading to the MS4. The program shall include:

   a. priorities and procedures for inspections and establishing and implementing control measures for such discharges;

   b. a monitoring (or self-monitoring) program for facilities identified under this section, including the collection of quantitative data on the following constituents:

      (1) any pollutants limited in an existing NPDES permit for an identified facility;
      (2) oil and grease;
      (3) chemical oxygen demand (COD);
      (4) pH;
      (5) biochemical oxygen demand, five-day ($BOD_5$);
      (6) total suspended solids (TSS);
      (7) total phosphorous;
      (8) total Kjeldahl nitrogen (TKN);
      (9) nitrate plus nitrite nitrogen; and
      (10) any of the metals cadmium, copper, lead, and zinc which can be reasonably expected in storm water runoff from such industrial site; and,
      (11) any information on discharges required under 40 CFR 122.21(g)(7)(iii) and (iv).

10. *Construction Site Runoff:* The permittee shall implement a program to reduce, to the MEP, the discharge of pollutants from constructions sites, including:

   a. requirements for the use and maintenance of appropriate structural and nonstructural best management practices to reduce pollutants



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discharged to the MS4 upon commencement of, and during, the construction activities;

b. procedures for site planning which incorporate considerations for potential short and long term water quality impacts and minimizes, to the MEP, these impacts;

c. prioritized inspection of construction sites and enforcement of SWMP-required control measures;

d. appropriate education and training measures for construction site operators; and,

e. notification of all construction permit applicants of their potential responsibilities under the NPDES permitting program for construction site runoff.

11. *Public Education:* The permittee shall implement a public education program including:

a. a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or improper disposal of materials into the MS4;

b. a program to promote, publicize, and facilitate the proper management and disposal of used oil and commonly-used hazardous materials.

c. a program to promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by commercial and private applicators and distributors conducting such business within the Port of Anchorage jusrisdictional area.

C. **AREA-SPECIFIC STORM WATER MANAGEMENT PROGRAM REQUIREMENTS**
The following SWMP requirements apply only to the areas or discharges specified below. Management practices must also be developed in the SWMP for the following:

1. The Port of Anchorage (The Port) will provide an area for the washing of Port vehicles (that is, vehicles owned or operated by The Port) that will not result in the discharge of wash waters. The Port will encourage the use of detergent-free methods of vehicle washing and will require regular maintenance of the area to ensure wash waters, and resulting contaminants, will not be transported by storm water to waters of the U.S. This area is not required to be within Port jurisdictional boundaries, and does not have to be operated by the Port or Port personnel.

2. The Port may provide this area to its tenants solely for the purpose of vehicle washing. In such case, The Port accepts the responsibilty of proper operation and



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maintenance of this area, and will ensure proper management practices are adhered to at all times.

3. All vehicle and equipment maintenance areas will be managed so as to control discharges from these areas to the maximum extent practicable. All hydrocarbon compounds used in these areas will be handled in a manner that will eliminate or minimize potential discharges to waters of the U.S.

D. **DEADLINES FOR PROGRAM COMPLIANCE**

1. Except as provided in PART III, compliance with the storm water management program shall be required within 120 days of the effective date of this permit.

2. Proposed modifications and updates to the SWMP, along with proposed schedules for implementation, shall be submitted with the Annual Report required under Part II.G. to EPA.

E. **ROLES AND RESPONSIBILITIES OF PERMITTEE AND LESSEES**

The SWMP plan shall clearly identify the roles and responsibilities of the permittee. Activities required of the lessees by the permittee must also be clearly identified.

F. **LEGAL AUTHORITY**

The permittee shall ensure legal authority exists to control discharges to and from those portions of the MS4 over which it has jurisdiction. This legal authority may be a combination of statute, ordinance, permit, contract, order or inter-jurisdictional agreements with entities having existing legal authority to:

1. Control the contribution of pollutants to the MS4 by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity;

2. Prohibit illicit discharges to the municipal separate storm sewer;

3. Control the discharge of spills and the dumping or disposal of materials other than storm water into the MS4;

4. Control through interagency agreements among co-permittees the contribution of pollutants from one portion of the MS4 to another;

5. Require compliance with conditions in ordinances, permits, contracts or orders; and,

6. Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with permit conditions.



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G. **SWMP RESOURCES**

The permittee shall provide adequate finances, staff, equipment, and support capabilities to fully implement the storm water management program.

H. **SWMP REVIEW AND MODIFICATION**

1. *Program Review:* The permittee shall conduct an annual review of the current SWMP in conjunction with preparation of the annual system-wide report required under Part II.I. This annual review shall include:

   a. A review of the status of program implementation and compliance (or non-compliance) with all schedules of compliance contained in this permit;

   b. An assessment of the effectiveness of controls established by the SWMP;

   c. A review of monitoring data and any trends in estimated cumulative annual pollutant loadings; and,

   d. An assessment of any SWMP modifications needed to comply with the CWA §402(p)(3)(B)(iii) requirement to reduce the discharge of pollutants to the MEP.

2. *Program Modification:* The approved SWMP, and its plan, shall not be modified by the permittee without the prior approval of the EPA, unless in accordance with items a. through c. below:

   a. Modifications adding (but not subtracting or replacing) components, controls, or requirements to the approved SWMP may be made by the permittee at any time upon written notification to the permitting authority.

   b. Modifications replacing a failing Best Management Practice (BMP) identified in the SWMP with an alternate BMP may be requested in conjunction with the annual system-wide report required by Part II.I. below. Such requests must: 1) be made in writing; 2) provide an analysis of why the BMP is failing or ineffective (including cost prohibitive); 3) discuss the expectations of the effectiveness of the replacement BMP; and, 4) explain why the replacement BMP is expected to provide at least the same level of performance as originally expected of the BMP to be replaced.

   c. Modifications made under this paragraph shall not become enforceable permit conditions until such time as the modifications are approved by EPA.

   Modification requests and/or notifications shall be signed in accordance with Part VI.H.

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3. *Modifications Required by the Permitting Authority:* The EPA may require the permittee to modify the SWMP as needed to:

   a. Address contributions by the MS4 discharges to impacts on receiving water quality;

   b. Include more stringent requirements necessary to comply with new State or Federal statutory or regulatory requirements; or,

   c. Include such other conditions deemed necessary by the Administrator to comply with the goals and requirements of the Clean Water Act.

   Modifications requested by the Administrator shall be made in writing, set forth the time schedule for the permittee to develop the modification(s), and offer the permittee the opportunity to propose alternative program modifications to meet the objective of the requested modification.

I. **SYSTEM-WIDE REPORT**

The permittee shall prepare and submit a system-wide report no later than one year after the anniversary of the effective date of this permit (March 3, 1995), and continue to submit an updated system-wide report every year thereafter. The report shall include the following separate sections and an overview for the entire MS4:

1. The status of implementing the components of the SWMPs that are established as permit conditions (status of compliance with any schedules established under this permit shall be included in this section);

2. Proposed changes to the SWMPs that are established as permit conditions, including an update on areas added to the MS4 due to annexation or other legal means;

3. Revisions, if necessary, to the assessments of controls and management practices;

4. A summary of the data, including monitoring data, that is accumulated throughout the last reporting year;

5. Annual expenditures for the reporting period (i.e., the last year), and projected budget for the one year period comprising the next system-wide report;

6. A summary describing the number and nature of compliance actions, inspections, and public education programs; and,

7. Identification of water quality improvements or degradation, with a discussion of those management practices implemented or proposed for implementation to address identified water quality degradation.



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## PART III. SCHEDULES FOR COMPLIANCE

### A. IMPLEMENTATION OF POLLUTION PREVENTION MEASURES

| POLLUTION PREVENTION MEASURE | ACTIVITY DESCRIPTION | DATE DUE |
|---|---|---|
| Part II.A.1 - New Development & Re-Development | Implement construction-phase storm water runoff control program. | March 4, 1996 |
| | Modify land use planning process within Port to require controls for storm water quality. | March 3, 1998 |
| | Implement requirements for post-construction storm water quality controls for new and significant re-development. | July 30, 1998 |
| Part II.A.2 - Vehicle Fluids | Implement public education program. | July 30, 1995 |
| | Develop collection/recycling/safe disposal program. | March 4, 1996 |
| | Implement collection/recycling/safe disposal program. | March 3, 1997 |
| Part II.A.3 - Common Hazardous Waste | Implement public education program. | July 30, 1995 |
| | Develop collection/recycling/safe disposal program. | March 4, 1996 |
| | Implement collection/recycling/safe disposal program. | March 3, 1997 |
| Part II.A.4 - Floatables | Implement public education program. | July 30, 1995 |
| | Implement litter control program. | July 30, 1995 |
| | Install floatables monitoring location (See Part V.A.2) | July 30, 1995 |
| | Complete study for targeting of structural controls. | July 30, 1996 |
| | Complete installation of structural controls on 100% of targeted storm sewer. | July 30, 1997 |

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B. IMPLEMENTATION OF STORM WATER MANAGEMENT PLANS

| SWMP ACTIVITY | ACTIVITY DESCRIPTION | DATE DUE |
|---|---|---|
| PART II.B - Storm Water Management Program (SWMP) plan development | Complete development of SWMP plan | June 5, 1995 |
| Part II.B.7 - Illicit Discharges and Improper Disposal | Implement public education program. | July 30, 1995 |
| | Complete screening of the MS4. | July 30, 1996 |
| | Complete follow up investigations based on screening results. | July 30, 1999 |
| Part II.I - System-wide Report | Episodic system and implementation status report | Annually: March 3 |

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## PART IV. SPECIAL PERMIT REQUIREMENTS

The following requirements are included in this permit as stipulations of water quality certification from the Alaska Department of Environmental Conservation (ADEC).

A. **MONITORING**

1. In Part II.B.9.b the parameter "Total Aqueous Hydrocarbons" will be substituted for the parameter "Oil and Grease" on the list of parameters to be monitored.

   The parameter "Total Aqueous Hydrocarbons" (TAqH) means those collective dissolved and water-accomodated monoaromatic and polynuclear aromatic petroleum hydrocarbons that are persistent in the water column; TAqH does not include floating surface oils and greases. TAqH is calculated by summing the values of the parameters Total Aromatic Hydrocarbons (TAH) and Total Polynuclear Hydrocarbons (PAH). The parameters TAqH, TAH, and PAH are all defined in the Adopted Draft Water Quality Standards, 18 AAC 70.020(b) Note #8, dated 9/13/94. The test methods to be used to determine the presence of these parameters are the EPA 602 method for TAH and the EPA 610 method for PAH. Equivalent methods may be substituted for EPA 610 that meet the performance standards, Minimum Detection Limits (MDLs), precision, and standard recoveries specified in method 610. The applicable criteria are contained in Note #8 (cited above).

2. Table V.A.1.a (Monitoring Frequency) shall be modified as follows:

   a) The monitoring frequency and the parameters listed for monitoring in years 2 and 3 shall be identical to that listed for year 4, such that the full list of parameters will be sampled in years 2, 3, and 4 at the frequency listed under YEAR 4.

   b) The parameter "Total Aqueous Hydrocarbons" will be substituted in the table for the parameter "Oil and Grease" (as discussed above).

   c) Delete "Other Water Quality Parameters" from the table.

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B. **MISCELLANEOUS**

1. Copies of all reports required in the permit will be sent to the following ADEC offices:

Alaska Department of Environmental Conservation
Southcentral Regional Office
3601 C Street, Suite 1334
Anchorage, AK 99503
(907) 563-6529

Alaska Department of Environmental Conservation
Anchorage Western District Office
800 E. Dimond Blvd. #3-470
Anchorage, Alaska 99515
(907) 349-7755

2. In Part II.A.1., add the following statement: The permittee shall emphasize source reduction techniques as a means to reduce the discharge of pollutants. The permittee shall inform the lessees of the availability, through ADEC, of pollution prevention resources, technical assistance programs and other non-regulatory initiatives that will support the overall objective of eliminating the discharge of pollutants.

3. In Part II.B.11., add the following as paragraph (d): a program to promote, publicize and facilitate implementation of technologies and techniques to prevent pollution through source reduction and recycling.

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## PART V. MONITORING AND REPORTING REQUIREMENTS

A. **Storm Event Monitoring**

The permittee shall implement a wet-weather monitoring program for the MS4 to provide data necessary to: 1) assess the effectiveness and adequacy of control measures implemented under the SWMP; 2) estimate annual cumulative pollutant loadings from the MS4; 3) estimate event mean concentrations and seasonal pollutants in discharges from major outfalls; 4) identify and prioritize portions of the MS4 requiring additional controls; and, 5) identify water quality improvements or degradation.

1. *Representative Monitoring:*
The permittee shall monitor representative outfalls and/or instream monitoring locations to characterize the quality of storm water discharges from the MS4.

   a. Monitoring Requirements: (See Table V.A.1.a).

   b. Outfall Descriptions: (See Table V.A.1.b)

2. *Wet Weather Screening Program:*
The permittee shall implement a program to screen all areas contibuting storm water to the MS4 for the presence of excessive pollutants in discharges from the MS4. The wet weather screening program:

   a. Shall screen the entire MS4 at least once during the permit term.

   b. Shall specify the sampling and non-sampling techniques, parameters, collection techniques, and analytical methods to be used for initial screening purposes. For screening samples only, sample collection and analysis need not conform to the requirements of 40 CFR Part 136 and are not subject to the requirements of Paragraphs 3, 4, and 5 below.

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Table V.A.1.a. - Monitoring Requirements for Outfalls 001, 002, and 003[1]

| PARAMETER | MONITORING FREQUENCY | | | | |
|---|---|---|---|---|---|
| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 |
| Biochemical Oxygen Demand ($BOD_5$) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Chemical Oxygen Demand (COD) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Suspended Solids (TSS) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Dissolved Solids (TDS) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Nitrogen (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Kjeldahl Nitrogen (TKN) (mg/l) | Once/year | Once/year | Once/year | Once/year | Once/year |
| Total Phosphorus (mg/l) | --------- | --------- | --------- | Once/year | --------- |
| Dissolved Phosphorus (mg/l) | --------- | --------- | --------- | Once/year | --------- |
| Oil & Grease (mg/l) | Twice/year | Twice/year | Twice/year | Twice/year | Twice/year |
| Total Cadmium (ug/l) | --------- | --------- | --------- | Once/year | --------- |
| Total Copper (ug/l) | --------- | Once/year | --------- | Once/year | --------- |
| Total Lead (ug/l) | --------- | --------- | --------- | Once/year | --------- |
| Total Zinc (ug/l) | --------- | Once/year | --------- | Once/year | --------- |
| Ph (S.U.) | Twice/year | Twice/year | Twice/year | Twice/year | Twice/year |
| Hardness (as $CaCO_3$) (mg/l) | --------- | --------- | --------- | Once/year | --------- |
| Temperature (°C) | Twice/year | Twice/year | Twice/year | Twice/year | Twice/year |

[1] This table represents the baseline monitoring requirements for the discharges and outfalls described in this permit. Some specific parameters and monitoring frequencies have have been modified pursuant to the special requirements as discussed in Part IV of this permit.



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Table V.A.1.b - Representative Monitoring Outfall Descriptions

| OUTFALL | LOCATION | DESCRIPTION |
|---|---|---|
| 001 | Transit Area B | Storm water drain for Transit Area B. This area is 52.0 total acres with 16.2 acres of impervious surface. |
| 002 | Transit Area D and Transit Area A | Storm water drain for Transit Area D and a portion of Transit Area A. Transit Area D is 43.4 total acres and has 7.8 acres of impervious surface. This portion of Transit Area A has 55 total acres with 15 acres covered by impervious surface. The total acreage of impervious surface draining to outfall 002 is 22.8 acres. |
| 003 | Transit Area 12-B | Storm water drain for Transit Area 12-B. Area 12-B is 36.7 total acres with 16.8 acres of impervious surface. |

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c. Shall establish three monitoring locations for removal of floatable material in discharges from the MS4. The amount of material collected shall be estimated in cubic yards. Floatable material shall be measured periodically as necessary for maintenance of the removal device.

d. Shall submit, along with the system-wide report required by Part II.I, the following information:

(1) An estimate of the amount of floatable material collected (cubic yards);

(2) A summary of results and actions taken or proposed based on the results of the wet weather screening program.

e. Any monitoring location that collects an annual average of less than 3 cubic yards of floatables over any consecutive 3 calendar-year period during the permit term will no longer be considered a mandatory monitoring location. The Port must maintain at least one monitoring location for floatables regardless of the amount of floatables collected.

3. *Storm Event Data:*
Quantitative data shall be collected to estimate pollutant loadings and event mean concentrations for each parameter sampled. In addition to the parameters listed above, The Port shall maintain records on site of the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event which generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge sampled.

4. *Sample Type, Collection, and Analysis:*
a. For discharges from storm water holding ponds or other storm water impoundments with a retention period greater than 24 hours, (estimated by dividing the volume of the detention pond by the estimated volume of water discharged during the 24 hours previous to the time that the sample is collected) a minimum of one grab sample may be taken.

b. Grab samples taken during the first two hours of discharge shall be used for the analysis (if required) of pH, temperature, cyanide, oil & grease, fecal coliform, fecal streptococcus, total phenols, residual chlorine, and volatile organics. For all other parameters, data shall be reported



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for flow weighted composite samples of the entire event or, at a minimum, the first three hours of discharge.

c. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Composite samples may be taken with a continuous sampler or as a combination of a minimum of three sample aliquots taken in each hour of discharge for the entire discharge or for the first three hours of the discharge, with each aliquot being separated by a minimum period of fifteen minutes.

d. Analysis and collection of samples shall be done in accordance the methods specified at 40 CFR Part 136. Where an approved Part 136 method does not exist, any available method may be used.

5. *Sampling Waiver:*
When a discharger is unable to collect samples due to adverse climatic conditions, the discharger must submit in lieu of sampling data a description of why samples could not be collected, including available documentation of the event. Adverse climatic conditions which may prohibit the collection of samples includes weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.). Dischargers are precluded from exercising this waiver more than once during a two year period.

B. <u>Dry Weather Monitoring</u>

1. *Dry Weather Screening Program:*
The permittee shall continue ongoing efforts to detect the presence of illicit connections and improper discharges to the MS4. All portions (but not necessarily all outfalls) of the MS4 must be screened at least once during the permit term, in accordance with the schedule set forth in PART III.A.

2. *Screening Procedures:*
Screening methodology may be developed and/or modified based on experience gained during actual field screening activities and need not conform to the protocol at 40 CFR 122.26(d)(1)(iv)(D).

3. *Follow-up on Dry Weather Screening Results:*
The permittee shall implement a program to locate and



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eliminate suspected sources of illicit connections and improper disposal identified during dry weather screening activities. Follow-up activities may be prioritized on the basis of:

a. magnitude and nature of the suspected discharge;

b. sensitivity of the receiving water; and

c. other relevant factors.

C. **Certification and Signature of Reports**

1. All reports required by the permit and other information requested by the Director shall be signed and certified in accordance with Parts VII.H. & VII.I. of the permit.

D. **Reporting: Where to Submit**

1. Monitoring results obtained during each anual reporting period shall be submitted on Discharge Monitoring Report Form(s) and included with the annual system-wide reprt. A separate Discharge Monitoring Report Form is required for each event monitored. The first report may include less than twelve months of information.

2. Signed copies of discharge monitoring reports required under Part V., the System-Wide Report required by Part II.G., SWMP modifications and modification requests, requests for changes in monitoring outfalls and all other reports required herein, shall be submitted to:

U.S. EPA, Region 10
Wastewater Management and Enforcement Branch
Municipal Storm Water Permits (WD-135)
1200 Sixth Avenue
Seattle, Washington 98101

E. **Additional Notification**

1. Copies of the discharge monitoring reports required under Part V., the System-Wide Report required by Part II.G., and other reports requested by the State shall be submitted to:

Alaska Department of Environmental Conservation
Southcentral Regional Office
3601 C Street, Suite 1334
Anchorage, AK 99503
(907) 563-6529



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Alaska Department of Environmental Conservation
Anchorage Western District Office
800 E. Dimond Blvd. #3-470
Anchorage, Alaska 99515
(907) 349-7755

F. **Retention of Records**

1. The permittee shall retain at The Port the latest approved version of the storm water management program developed in accordance with Part II of this permit until at least three years after coverage under this permit terminates. The permittee shall retain at The Port all records of all monitoring information, copies of all reports required by this permit, and records of all other data required by or used to demonstrate compliance with this permit, until at least three years after coverage under this permit terminates. This period may be explicitly modified by alternative provisions of this permit or extended by request of the Director at any time.

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## PART VI. STANDARD PERMIT CONDITIONS

A. Duty to Comply

1. The permittee must comply with all conditions of this permit insofar as those conditions are applicable to each permittee, either individually or jointly. Any permit noncompliance constitutes a violation of CWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

B. Penalties for Violations of Permit Conditions

1. Criminal

a. Negligent Violations The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. Knowing Violations The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Knowing Endangerment The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 year, or both.

d. False Statement The CWA provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4



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years, or by both. (See Section 309(c)(4) of the Clean Water Act).

2. Civil Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation.

3. Administrative Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

   a. Class I penalty Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

   b. Class II penalty Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

C. **Duty to Reapply**

If the permittee wishes to continue an activity regulated by this permit after the permit expiration date, the permittee(s) must apply for and obtain a new permit. The application shall be submitted at least 180 days prior to expiration of this permit. The Administrator may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR 122.6 and any subsequent amendments.

D. **Need to halt or reduce activity not a defense**

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

E. **Duty to Mitigate**

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. **Duty to Provide Information**

The permittee shall furnish to the Administrator, within a time specified by the Director, any information which the



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Administrator may request to determine compliance with this permit. The permittee shall also furnish to the Administrator upon request copies of records required to be kept by this permit.

G. **Other Information**
When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in any report to the Director, he or she shall promptly submit such facts or information.

H. **Signatory Requirements**
All Discharge Monitoring Reports, storm water pollution prevention plans, reports, certifications or information either submitted to the Administrator or that this permit requires be maintained by the permittee, shall be signed by:

1. either a principal executive officer or ranking elected official.

2. a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director.

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

   c. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new notice of intent satisfying the requirements of this paragraph must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

I. **Certification**
Any person signing documents under this section shall make the following certification:



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"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

J. **Penalties for Falsification of Reports**
Section 309(c)(4) of the Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or by both.

K. **Penalties for Falsification of Monitoring Systems**
The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the CWA.

L. **Oil and Hazardous Substance Liability**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA or section 106 of CERCLA.

M. **Property Rights**
The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

N. **Severability**
The provisions of this permit are severable, and if any provision of this permit, or the application of any provision



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of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

O. Requiring an individual permit

1. The Administrator may require the permittee authorized by this permit to obtain an individual NPDES permit. Any interested person may petition the Administrator to take action under this paragraph. The Director may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form (as necessary), a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit, coverage under this permit shall automatically terminate. Individual permit applications shall be submitted to the address of the appropriate Regional Office shown in Part V.D. of this permit. The Administrator may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application as required by the Administrator, then the applicability of this permit to the individual NPDES permittee is automatically terminated at the end of the day specified for application submittal.

2. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application as specified by 40 CFR 122.26(d) with reasons supporting the request to the Administrator. Individual permit applications shall be submitted to the address of the appropriate Regional Office shown in Part V.D. of this permit. The request may be granted by the issuance of a individual permit if the reasons cited by the owner or operator are adequate to support the request.

P. State/Environmental Laws

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Act.



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2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

Q. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

R. Monitoring and records

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. The permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Administrator at any time.

3. Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;

   b. The initials or name(s) of the individual(s) who performed the sampling or measurements;

   c. The date(s) analyses were performed;

   d. The time(s) analyses were initiated;

   e. The initials or name(s) of the individual(s) who performed the analyses;

   f. References and written procedures, when available, for the analytical techniques or methods used; and



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g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

S. **Monitoring Methods**
Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

T. **Inspection and Entry**
The permittee shall allow the Administrator or an authorized representative of EPA, or the State, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and,

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

U. **Permit Actions**
This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

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## PART VII. PERMIT MODIFICATION

A. **Modification of the Permit**
The permit may be reopened and modified during the life of the permit to address:

1. changes in the State's Water Quality Management Plan, including Water Quality Standards;

2. changes in State or Federal statutes or regulations;

3. add a co-permittee who is the owner or operator of a portion of the MS4;

4. changes in portions of the storm water management program that are considered permit conditions; or

5. other modifications deemed necessary by the Administrator to meet the requirements of the Clean Water Act.

All modification to the permit will be made in accordance with 40 CFR 122.62, 122.63, and 124.5.

B. **Termination of Coverage for a Single Co-permittee**
Permit coverage may be terminated, in accordance with the provisions of 40 CFR 122.64 and 124.5, for a single co-permittee without terminating coverage for other co-permittees.

C. **Modification of Storm Water Management Program(s)**
Only those portions of the SWMPs specifically required as permit conditions shall be subject to the modification requirements of 40 CFR 124.5. Replacement of a failing BMP implementing a required component of the SWMP with an alternate BMP expected to provide at least the same level of performance initially expected of the failing BMP, shall be considered minor modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.63.

D. **Changes in Monitoring Outfalls**
This permit is issued on a system-wide basis in accordance with CWA § 402(p)(3)(i) and authorizes discharges from all portions of the MS4. Since all outfalls are authorized, changes in monitoring outfalls, other than those with specific numeric effluent limitations, shall be considered minor modifications to the permit and will be made in accordance with the procedures at 40 CFR 122.63.



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## PART VIII. DEFINITIONS

"Administrator" means the Regional Administrator.

"Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"CWA" means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.

"Co-permittee" means a permittee to a NPDES permit that is only responsible for permit conditions relating to the discharge for which it is operator.

"Director" means the Regional Administrator or an authorized representative.

"Discharge" for the purpose of this permit, unless indicated otherwise, refers to discharges from the Municipal Separate Storm Sewer System (MS4).

"Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

"Illicit connection" means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

"Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.

"Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

"Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.



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"MS4" is an acronym for "municipal separate storm sewer system" and is used to refer to either a Large or Medium Municipal Separate Storm Sewer System.

"Large or Medium municipal separate storm sewer system" means all municipal separate storm sewers that are either:

(i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or

(ii) located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or

(iii) owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

"Municipal Separate Storm Sewer" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian Tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) designed or used for collecting or conveying storm water; (iii) which is not a combined sewer; and (iv) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

"Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

"Storm sewer", unless otherwise indicated, refers to a municipal separate storm sewer.

"Storm Water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

"SWMP" is an acronym for "Storm Water Management Program."



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"Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

"Waste pile" means any noncontainerized accumulation of solid, nonflowing waste that is used for treatment or storage.

"Waters of the United States" means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(b) All interstate waters, including interstate "wetlands";
(c) All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
(1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
(3) Which are used or could be used for industrial purposes by industries in interstate commerce;
(d) All impoundments of waters otherwise defined as waters of the United States under this definition;
(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
(f) The territorial sea; and
(g) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal areas in wetlands) nor resulted from the impoundment of waters of the United States.

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date of draft: March 17, 1995

**DRAFT**

**FACT SHEET**

**STATE OF WASHINGTON**

**DEPARTMENT OF ECOLOGY**

**FACT SHEET FOR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) AND STATE WASTE DISCHARGE GENERAL PERMITS FOR STORMWATER DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWERS LOCATED IN:**

1. **THE CEDAR-GREEN WATER QUALITY MANAGEMENT AREA AND THE PORTION OF THE KITSAP WATER QUALITY MANAGEMENT AREA LOCATED IN KING COUNTY**

2. **THE SOUTH PUGET SOUND WATER QUALITY MANAGEMENT AREA AND THE PORTION OF THE KITSAP WATER QUALITY MANAGEMENT AREA LOCATED IN PIERCE COUNTY**

3. **THE SNOHOMISH WATER QUALITY MANAGEMENT AREA AND THE PORTION OF THE SKAGIT WATER QUALITY MANAGEMENT AREA LOCATED IN SNOHOMISH COUNTY**

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## I. PUBLIC INVOLVEMENT OPPORTUNITIES

The Department of Ecology (Ecology) has scheduled the following public workshop and public hearing for the proposed permits:

| Public Workshop | | Public Hearing | |
|---|---|---|---|
| Date: | April 20, 1995 | Date: | April 27, 1995 |
| Time: | 7 p.m. | Time: | 7 p.m. |
| Location: | Ecology Northwest Regional Office 3190 160th Ave. S.E. Bellevue, WA | Location: | Ecology Northwest Regional Office 3190 160th Ave. S.E. Bellevue, WA |

The workshop will explain the need for and requirements of the permits. The workshop participants will have the opportunity to ask questions of and converse with Ecology staff members concerning the proposed permits. This is an informal process.

At the public hearing, Ecology staff will once again explain the need for and requirements of the permits. Then an opportunity for formal public comment will commence. Ecology staff will not be able to respond to comments or questions during the public hearing. Comments will be recorded and transcribed into an official public record. Written comments will be accepted through May 5, 1995. All oral comments made during the hearing, and written comments provided by the May 5, 1995 deadline, will be considered by Ecology. A written record of all comments and Ecology's response will be prepared and distributed to those who commented and others indicating interest.

Ecology anticipates issuing the permits in June. After issuance of the permits, Ecology will conduct workshops, a public hearing, and provide an opportunity for public comment prior to making a decision on approval or disapproval of each permittee's stormwater management program. The hearings on the proposed programs are not scheduled to occur until early 1996 for the King Co. and Seattle programs, and in mid-1996 for the Snohomish Co., Pierce Co., Tacoma, and Washington State Department of Transportation programs. An opportunity for public comment will also be provided prior to making a decision on any significant modifications to an approved stormwater management program.

## II. PURPOSE OF THE PERMIT

These permits authorize the discharge of stormwater from municipal separate storm sewers owned or operated by the permittees, to surface and ground waters of the State of Washington. As required by §402(p)(3) of the Clean Water Act, discharges covered under these permits must effectively prohibit non-stormwater discharges into storm sewers, and must apply controls to reduce the discharge of pollutants to Waters of the U.S. to the maximum extent practicable. As authorized by RCW 90.48.030 and .162, Ecology is also



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rainfall and snowmelt). There are a wide range of pollutants in stormwater, and concentrations vary depending on storm events. Further difficulty in controlling municipal stormwater discharges comes from the large number of outfalls where stormwater is being discharged (hundreds or even thousands of outfalls within a city are typical). These features of stormwater runoff make conventional end-of-pipe treatment options that are applied to traditional wastewater discharges difficult, and often they are not cost-effective to apply to stormwater.

Two basic control options exist for stormwater. One is to prevent pollutants from coming into contact with stormwater in the first place by using source control best management practices (BMPs). The second option is treatment BMPs. Source control BMPs include activities as diverse as changing vehicle and equipment maintenance activities to prevent the leaking of oil or other fluids; landscape design, installation, and maintenance to minimize stormwater runoff; product replacement or substitution (e.g., replace roofs that are sources of copper contamination with roofs that have no copper in them); land use zoning to reduce the intensity of urbanization in sensitive watersheds; covering up materials that are stored outside and exposed to rainfall and runoff; and prohibiting or restricting the use of certain chemicals that are causing a pollution problem (e.g., pesticides, or phosphorus in watersheds that drain to lakes). Where source control BMPs are feasible, they can be very effective in preventing stormwater contamination.

Treatment BMPs include detention or retention ponds, filtration, and infiltration devices that are designed to capture runoff and treat it using physical, biological, and/or chemical processes. The effectiveness and feasibility of treatment BMPs is variable, subject to some debate, and much remains to be learned. Treatment BMPs can be very costly to design, build, maintain, and operate.

In summary, the complexity inherent in stormwater discharges, and the difficulty of controlling such discharges means that it will take many years to fully implement a program which adequately mitigates or prevents their adverse environmental impacts.

Clean Water Act Amendments of 1987 and Subsequent Rulemaking by U.S. EPA

Amendments to the Clean Water Act in 1987 established new statutory requirements to control industrial and municipal stormwater discharges to waters of the United States. Waters of the United States include most surface water bodies and ground waters that are hydrologically connected to surface waters. Municipalities with separate storm sewers serving populations of 100,000 or greater are required to have a National Pollutant Discharge Elimination System (NPDES) permit to discharge stormwater. Municipalities with populations of 250,000 or more are defined as "large" while those with populations between 100,000 and 250,000 are defined as "medium" municipalities. The U.S. EPA proceeded to implement 402(p) of the Clean Water Act through a rulemaking process which culminated in finalization of the stormwater rule in November 1990. The rule went into effect on



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December 17, 1990.

U.S. EPA implementing regulations define the term "municipality" to mean incorporated cities and unincorporated counties that have sufficient population in a Census Bureau designated urbanized area to meet the population thresholds. In addition, other public entities (excluding incorporated cities) that own and operate storm sewer systems located within the municipalities that meet the population thresholds are also required to be covered under the permit program. The basis for the permit requirement is being located within the municipalities with large populations. Examples of other publicly-owned storm sewer systems include state highway systems, drainage districts, and flood control districts located within named municipalities. Permit application requirements are identical for medium and large municipalities with the exception that the permitting process started six months earlier for large municipalities.

Recognizing the complexity of controlling stormwater, Congress and the U.S. EPA have established a regulatory framework for municipal stormwater discharges that is very different from traditional NPDES permit programs. Some of the key provisions of the stormwater rule that reflect these differences are:

- Permits are to require the implementation of stormwater management programs rather than establishing numeric effluent standards for stormwater discharges (40 CFR 122.26(d)(2)(iv)).
- Permits are to cover a large geographic area rather than individual "facilities." Within a permit coverage area there will be hundreds or even thousands of individual outfalls discharging stormwater (40 CFR 122.26(a)(3)).
- Flexibility that allows permittees to first focus their resources on the highest priority problems (40 CFR 122.26(d)(2)(iv)).
- A watershed approach is allowed, even encouraged, to comprehensively manage stormwater (40 CFR 122.26(a)(3) & (d)(2)(iv)).
- Pollution prevention is emphasized with some provisions requiring eliminating or controlling pollutants at their source and by requiring permittees to assess potential future impacts due to population growth and other factors (40 CFR 122.26(d)(2)(iv)(B) & (d)(1)(iii)).

Chapter 90.48 RCW - The Water Pollution Control Act

Along with requirements in federal law, there are state law requirements for the control of pollution. RCW 90.48.080 states that it is unlawful for any person to discharge anything which causes pollution of waters of the state. Ecology is granted authority to control pollution and protect all waters of the state in RCW 90.48.030. In addition, RCW 90.48.162 states that municipalities are to obtain permits from Ecology for discharges of pollutants or waste materials to waters of the state. The Waste Discharge General Permit Program regulation, Chapter 173-226 WAC, establishes a permit program applicable to the discharge



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of pollutants, wastes, and other materials to waters of the state. Prior to issuance of these permits the state has not regulated municipal stormwater as a point source discharge under the state waste discharge permit program. The federal government decision to control municipal stormwater through NPDES permits created incentive for application of Ecology's authority under RCW 90.48.162 to municipal stormwater.

RCW 90.48.035 grants Ecology authority to adopt standards for the quality of waters of the state. Ecology has adopted the following standards: Ch. 173-200 WAC Ground Water Quality Standards; Ch. 173-201A WAC Water Quality Standards for Surface Waters; and Ch. 173-204 WAC Sediment Management Standards. These standards generally require that permits that are issued by Ecology are to ensure that standards are not violated or a compliance schedule is put in place to bring discharges into compliance.

Description of the Municipal Stormwater Permit Application Requirements and Procedures

The following is a summary of the permit application requirements and procedures from the federal rule, 40 CFR 122.26.

The issuance of a municipal stormwater NPDES permit is a multi-step procedure that occurs over a lengthy time period (typically three years) and is composed of a two-part application (Part 1 and Part 2) that forms the basis for the permit conditions. The following is a summary of the procedure:

1. Ecology or EPA notifies an applicant to submit a Part 1 application. At least one year is allowed for preparation of the Part 1 application.
2. Applicant submits a Part 1 application to Ecology. Part 1 applications for large municipalities were due November 18, 1991, medium municipalities on May 18, 1992.
3. Applicant submits a Part 2 application one year after submitting the Part 1 application. Part 2 applications for large municipalities were due November 16, 1992, medium municipalities on May 17, 1993.
4. Ecology reviews the Part 2 application and issues a draft permit within one year of receiving a complete Part 2 application.
5. Upon completion of a formal public review process the permit is issued.

The permittees named in Special Condition S3.A. of this permit submitted timely applications in accordance with the federal deadlines listed above.

The Part 1 application requires an assessment of the applicant's current stormwater management program and legal authority. It requires the applicant to submit the results of a field screening program intended to detect illicit (non-stormwater) discharges to municipal separate storm sewers. Mapping of outfalls from the municipal separate storm sewer system and sources of contamination to the system is required. In addition, a sampling program



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must be proposed that will be used to characterize the quality of stormwater discharges for a limited number of outfalls. Ecology has 90 days to approve or deny the proposed discharge characterization program.

In the Part 2 application, the applicant is required to submit a proposed stormwater management program, demonstrate adequate legal authority to support the management program and other regulatory requirements, conduct an assessment of controls, provide a fiscal analysis for the term of the permit (typically five years), and submit the characterization data. The stormwater management program required under these permits is based upon the program description required in the Part 2 application. A description of the differences between the application requirements and the program required under this permit is found in the discussion of special condition S7, below.

The Part 1 and Part 2 applications are complementary and form the basis for the permit conditions, especially the requirement to propose a stormwater management program, or SWMP.

## IV. NPDES AND STATE WASTE DISCHARGE PERMITS

Under agreement with U.S. EPA - Region X, Ecology has the authority to authorize discharges to waters of the U.S. by issuing NPDES permits for those discharges. Ecology also has authority under state law to issue State Waste Discharge permits for discharges to state surface waters and ground waters. These permits are issued under both authorities.

This allows Ecology to not only regulate discharges to surface waters under the permits, but also to regulate discharges to the ground. Discharges to ground are covered under the permit because portions of the areas regulated under these permits may include discharges of stormwater to the ground from municipal separate storm sewers. It is appropriate that the stormwater management programs that are required under these permits should apply area-wide, regardless of where water is discharged, and that measures are taken to reduce the discharge of pollutants to ground as well as surface waters.

Along with discharges to surface water, the implementation of controls for discharges to ground will be subject to a set of identified priorities for the stormwater management program of each permittee. Where stormwater discharges to ground are not identified as a priority concern, it is likely that controls will be minimal in the initial stormwater management programs. However, actions to minimize the potential for ground water quality impacts resulting from stormwater discharges should be part of a long-term stormwater management program.



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## V. ECOLOGY'S WATERSHED-BASED PERMITTING STRATEGY

Ecology has chosen to issue three watershed-based municipal stormwater NPDES general permits. A general permit is being used as the mechanism to cover a category of dischargers (and, therefore, multiple permittees) under a single permit for a discrete geographic area as allowed under WAC 173-226-050. The permit coverage area generally follows the boundaries of a single water quality management area, however, exceptions have been made to allow efficient coverage of the entire municipal separate storm sewer system. (See maps in appendices B and C)

These permits are being issued to cover entire watersheds, but they do not cover discharges from all the municipalities in the named watersheds. This initial municipal stormwater permitting action applies only to municipalities named under the U.S. EPA stormwater regulations. As the need for coverage of more municipal stormwater discharges is identified through future U.S. EPA regulations or the Clean Water Act reauthorization, additional permittees will be added either during this five-year permit cycle or when the permits are reissued. However, federal laws give Ecology the option, should we chose to use it, of requiring more municipalities to apply for coverage because of the interrelationship between the municipal separate storm sewers, or where it is found that the discharge contributes to a violation of a water quality standard, or is a significant contributor of pollutants to waters of the U.S. In addition, an outside party may petition Ecology to designate a municipality located within a watershed that includes a named permittee. (ref. 40 CFR 122.26(b)(4) and (7)). Ecology does not intend to use these additional options in the foreseeable future.

There are two major reasons for issuing permits on a watershed basis. The first is that Ecology believes a watershed approach to stormwater management will, in the future, result in better water quality for waters of the state. The second is to integrate stormwater management into Ecology's watershed approach to water quality permitting, and more efficiently use state resources allocated to this program.

To control stormwater impacts on water bodies it will be necessary to eventually address activities in an entire watershed. Restricting permits to jurisdictional boundaries would not allow this to occur. Coordinating management activities throughout the watershed, and addressing the cumulative impact of municipal stormwater discharges from several jurisdictions to a large, downstream waterbody is a necessary part of reducing the discharge of pollutants.

Ecology recognizes that a truly regional program is not possible without including all jurisdictions in these watersheds under the permit. Therefore, these permits represent the initial stage of watershed-wide coordination and are limited to activities that a subset of jurisdictions in the watershed can do. As more permittees are added in the future, coordination will become a more important part of the permits.

In addition to issuing watershed-based municipal stormwater permits, the Water Quality



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Program at the Department of Ecology has adopted a watershed approach to all water quality permit activities. Twenty three water quality management areas have been delineated to cover the entire state. A water quality management area is a large watershed or grouping of watersheds identified as a management unit. Each water quality management area is put onto a five-year cycle that starts with information, monitoring, modeling and analysis, and culminates with issuing permits for all dischargers in the watershed. After permit issuance, the cycle begins again.

With this approach, permits will reflect a broader understanding of water quality problems in the entire watershed. As knowledge about the watershed increases, over several permit cycles, changes in permit requirements can be made to ensure water quality goals are met. In addition, synchronizing the steps in the five-year cycle for a relatively large area will make more efficient use of state resources. Integrating municipal stormwater permitting into this "watershed approach" will improve the information base for the watershed by using the information collected under the stormwater permits, and allow Ecology to make decisions about water quality needs that take into account process wastewater and other discharges, as well as stormwater. Ecology will, in the future, integrate the municipal stormwater permits into the five-year cycle of the overall watershed approach.

## VI. ECOLOGY'S APPROACH TO ISSUING MUNICIPAL STORMWATER NPDES PERMITS

The federal stormwater rules envisioned a process where municipal stormwater management programs are reviewed and approved by the permitting agency before permits are issued. Ecology has chosen to issue permits before approving stormwater management programs and provide a public involvement process during approval of the stormwater management programs. Ecology has chosen this approach to issue permits in as timely a manner as possible.

Section 402(p)(4)(B) of the federal Clean Water Act required the issuance or denial of NPDES permits for large municipalities by February 1991, and for medium-sized municipal separate storm sewer systems not later than February 1993. We have missed those deadlines. Federal rules extended the deadlines, stating that permits were to be issued within one year of receipt of a complete Part 2 application. The Part 2 deadline for large municipalities was November 16, 1992; for medium municipalities, it was May 17,1993. Due to limited resources and the fact that program requirements are in the developmental stage for this new initiative, review and approval of programs prior to issuance of the permits would further delay compliance with these deadlines.

The conditions of the permits establish a definition of a stormwater management program, and set deadlines and compliance schedules for stormwater management program approvals during the term of the permits. Ecology has taken this approach to comply with the statutory requirements in the Clean Water Act to issue permits.



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The deadlines for Ecology's approval of the permittees' stormwater management programs are set for approximately one year after permit issuance for large municipalities, and 18 months after permit issuance for medium municipalities. These deadlines were intended to prevent the program approval process from extending too long during the term of the permits. Ecology's intention is to address program review and approval as quickly as possible. In addition, the program approval process will include an opportunity for public comment on each of the permittee's proposed stormwater management program. Prior to making a final decision on a proposed stormwater management program, Ecology will hold workshops, a public hearing, and advertise a public comment period. Ecology's decision to approve or disapprove a stormwater management program is appealable under the provisions of RCW 43.21B.110.

As required under 40 CFR 122.26, other publicly-owned storm sewers located in the municipalities named as permittees must also obtain an NPDES permit to discharge stormwater. In addition to state highways, this requirement applies to special districts such as drainage districts and flood control districts that own or operate conveyances discharging into waters of the state. Ecology recognizes that there may be special districts which need a permit but did not submit application materials, or participate with another permittee as a co-applicant (see permit definitions). It will be necessary for these entities to obtain a permit. Ecology intends to work with these entities to identify those that require a permit and to assist with the application process.

## VII. DISCUSSION OF PERMIT CONDITIONS

Summary

These municipal stormwater NPDES permits require the development and implementation of stormwater management programs for municipal separate storm sewers owned or operated by the permittees. The stormwater management programs must be approved by Ecology. The permittees are to identify participation in watershed-wide coordination activities to the extent appropriate at this early stage of watershed permit implementation. Implementation of approved stormwater management programs constitutes reduction of pollutants to the maximum extent practicable (MEP) during the life of the permit, as required in section 402(p)(3)(B) of the federal Clean Water Act.

The conditions defining the stormwater management program requirements are based on U.S. EPA regulations for the municipal stormwater permit program (CFR title 40, §122.26), on the stormwater elements of the Puget Sound Water Quality Management Plan, and on the State Water Pollution Control Act, Chapter 90.48 RCW. The stormwater management program must include: program priorities that reflect an appropriate balance between prevention and correction; program components to control pollutants in accordance with approved priorities; adequate legal authority and fiscal resources; a monitoring program; and an implementation schedule.



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S1 - Permit Coverage Area - **for Cedar/Green permit**

As authorized by Section 402 (p) of the federal Clean Water Act, this permit is being proposed on a system basis. Ecology has chosen to issue the permit to cover a water quality management area as defined under Ecology's watershed approach to water quality management (see discussion of Ecology's watershed based permitting strategy above). Within this water quality management area, during this first round of municipal stormwater permits, the permit applies only to municipalities named under the U.S. EPA stormwater regulations. Therefore, the permit initially applies only to those areas served by or contributing to municipal separate storm sewers owned or operated by the permittees listed in Special Condition S3.

Application of permit requirements to discharges from municipal separate storm sewers owned by the Washington State Department of Transportation (WSDOT) is limited to those storm sewers located within the regulated area of the other named permittees. This is a result of the federal stormwater regulations requiring coverage of other publicly owned storm sewers where they are located in municipalities over 100,000 population.

A permit is required for discharges from all the municipal separate storm sewers owned or operated by the Cities and Counties named as permittees. For efficient coverage of all of King County, Vashon Island is included under this permit even though it is not in this water quality management area. This area is part of the Kitsap water quality management area, and the majority of the Kitsap peninsula is not required to have coverage under the municipal stormwater NPDES permit program. Other portions of unincorporated King County and Snohomish County that are not covered under this permit will be covered by another watershed-based municipal stormwater permit.

S1 - Permit Coverage Area - **for Island/Snohomish permit**

As authorized by Section 402 (p) of the federal Clean Water Act, this permit is being proposed on a system basis. Ecology has chosen to issue the permit to cover a water quality management area as defined under Ecology's watershed approach to water quality management (see discussion of Ecology's watershed based permitting strategy above). Within this watershed, during this first round of municipal stormwater permits, the permit applies only to municipalities named under the U.S. EPA stormwater regulations. Therefore, the permit initially applies only to those areas served by or contributing to municipal separate storm sewers owned or operated by the permittees listed in Special Condition S3.

Application of permit requirements to discharges from municipal separate storm sewers owned by WSDOT is limited to those storm sewers located within the regulated area of the other named permittees. This is a result of the federal stormwater regulations requiring coverage of other publicly owned storm sewers where they are located in municipalities over 100,000 population.



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Named permittees - South Puget Sound general permit:

The permittees listed in Special Condition S3.A. are the municipalities and public entities that are required to obtain a permit in accordance with 40 CFR 122.26(b)(4) and (b)(7). The named permittees for the South Puget Sound general permit are Tacoma, Pierce County, King County, and WSDOT.

Other permittees - all permits:

In addition to the permittees named in Special Condition S3.A., there are other potential permittees which may be required by Ecology or U.S. EPA to obtain coverage under this permit. These are addressed in special condition S3.B. There are three circumstances under which owners or operators of municipal separate storm sewers may be required to obtain coverage:

1. Ecology has authority under 40 CFR 122.26 (b)(4) and (b)(7) to designate other municipalities under the permit program because of interconnections, location in relation to the named permittees, the quality and nature of pollutants discharged, or the nature of the receiving waters. At this time, Ecology has not identified any other municipalities that should be designated for these reasons.

2. Permit coverage is required for discharges from all municipal separate storm sewers located in the municipalities that meet the population threshold for the permit requirement. Municipal separate storm sewers are defined at 40 CFR 122.26(b)(8) to include conveyances owned or operated by a public body having jurisdiction over disposal of stormwater. It is this definition that brings WSDOT and METRO into the permit program. There may be other owners or operators of municipal separate storm sewers located in the area covered by the permit that must be brought into the permit program in the future. As necessary, Ecology will notify and require application information from these public entities.

3. U.S. EPA is scheduled to issue additional stormwater regulations. These regulations are to address stormwater discharges not covered under the current regulations, including discharges from smaller municipalities. If new federal regulations require additional municipalities within any of the water quality management areas to have NPDES permits, those municipalities can obtain coverage under this permit.

Special Condition S3.C. allows any other owners or operators of municipal separate storm sewers (within this watershed) who desire coverage under this permit, to apply to become permittees.

Ecology received a petition requesting that all smaller cities located in the Counties covered under the three watershed permitting areas be designated for inclusion in the permit program. Ecology denied this petition for the following reasons:



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1) U.S. EPA currently requires that only municipalities of population > 100,000 be covered under permit;
2) Ecology has chosen not to pursue coverage of municipalities beyond existing federal requirements;
3) Due to Ecology and local government resource limits, this addition of new municipalities at this time would seriously delay our current efforts and be counterproductive.

Though the smaller local governments are not included in this permit, they are subject to the stormwater program requirements of the Puget Sound Water Quality Management Plan. Many of the requirements of that plan are the same as those required under the permit. We are optimistic that many smaller cities will implement stormwater management programs without being required to do so by an NPDES permit.

S4 - How to Obtain Coverage

To comply with the requirements of Ch. 173-226 WAC, the General Permit Rule, it is necessary for entities to submit an application that contains the information specified in WAC 173-226-200. The Notice of Intent (NOI) is the official permit application document required to request coverage under these general permits and is included in the permits. In addition, entities named in federal stormwater rules, 40 CFR 122.26, must submit permit applications in accordance with those rules. All permittees initially named in this permit have submitted the federal application materials in compliance with the deadlines specified in 40 CFR 122.26. Submitting the NOI and federal application requirements also constitutes application for the state waste discharge permit.

Since these are general permits, it is necessary to provide procedures for other permittees to obtain coverage. These procedures are described in S4.B and C.

As discussed in the section on Special Condition S3 - Permittees, and other public entities may be required by Ecology or U.S. EPA to obtain permit coverage. Where federal rules do not specify application requirements for any entity required to obtain stormwater permit coverage, Ecology will identify those requirements as stated in S4.B.1.b. Some public entities may choose to pursue co-permittee status with one of the named permittees. Entities may elect to become a co-permittee to be able to jointly manage stormwater with others in the basin, or because the entity does not have adequate legal authority to control discharges into their storm sewers. Co-permittees must supplement the application information of the existing permittee.

Entities which are not required to obtain a stormwater permit, but which desire coverage under one of these general permits, are only required to submit an NOI. If granted coverage under the permit, these permit volunteers will be given a compliance schedule to develop a stormwater management program.



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S5 - Responsibilities of Permittees

Since there are multiple permittees, this section is included to explain the responsibilities of each permittee. Co-permittees, in particular, are responsible only for discharges from municipal separate storm sewers which they own or operate, and together with the municipality they are located in, must be able to achieve full compliance with the requirements of the permit. Co-permittees are also required to have an agreement with the municipality they are located in, clarifying the responsibilities of each party for compliance with the terms of the permit.

S6 - Compliance with Standards

The municipal stormwater NPDES permit program involves the regulation of a large number of discharges under a single area-wide permit. This approach is different from any other NPDES permits previously issued and presents many challenges for state and local governments. The inherent difficulties in controlling stormwater discharges, as described earlier in the background section, means that it will take many years to fully implement a municipal stormwater permit program which achieves all the objectives of the U.S. EPA stormwater regulations, the federal Clean Water Act, and state law. Though some local governments and the state have had programs to reduce stormwater impacts, particularly in the Puget Sound Basin, this permit represents a commitment, and a significant step towards achieving these objectives.

To achieve the objectives of the Clean Water Act, Congress decided that discharges from municipal separate storm sewers must meet all applicable provisions of sections 402(p) and 301(b)(1)(c) of the Act. These provisions require a prohibition on non-stormwater discharges in municipal storm sewers, controls to reduce the discharge of pollutants to the maximum extent practicable (MEP), and any more stringent limitations necessary to meet water quality standards. Neither Congress nor EPA have defined what is meant by "maximum extent practicable" (MEP). Therefore, it is left for Ecology to determine what is expected of permittees to comply with these standards.

A. State law requires all dischargers, including stormwater dischargers, to apply all known, available, and reasonable (methods) of treatment (AKART) to prevent and control the pollution of waters of the state (RCW 90.48.010).

   "MEP" (the federal requirement) and "AKART" (the state requirement) are technology-based statutory requirements. Traditionally, Ecology determines, or uses a U.S. EPA determined, specific effluent quality which it considers as achieving such technology-based statutory requirements.

   Given the large number of municipal storm sewers covered by this permit, the wide



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variation in quantity and quality of these discharges, the lack of adequate data on stormwater quality, the impacts of stormwater from all these discharges, and the uncertainty and variability of the pollutant removal effectiveness of currently accepted BMPs, it is not feasible at this time to establish specific numeric effluent quality limitations for municipal stormwater discharges. Therefore, the permit requires the development and implementation of stormwater management programs which include the implementation of BMPs and other program components. Ecology will consider compliance with these requirements as meeting the technology-based requirements of MEP and AKART.

MEP is likely to be defined differently in future permits as our ability to control stormwater discharges improves, or if a federal definition of MEP is adopted.

As required by the Puget Sound Water Quality Management Plan, Ecology has adopted a manual which defines appropriate BMPs for addressing stormwater erosion and sediment control, runoff control, and control of pollution from urban land uses. Under the Puget Sound Water Quality Management Plan, local governments in the Puget Sound Basin are required, subject to the availability of local funding, to adopt this manual, or an equivalent manual for control of stormwater from new development, redevelopment, and construction sites. To date, Ecology has approved, or conditionally approved, four local government manuals as equivalent to Ecology's manual. Five other manuals, including manuals from Tacoma, Pierce County, Seattle, and King County are currently under review. The adoption and implementation of BMPs in these manuals by these entities is considered justification that the requirement is known, available, and reasonable.

B. Attaining compliance with water quality standards presents an even greater challenge than compliance with technology-based requirements. State law requires application of any more stringent limitations necessary to meet all applicable water quality standards, including surface water, ground water, and sediment management standards. In this state, U.S. EPA sanctioned water quality standards include surface water and sediment management standards. Compliance with ground water standards is a state requirement and not a federal requirement. The implementation of the existing, known, available and reasonable BMPs and other strategies will not likely be sufficient to attain compliance with the present surface and ground water quality and sediment quality standards at many discharge locations. Ecology's permitting strategy to achieve compliance with standards is:

- To require permittees to adopt stormwater management programs consisting of priorities and an implementation schedule to address all components of special condition S7 selected for implementation during the first permit cycle.

- To assess the success of those programs through monitoring and other evaluation efforts.



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- To require in subsequent programs, re-evaluations of the priorities of the stormwater management program and the level of effort in some program components in light of monitoring and evaluation results.

- To require in subsequent programs, implementation of more effective BMPs as they are developed.

- To evolve towards compliance with standards through successive permit cycles and program updates.

This strategy is to be implemented through this and subsequent permits. Regulations implementing the standards allow compliance schedules to meet them.

Finally, it is fair to note that achieving compliance with standards for some pollutants may require source control strategies which extend beyond the authority of the permittees. Possible examples of this include pollutants generated by internal combustion engine exhaust, tire wear, and brake wear.

C. This condition delineates that the permittees' stormwater discharges to surface water are regulated by federal and state statutes and regulations. Compliance with ground water standards is regulated only by state authority. However, it is U.S. EPA policy that where hydraulic connectivity exists between surface water and ground water, discharges to ground water can be regulated under federal Clean Water Act authority to meet surface water quality and sediment management standards.

S7 - Stormwater Management Program

A. The federal stormwater rules require a description of a stormwater management program to cover the duration of these permits. This section requires each permittee to develop and implement a stormwater management program. The stormwater management program forms the core requirement of these permits. As part of the approval process for each stormwater management program, Ecology and each permittee will hold a public hearing as an opportunity for public comment on the content of the proposed program. Ecology follows the procedures for public hearings in the Administrative Procedures Act, Ch. 34.05 RCW.

B. This section defines a stormwater management program as a plan for the term of the permit, and spells out the components of a stormwater management program. Each permittee is to propose a plan which describes how and when it will implement priority program components. The planning period is the term of the permit, approximately from 1996 to 2000.



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Conditions S7.B.1 through 7 describe program components which are necessary administrative, legal, or evaluation measures. All of these components must be included in a stormwater management program. Special Conditions S7.B.8 a.-i. describe program components which should directly effect pollutant reductions. The level of effort for these stormwater control components should be determined with regard to program priorities and in light of budget limitations.

The permittees named in Special Condition S3.A. have existing stormwater programs. It is likely that they will have to modify their programs to meet some of these permit requirements. It is unrealistic to expect permittees to immediately have stormwater management programs that satisfy each of the required components.

Ecology anticipates that permittees will phase-in program implementation. As further explained later in this fact sheet, permittees will have 12 to 18 months after permit issuance to gain Ecology approval for their stormwater management program. The program should describe the permittee's proposed method for implementing program components which have been identified as priorities based on local water quality needs. The program should also identify steps necessary to phase in implementation, and a schedule for those steps. Depending on identified needs and budget restrictions (see explanation under S7.B.5., below), the plan may not include efforts in all the program components listed in this condition.

Ecology and permittees have discussed what is expected for stormwater management program submittals for the first permit. A document has been written to provide clarification in interpreting permit conditions and reviewing stormwater management programs that will be submitted by permittees. The document contains recognized problems and constraints affecting stormwater program development, long-term outcomes for the components of the program, and short-term expectations for the stormwater management program for the first permit. The permittees and Ecology recognize that the permits and stormwater management programs will be subject to public review. In addition, the permittees and Ecology may modify the expectations document as a result of comments received from the public or experience gained during the course of permit implementation. A copy of this document is available from Ann Wessel at the Department of Ecology (360) 407-6457.

In addition to the expectations document developed among all permittees, a more specific Memorandum of Understanding is being prepared with the Washington State Department of Transportation. The purpose of the MOU is the same as the expectations document, with additional specificity for WSDOT. The Department of Transportation is unique among the permittees since they are included under all permits being issued, and have only one primary type of land use. A copy of the draft MOU will be available, upon request, when it is completed. Contact Ann Wessel at the above number to arrange to receive a copy.



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Stormwater management program components S7.B.3, 8b, 8d, 8e, and 8f are drawn directly from federal regulations (40 CFR 122.26) or the Puget Sound Water Quality Management Plan. Explanation of the reasons for including these components in a stormwater management program is found in the preamble to the U.S. EPA stormwater regulations published in the Federal Register on November 16, 1990, and in the Puget Sound Water Quality Management Plan. The remaining program components are either a modification of a federal rule, or Puget Sound Plan provision, or drafted specifically for this permit. These warrant further explanation, and are discussed below.

S7.B.1. - Comprehensive Planning Process

The federal stormwater rules call for a description of the comprehensive planning process used to develop the stormwater management program. Ecology has included this requirement as part of the stormwater management program, and added a request for additional information about the relationship to other planning processes. Given the interconnection of stormwater issues with decisions regarding land use and transportation, it is reasonable to expect that other planning processes, including the Growth Management Act, will play a part in development of the local stormwater management program.

S7.B.2. - Stormwater Management Needs and Priorities

This condition requires permittees to assess their stormwater needs, to prioritize those needs, and to develop an implementation plan and schedule based on those prioritized needs. The needs analysis, priority system, and the resultant implementation plan and schedule are subject to Ecology review.

Though the permits establish a list of program components as requirements for stormwater management programs, local governments are given the flexibility to set priorities for their program. Program priorities should be based on what is known about water quality threats and impairments and sources of pollution to discharges from the permittees' municipal separate storm sewers. Program priorities can determine the level of effort and the implementation schedule for different parts of the stormwater management program requirements. They should help establish the basis for monitoring to evaluate the effectiveness of the local programs. To make progress toward achieving state and federal water quality objectives, stormwater management programs must include problem prevention and problem correction aspects.

The Department of Transportation has responsibility for stormwater runoff from highway systems throughout the state. WSDOT has prioritized stormwater quality projects state-wide and not all projects are located in watersheds covered by permits. Ecology has agreed that state-wide priorities are acceptable, and that may mean having higher priority projects outside of the area under permit.



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The federal stormwater rules require an implementation schedule for the program to reduce pollutants from commercial and residential areas. However, the rules do not call for an implementation schedule for all components of the stormwater management program. Since the stormwater management program is the core requirement for these permits, Ecology considers it reasonable to require an implementation schedule for the proposed program for the term of the permit.

S7.B.4. - Monitoring

The federal stormwater rules require municipalities to propose a stormwater monitoring program for the term of the permit (40 CFR Part 122.26(d)(2)(iii)(D)). However, few specific requirements of such programs are listed. In the preamble to the federal rule (See pages 48049 - 48052 of the Federal Register, Volume 55, No. 222, November 16, 1990) U.S. EPA indicates that they favor ... " a permit scheme where the collection of representative data is primarily a task that will be accomplished through monitoring programs during the term of the permit." In the same text, they indicate that "an estimate of annual pollutant loading associated with discharges from municipal stormwater sewer systems is necessary to evaluate the magnitude and severity of the environmental impacts of such discharges and to evaluate the effectiveness of controls which are imposed at a later time."

Ecology concurs with these statements and has written this condition to establish broad monitoring objectives. Specifics concerning monitoring strategies for each discharger will be established in their respective stormwater management programs. This is appropriate because monitoring needs may vary among the permittees, and because the science of monitoring stormwater discharges and their impacts is new and still developing.

The development of cost-effective and meaningful strategies for monitoring is the subject of much nationwide debate. Ecology wants permittees to make maximum use of evolving information and strategies in establishing their monitoring programs. The U.S. EPA rules imply, and U.S. EPA guidance assumes that some monitoring for chemical constituents in stormwater is necessary. Ecology concurs with this view. However, there also may be cost-effective and useful biological and visual monitoring methods that can be employed by the permittees. Also, there may be opportunities to complement and coordinate with Ecology ambient monitoring efforts.

Because Washington has adopted sediment management standards for marine waters, and is developing similar standards for fresh waters, the scope of monitoring programs must include assessing sediment impacts. Also, because this permit covers stormwater discharges to ground, the scope of monitoring programs should include impacts to ground water. A monitoring program to adequately cover all these needs in this permit cycle would be overwhelming. Ecology expects that in this first permit, permittees will establish monitoring programs which are focused on their identified



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priorities.

All the monitoring objectives listed in these permits remain applicable in the long run, regardless of those identified priorities. Knowledge of pollutant loads and of average event mean concentrations from representative areas drained by the municipal storm sewer system are necessary to gauge whether the stormwater management program is making progress towards the goal of reducing the amount of pollutants discharged. On a smaller scale, we also need to determine the effectiveness of specific BMPs in reducing pollutant discharges and receiving water impacts. The third objective, identification of significant pollution sources, is already a Puget Sound Water Quality Management Plan requirement.

Finally, there is a need to evaluate the effect of stormwater on receiving waters, and assess progress toward the ultimate goals of protecting the receiving waters, aquatic habitat, aquatic resources, and their beneficial uses. Receiving water monitoring can include surveys of streambed physical characteristics, chemical analyses of water and sediment quality, and various types of biological monitoring (e.g., bioassays and stream surveys). Modeling efforts may help predict likely impacts and aid development of strategies to avoid impacts. Results of monitoring will be used by the permittee to reassess stormwater management program priorities, and to evaluate and modify the stormwater management program.

The expenditure of large amounts of money on stormwater management programs makes it imperative that we allocate a reasonable amount of resources to determine program effectiveness. Although the scope of each permittee's monitoring program is yet to be established, Ecology anticipates that the sampling and analysis costs could be at least in the tens of thousands of dollars per year. Permittees may be able to realize some cost savings through cooperative monitoring agreements with other permittees and Ecology. Ecology sees potential cost savings in avoiding duplicative monitoring for BMP effectiveness (subparagraph b) and for impacts on shared waterbodies (subparagraph d). Also, permittees are encouraged to share field and laboratory staff expertise, time, and material resources. Coordination with Ecology monitoring efforts may also help with cost savings.

S7.B.5. - Fiscal Analysis

The federal stormwater regulations, at 40 CFR 122.26(d)(2)(vi), require that permittees provide a fiscal analysis, including yearly cost estimates, for the capital and operation and maintenance expenditures necessary to accomplish the activities of the program. A fiscal analysis is needed to evaluate the municipalities' ability to prepare and implement management programs, and is an appropriate measure to justify a proposed stormwater management program. Where adequate funds are not available to implement all aspects of a program to reduce the discharge of pollutants to the maximum extent practicable, it will be necessary for permittees to propose a strategy



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and a schedule for seeking additional funding, and to reschedule program activities accordingly.

In addition, at 40 CFR 122.26(d)(2)(iv), the federal stormwater regulations require a description of staff and equipment available to implement the stormwater management program. Ecology has chosen to combine this requirement with the fiscal analysis since they are logically linked, and added a request for information on support capability.

S7.B.6. - Adequate Information

This condition is a modification of, and a logical follow-up to a requirement of the federal rules regarding municipal stormwater permit applications. The permit application requirements in 40 CFR 122.26 specify a two-part application process. "The purpose of the two-part application process is to develop information, in a reasonable timeframe, that would build successful municipal stormwater management programs and allow the permit writer to make informed decisions with regard to developing permit conditions."[1] The Part 1 application information, together with the results of the discharge characterization, is used to prepare the proposed stormwater management program that is submitted in Part 2 of the permit application.

Maintenance of data bases regarding the physical characteristics and location of the separate storm sewer system and the areas it serves are necessary for proper management of the system. In addition, it is necessary to maintain an adequate information base concerning stormwater discharges and receiving waters to evaluate program effectiveness. This information base should include any available, pertinent information (including information not required to be collected by the permit) which may be used by the permittees in planning and evaluating their stormwater management programs. As conditions change, an accessible data base is necessary to display those changes. Managers can then make changes to the stormwater management program to maintain or increase its effectiveness.

S7.B.7. - Watershed-wide Coordination

This permit condition is intended to establish an initial framework for watershed-wide management of stormwater quality. For this permit the watershed-wide requirements are very basic. This section will be expanded in future permits.

Permittees are to identify intergovernmental coordination mechanisms. The type of coordination mechanisms are not specified and may be determined by the permittees. Acceptable mechanisms could include a management committee process, interlocal agreements, a regional stormwater management entity, or similar agreements among

[1]Federal Register, Vol. 55, No. 222, November 16, 1990. p. 48044.



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permittees.

Through intergovernmental coordination the permittees are to address shared waterbodies by developing coordinated stormwater management priorities. What is intended here is that permittees priorities not be in conflict with respect to shared waterbodies. It is not necessary to have identical priorities for shared waterbodies. Permittees are also to coordinate data management, mapping, monitoring, and modeling.

One of the objectives of issuing permits on a watershed basis is to ensure protection of waterbodies that are beyond the control of an individual permittee. While this cannot be accomplished without including all municipalities in the watershed under the permit program, efforts can be made by the current group of permittees to ensure compatibility among stormwater management programs. In addition, the comprehensive stormwater program (element SW-2) of the Puget Sound Water Quality Management Plan requires interlocal coordination among all jurisdictions in shared watersheds. Therefore, permittees are directed to develop coordinated stormwater management priorities for shared waterbodies.

To allow a broader look at stormwater quality issues, permittees are to address coordinated data management and mapping efforts. To allow comparisons of data, permittees are directed to coordinate stormwater monitoring and modeling efforts.

In the next round of permits, permittees will be expected to begin implementing best management practices and other measures to control stormwater impacts from cumulative discharges to shared waterbodies.

S7.B.8.a. - New Development and Redevelopment

The federal stormwater rules require applicants to have programs "to reduce the discharge of pollutants ... from areas of new development and significant redevelopment." (40 CFR Part 122.26(d)(2)(iv)(A)(2)). The rules also require a program "to reduce pollutants in storm water runoff from construction sites." (40 CFR Part 122.26(d)(2)(iv)(D)). The Puget Sound Water Quality Management Plan has similar requirements for municipalities within the Puget Sound Basin.

As required by the Puget Sound Water Quality Management Plan, Ecology has developed a Technical Manual which establishes stormwater control requirements for new development, redevelopment, and construction sites. As required also by that plan, Ecology has included these requirements as permit conditions. Subject to available funding, the Puget Sound Water Quality Management Plan requires local governments to either adopt Ecology's manual or a local version that contains equivalent standards. Therefore, the substantial requirements of this special condition are already required of the permittees.



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To these pre-established requirements, Ecology has made one addition. We are attempting to utilize existing local government permitting procedures to notify as many people as possible of a federal requirement for some construction sites and industries to obtain an NPDES permit. NPDES stormwater rules require that construction sites of five acres or more (including sites less than five acres which are part of a larger common plan of development, or sale of five or more acres) obtain an NPDES permit if stormwater runoff discharges to a surface water. Where those construction projects involve establishing a new industrial facility, that facility may also need an NPDES permit to discharge stormwater. In Washington, such construction sites and industries must obtain coverage under Ecology's "Baseline General Permit for the Discharge of Stormwater from Industrial Activities." Coverage is obtained by completing the Notice of Intent forms referenced in this special condition.

This condition does not make the municipality responsible for determining which sites need such coverage, nor does it give them responsibility to assure that these sites obtain coverage under the Baseline General Permit. However, Ecology does consider it reasonable to expect the permittees to assist with informing dischargers within their geographic boundaries of this permit requirement.

S7.B.8.c. - Operation and Maintenance Programs

The requirements for an operation and maintenance program and an ordinance for operation and maintenance of facilities owned by entities other than the permittees, which discharge to municipal separate storm sewers, are drawn from the federal stormwater rules and the Puget Sound Water Quality Management Plan.

Ecology has added a requirement for a strategy to address the disposal of street waste decant. Current maintenance practices for catch basins and other similar stormwater facilities involve using a vactor truck to collect accumulated sediments. This process uses water to free-up the sediments and frequently this water is decanted from the truck back into stormwater conveyances to allow more solids to be put in the vactor truck. Vactor truck decant water often contains high levels of suspended sediments, metals, and petroleum hydrocarbons, and can contain other unpredictable contaminants.

It is not appropriate to continue to reintroduce these pollutants into storm drains. However, adequate alternatives to this practice have not been identified. Therefore, Ecology is requiring the permittees to cooperate in identifying solutions to this problem and to develop strategies consistent with those solutions.

The requirement for a strategy to address street waste decant is consistent with state policy prohibiting the reintroduction of pollutants into the waste stream. This policy has been applied by Ecology to traditional wastewater treatment systems and supported by the Pollution Control Hearings Board and the courts. This policy is expressed in



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General Condition G10 in this permit, which is based on a standard condition that is applied to all NPDES permits. This condition states that, except for decant from street waste vehicles, the permittee shall not allow removed substances to be resuspended or reintroduced to the storm sewer system. Decant from street waste vehicles may be reintroduced only when other practical means are not available and only to catch basins remote from the discharge point. The exception for decant will end as municipalities implement the solutions identified in response to Special Condition S.7.B.8.c.

S7.B.8.g. - Illicit Discharges

The requirement for a program to control illicit discharges and improper disposal is drawn from the U.S. EPA stormwater regulations in 40 CFR 122.26(d)(2). The U.S. EPA requirements are based on the provision in the Clean Water Act that municipal stormwater NPDES permits include a requirement to effectively prohibit non-stormwater discharges into the storm sewers.

In acknowledgement of the diverse contributions to storm drains, U.S. EPA included a list of discharges to storm sewers that must be addressed where they are identified by the permittees as sources of pollution to waters of the United States. This list is referenced in Special Condition S7.B.8.g., consists of the following: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl spaced pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, street wash water, and flows from fire fighting. Because this permit also covers stormwater discharges to all waters of the state, Ecology expects these sources to be addressed where they are sources of pollution to ground water.

In special Condition S7.B.8.g., Ecology has allowed the use of alternative field screening methods for detecting illicit discharges. Use of alternative methods requires Ecology approval. During the permit application process several of the permittees reported problems with the colorimetric field test kits that were specified by U.S. EPA for this purpose. Some permittees have developed effective ways of detecting illicit discharges that include visual inspections of storm drains using television cameras and site inspections. Ecology agrees that there should be flexibility on field screening methods.

In addition, the permits specify that urbanized areas should be the focus of the field screening program. This is intended to provide some clarification for county governments that are under the permit program, where rural areas are not as likely to have illicit connections to storm sewers.



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S7.B.8.h. - Industrial Facilities

The federal stormwater regulations envision that Ecology and the municipal permittees will cooperate to develop programs to monitor and control pollutants in stormwater discharges to municipal storm sewers from industrial facilities. A wide range of industrial facilities listed at 40 CFR 122.26(b)(14) must obtain an NPDES permit from Ecology if they discharge to surface waters or to municipal separate storm sewers which drain to surface waters. Under 40 CFR 122.26(d)(2)(iv)(C), municipal permittees are to establish a program to monitor and control discharges from industrial facilities that the permittees determine are contributing a substantial pollutant loading to municipal separate storm sewers. In the preamble to the federal stormwater regulations U.S. EPA makes their position on the dual responsibility for controlling stormwater discharges associated with industrial activity very clear:

> "Although today's rule will require industrial discharges through municipal separate storm sewers to be covered by separate permit, EPA still believes that municipal operators of large and medium municipal systems have an important role in source identification, and the development of pollution controls for industries that discharge storm water through municipal separate storm sewer systems is appropriate. Under the CWA *(Clean Water Act)*, large and medium municipalities are responsible for reducing pollutants in discharges from municipal separate storm sewers to the maximum extent practicable. Because stormwater from industrial facilities may be a major contributor of pollutants to municipal separate storm sewer systems, municipalities are obligated to develop controls for stormwater discharges associated with industrial activity through their system in their stormwater management program."[2]

The Puget Sound Water Quality Management Plan goes a step further than the federal requirements. It requires municipalities in all urbanized areas of the Puget Sound Basin to develop a "comprehensive urban stormwater program" (Element SW-2). Such programs are to "seek to control the quality and quantity of runoff from public facilities and industrial, commercial, and residential areas including streets and roads, consistent with manuals and guidance provided by Ecology ..." (Element SW-2.4). Those programs are to include inspection, compliance and enforcement measures (SW-2.4.i.). Clearly, the Puget Sound Water Quality Management Plan requires local governments to develop programs to control stormwater flowing into their systems from industrial facilities.

This component includes requirements from federal rules and the Puget Sound Water Quality Management Plan. The permittees must have a program to reduce pollutants from industrial stormwater. Subsection i requires that each permittee identify industries tributary to their storm sewer system. It does not require municipalities to

[2] U.S. EPA, Federal Register, Vol.55, No. 222; November 16, 1990; p. 48090.



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identify, within a specific time frame, all industrial discharges to their system. But eventual identification of all industrial discharges to municipal storm sewers is the goal to be achieved. Subsection ii is drawn from the Puget Sound Water Quality Management Plan. Subsection iii is derived from the federal rules. In subsection iii, we added the last statement concerning coordination of monitoring and controlling pollutants from certain industries, because those same industries may have monitoring and control requirements mandated under their NPDES permit from Ecology. It can be argued that industrial facilities which require NPDES permits, though they drain through the municipal storm sewer system, should be regulated solely by Ecology and not by the municipality. Ecology does not concur with this view. Municipalities are ultimately responsible for discharges from their storm sewer system. Therefore, they need to have a role in controlling what goes into that system.

Ecology acknowledges that the federal stormwater rules establish overlapping responsibilities for the control of industrial stormwater. Ecology and the local governments need to negotiate agreements that make the most efficient use of limited regulatory resources. Ecology expects to play the lead role in gaining compliance from industries covered under NPDES permits for their stormwater discharges. Municipalities are not expected to enforce the requirements of NPDES permits issued to industries. However, nothing in the federal regulations would prohibit the municipalities from requiring additional stormwater controls beyond those required in an industry's NPDES permit from Ecology. Municipalities may consider such actions necessary in order to meet their own NPDES permit obligations. Where such additional controls are required by a municipality, the municipality is responsible, and required by this permit, for gaining compliance with those controls.

S7.B.8.i. - Public Education

The public education program described in special condition S7.B.8.i is derived from the U.S. EPA stormwater regulations and the Puget Sound Water Quality Management Plan. Ecology has broadened the public education program to include permittees' staff whose job functions may impact stormwater quality. We feel it is appropriate to also direct education efforts internally.

As a means of reducing overall costs to the public, the education program requirement has been modified to allow permittees to develop education programs on a regional basis. For example, permittees in the Puget Sound Basin could develop an education campaign for the entire region. In addition, Ecology provides guidance materials and conducts workshops to provide training on BMP selection and the use of Ecology's Stormwater Management Manual for the Puget Sound Basin (the technical manual). There may be some overlap between Ecology's and the permittees' education efforts. However, Ecology's focus has been to educate local government staff (not just staff of NPDES permittees), to enable local governments to transfer information to the public.



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S8 - Total Maximum Daily Load Allocations

Under some circumstances, when the water quality of a waterbody is impaired, the federal Clean Water Act requires states to set limits on the amount of pollutants that the waterbody receives from all sources. States may also set limits on pollutant loads when waterbodies are threatened. These limits are known as Total Maximum Daily Loads (TMDLs). TMDLs differ from commonly used technology-based or water quality-based numeric limits for discharges. A TMDL is developed through a defined process. Through this process, the maximum amount of a pollutant that may be discharged from all sources to a waterbody without causing violations of water quality standards is identified. Then pollutant control strategies are developed to keep the pollutant loading below that level. The strategies may be numerical wasteload allocations to NPDES permitted dischargers or management strategies to control the loads from nonpoint sources.

When controls for stormwater discharges are necessary to implement a TMDL, stormwater management programs must be modified appropriately. Ecology considers a four-month timeframe reasonable for making these modifications. The condition also requires permittees to consider existing TMDLs when submitting their initial stormwater management program as required by S11.

S9 - Program Modification

This section is included in the permit because Ecology recognizes the need for permittees to modify their stormwater management programs in response to changing conditions and unplanned occurrences. However, Ecology also recognizes that it is the state's responsibility to make sure programs are not modified to the extent they undermine compliance with the terms of the permit. Therefore, we have identified certain types of modifications that must have prior approval from Ecology, and an opportunity for public comment.

The list of modifications requiring prior approval addresses several potential concerns:

A change in the level of effort of program implementation (i.e., a greater than 20 percent reallocation or reduction in resources).

A change in implementation of program components, as defined in special condition S7, that could negatively influence the effectiveness of the approved stormwater management program (i.e., significantly delaying, completely changing, or eliminating program components).

Changing the geographic area of coverage by adding a co-permittee or accepting permit responsibility for another entity.



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Changes necessary to implement a TMDL.

All other program modifications are to be described in the annual report required in Special Condition S10.

If, based on information in the annual report, Ecology finds that the basis for the stormwater management program priorities have significantly changed, parts of the program are proving to be ineffective, or there are other problems with program implementation, Ecology may require permittees to make program modifications.

S10 - Reporting Requirements

A. The federal stormwater rules at 40 CFR 122.42 require municipal stormwater permittees to submit an annual report. Ecology included the annual reporting requirement in these permits, and modifications were made to clarify what is requested from permittees and to make the reporting requirements consistent with other provisions in the permits.

To reduce the administrative burden for Ecology and permittees, brief status reports are requested at the end of years one, two, three, and five. Ecology does not want the annual reporting requirement to unnecessarily take resources away from program implementation. Also, Ecology does not have staff resources to respond to voluminous annual reports. However, it is necessary to have more detailed information to prepare the next permit. Therefore, the report scheduled for the end of year four (one year before the expiration of this permit), together with a Notice of Intent shall constitute permit reapplication.

The year four report shall include a detailed evaluation of the effectiveness of the stormwater management program, all of the annual reporting information, a summary and analysis of cumulative monitoring data, and a proposed stormwater management program for the term of the next permit. If U.S. EPA establishes application requirements for the next permit before the end of year four, this permit will be modified, if necessary.

B. The items for inclusion in the annual report have been modified from the federal requirements for the following reasons:

- Additional clarification is provided on what is to be included in the portion of the report on the status of implementing the components of the stormwater management program. Compliance with the approved implementation schedule is to be addressed. Also, program modifications that were made during the reporting year are to be described.



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- The federal requirement to describe proposed changes to the stormwater management program has been deleted since this requirement is addressed by special condition S9 - Program Modifications.

- The portion of the report on annexations and incorporation has been added by Ecology. Major annexations and incorporation could have a negative impact on stormwater management program implementation if large areas are taken out of the municipal stormwater permit program. Ecology believes it is reasonable to be notified of these types of changes in the permit coverage area so that decisions can be made about designating new or newly enlarged municipalities under the permit program.

- Ecology has provided clarification on what kind of information is required in the portion of the report on annual expenditures. Ecology needs to assess differences between planned and actual expenditures for components of the stormwater management program to evaluate the level of effort each permittee is expending on their program. We recognize that permittees do not currently have budget tracking systems that reflect the stormwater management program required under this permit, and that it is difficult to create these systems. Therefore, we have clarified our expectations on this requirement, narrative descriptions are acceptable, but over the term of the permit, reports shall evolve to show numeric expenditures.

- The federal requirement for information on revisions to the assessment of controls has been deleted from the annual report. The purpose of the federal requirement is to estimate the effectiveness of Stormwater Management Plans in reducing pollutants discharged. Except for qualitative observations, it would not be possible to estimate pollutant reductions annually without extensive monitoring of discharges. Ecology prefers the broader monitoring program outlined in S.7.B.4. for assessing success. These objectives include monitoring for overall program effectiveness. However, with multiple objectives for these programs, Ecology does not want to mandate a monitoring program which exclusively accomplishes one objective at the exclusion of the others.

  In addition, changes in program effectiveness will probably not be measurable on an annual basis. A longer time period in which trends may become observable seems more appropriate.

- Ecology has eliminated the requirement to provide a summary of monitoring data in each annual report, and replaced it with a requirement for a summary and analysis of cumulative data for the year four report. We did not feel it was necessary to look at the data annually, but do want to be able to judge trends, and make decisions about requirements for the next permit. In addition, Ecology has requested a description of any other stormwater



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monitoring programs to be provided in the annual reports. We need this information to stay aware of all available information about stormwater in the watershed.

- The requirements for a summary of enforcement actions and identification of water quality improvements or degradation are drawn from the federal rules.

- Ecology has added a requirement for a report on the status of watershed-wide coordination activities. Information that will be used to develop the next permit is required at the end of year four.

S11 - Schedules for Compliance with Permit Conditions

This section sets schedules for stormwater management program approval. The decision to approve or disapprove a stormwater management program is identified as a modification of the permit which gives a right of appeal before the Pollution Control Hearings Board.

Ecology has set an approximately one year deadline for stormwater management program approval for large municipalities and 18 months for medium municipalities. The intention is to prevent stormwater program development from dragging on too long during the term of the permit. Permittees have already spent several years developing proposed programs and submitting applications. Ecology is anxious to expedite formal program implementation. We have set staggered program approval deadlines for large and medium municipalities because large municipalities had a statutory deadline for filing applications that was six months ahead of medium municipalities and they are generally ahead of the medium municipalities in developing their stormwater management programs.

WSDOT is a permittee that cannot be categorized as a large or medium municipality on the basis of population. Therefore, we have assigned WSDOT to the medium municipality category for the purpose of assigning a schedule for compliance.

Deadlines for program approval are contingent on Ecology meeting deadlines for review of proposed programs. It is unfair to have permittees in violation of permit requirements because Ecology was not able to provide a timely review. Therefore, the deadline for program approval is extended by the number of days by which Ecology exceeds its deadlines for program review. S11.D.3 also provides for schedule extensions for other actions beyond the permittee's control or caused by Ecology.

S11.D.2. and D.3. allow for compliance schedule extensions to accommodate comments on the SWMP and for good cause as requested in writing. Ecology shall establish compliance schedule extensions through administrative order.



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General Conditions

The General Conditions of this permit are requirements based on federal or state laws which must be included in all NPDES general permits, either expressly or by reference. Ecology has decided to expressly incorporate the requirements of federal and state law that can be applied to municipal stormwater discharges. Where necessary, the requirements have been modified to make sense when applied to municipal stormwater discharges. The significant modifications are summarized below.

As previously explained in the discussion of Special Condition S7.B.8.c., G10, Removed Substances, is changed to allow for the reintroduction of street waste vehicle decant water until a more appropriate strategy can be developed and implemented.

G4, Bypass Prohibited, is changed to allow for bypasses of stormwater treatment facilities when the design capacity is exceeded. Ecology has set a minimum technology-based requirement that stormwater treatment BMPs in the Puget Sound Basin should be designed to treat the six-month, 24-hour storm event. Roughly, this should provided capacity for treatment of 90 percent of the annual stormwater runoff. However, higher flows generated by larger storm events are allowed to bypass. The incremental costs and the space needed to provide additional capacity to treat flows generated by larger storms becomes prohibitive quickly beyond the six-month, 24-hour storm event.



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**DRAFT**

**FACT SHEET**

**STATE OF WASHINGTON**

**DEPARTMENT OF ECOLOGY**

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**FACT SHEET FOR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) AND STATE WASTE DISCHARGE GENERAL PERMITS FOR STORMWATER DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWERS LOCATED IN:**

1. **THE CEDAR-GREEN WATER QUALITY MANAGEMENT AREA AND THE PORTION OF THE KITSAP WATER QUALITY MANAGEMENT AREA LOCATED IN KING COUNTY**

2. **THE SOUTH PUGET SOUND WATER QUALITY MANAGEMENT AREA AND THE PORTION OF THE KITSAP WATER QUALITY MANAGEMENT AREA LOCATED IN PIERCE COUNTY**

3. **THE SNOHOMISH WATER QUALITY MANAGEMENT AREA AND THE PORTION OF THE SKAGIT WATER QUALITY MANAGEMENT AREA LOCATED IN SNOHOMISH COUNTY**



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